The Impact of Cross-border E-commerce on Traditional Import and Export Trade in China

Ke-Xin ZHANG, Zheng-Yao YAN, Qian-Hui WAN, Shuai LI, Lei YAO*
Business school, Beijing Institute of Fashion Technology, Beijing, China

Keywords: Cross-border E-commerce; Import and export trade; Regression analysis.

Abstract. The purpose of this thesis is to study the impact of cross-border E-commerce on traditional import and export trade in China, and further analyze what trade measures we should take in the current age when cross-border E-commerce experiences a spurt. In advantage of measuring software Eviews and statistics in time sequence from 2008 to 2016, four most key elements are selected (the total scale of cross-border E-commerce trade, GDP, financial crisis and FDI) to establish a model of impact element for import and export trade in China, so as to make a linear regression analysis and empirical analysis. The conclusions demonstrate that the development of cross-border E-commerce is closely connected to the traditional import and export trade in China, the latter of which is somewhat impacted by the former in the short term, displaying an inverse change.

Introduction

The rapid development of cross-border E-commerce in China created us a free, flexible, open, efficient and inclusive market economy system. In 2014, the so-called “first year of cross-border E-commerce”, China Customs published and put in place a series of policies to legitimate cross-border import E-commerce, which stepped into a fast-growth phase. Statistics show that the average annual growth of traditional foreign trade in China was less than 10% in 2013, while cross-border E-commerce grew at a rate of over 30%. The total scale of cross-border E-commerce trade reached 4 trillion Yuan in 2014, and 6.7 trillion Yuan in 2016.

The conclusions demonstrate that the development of cross-border E-commerce is closely connected to the traditional import and export trade in China, the latter of which is somewhat impacted by the former in the short term. In addition, GDP, financial crisis and FDI are all key variables, influencing the development of import and export trade in China on different levels.

Development Status of Cross-border E-commerce

On the morning of September 7, 2013, President Xi Jinping of China delivered a speech in Nazarbayev University in Kazakhstan, proposing a joint effort in striving for the “Silk Road Economic Belt”. The construction of “The Belt and Road Initiative” accelerated the infrastructure construction and interconnection of land, maritime and air transportation networks of countries and regions along the Belt and Road, which sped up the logistics speed to some extent and further enhanced the development of cross-border E-commerce.

In addition, between customs of China and countries along the Belt and Road, customs cooperation was reinforced through exchange of information and mutual recognition of supervision, customs clearance efficiency was improved through electronic customs clearance interconnection and expedition, interconnection level was enhanced through the signing of such various agreements as investment agreements and double taxation avoidance agreements. All the above will also further boost the development of cross-border E-commerce.

Through innovation technology and free connection to internet, cross-border E-commerce can extensively propel the developing countries along the “Belt and Road” to connect to the global network of industry chain, value chain and supply chain, while policies including “Investment Plan
for Europe”, “ASEAN Community Vision 2025” and “Eurasian Economic Union” in combination with “Belt and Road Initiative” will accelerate the development of cross-border E-commerce in the aspect of policy.

From 2008 to 2016, the trade scale of cross-border E-commerce in China displayed a stepped growth (as shown in Fig.1). In 2008, the scale of cross-border E-commerce trade in China was 800 billion Yuan; in 2009, the scale grew to 900 billion RMB Yuan, with a year-on-year growth rate of 12.5%; in 2010, the scale grew to 1.3 trillion, with a growth rate of 44.4%; in 2011, the scale grew to 1.8 trillion, with a growth rate of 38.5%; in 2012, the scale grew to 2.3 trillion, with a growth rate of 27.8%; in 2013, the scale grew to 3.1 trillion with a growth rate of 34.8%; in 2014, the scale grew to 4 trillion, with a growth rate of 29%; in 2015, the scale grew to 5.2 trillion, with a growth rate of 30%; in 2016, the scale grew to 6.7 trillion, with a growth rate of 28.8%.

![Figure 1. Cross-border E-commerce Trade Scale.](image)

Date source: iResearch

**Positive Analysis**

**Theory Hypothesis**

This thesis will establish a model of cross-border E-commerce impacting traditional import and export trade. The explained variable is Y: total scale of traditional import and export trade. There are many factors that influence import and export trade in China. Taking into consideration the key explaining variables, this thesis selected the following explaining variables:

1. The total scale of cross-border E-commerce trade (X1)—the market shares of foreign trade in the mode of cross-border E-commerce and traditional trade compete with each other. The development of cross-border E-commerce will certainly have an impact on traditional trade mode. In theory hypothesis, the total scale of cross-border E-commerce and the total scale of traditional import and export trade are negatively correlated.

2. GDP (X2)—Gross Domestic Product consists of consumption, investment and net export. Therefore, import and export trade becomes one of the three factors drive the development of the Gross Domestic Product. In turn, the power and wealth of a country are greatly impacting its import and export trade. In theory hypothesis, GDP and the total scale of traditional import and export trade are positively correlated.

3. Financial crisis (D)—Dummy variable. Impacted by the financial crisis in 2008, the import and export trade of China encountered outliers and the general trend encountered a huge change. However, according to statistics, the Subprime Crisis in the U.S. didn’t have an obvious impact on our foreign trade or employment. Therefore, the dummy variable is set D=1 (year t=2008) and 0 (other
years). In theory hypothesis, financial crisis and the total scale of traditional import and export trade can be positively and negatively correlated.

4. FDI (X4)—The foreign direct investment of China keeps increasing, boosting development of foreign economy and trade and having an especially boosting impact on import increase of China. In theory hypothesis, FDI and the total scale of traditional import and export trade are positively correlated.

Data Collection and Reduction

Based on the analysis above, we collected data about the total scale of traditional import and export trade, the total scale of cross-border E-commerce trade, GDP, financial crisis and FDI from 2008 to 2016. All data below have been removed of CPI influence.

Relevant data can be referred to in Table 1:

<table>
<thead>
<tr>
<th>Year</th>
<th>Total scale of traditional import and export (RMB 100 million)</th>
<th>Total scale of cross-border E-commerce trade (RMB 100 million)</th>
<th>Financial crisis (dummy variable)</th>
<th>(USD 10 thousand)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>179921.47</td>
<td>8000</td>
<td>1</td>
<td>9239500.00</td>
</tr>
<tr>
<td>2009</td>
<td>151710.03</td>
<td>9063.44</td>
<td>0</td>
<td>9066767.37</td>
</tr>
<tr>
<td>2010</td>
<td>196654.55</td>
<td>12673.42</td>
<td>0</td>
<td>10307388.90</td>
</tr>
<tr>
<td>2011</td>
<td>218655.74</td>
<td>16648.78</td>
<td>0</td>
<td>10730228.97</td>
</tr>
<tr>
<td>2012</td>
<td>220108.85</td>
<td>20734.34</td>
<td>0</td>
<td>10071121.51</td>
</tr>
<tr>
<td>2013</td>
<td>226839.68</td>
<td>27238.10</td>
<td>0</td>
<td>10331674.48</td>
</tr>
<tr>
<td>2014</td>
<td>227623.14</td>
<td>34456.80</td>
<td>0</td>
<td>10299309.21</td>
</tr>
<tr>
<td>2015</td>
<td>208561.26</td>
<td>44175.38</td>
<td>0</td>
<td>10726717.25</td>
</tr>
<tr>
<td>2016</td>
<td>199839.32</td>
<td>55031.79</td>
<td>0</td>
<td>10348440.81</td>
</tr>
</tbody>
</table>

Data source: National Bureau of Statistics of PRC, iResearch

Establishment of Model

A linear regression model can be established in the approach of Eviews stepwise regression method. The total scale of traditional import and export (Y) is selected to be explained variable, while the total scale of cross-border E-commerce trade (X1), GDP (X2), financial crisis (D) and FDI (X4) are explaining variables. \( \mu \) is a random error term. The hypothetical model, which is
\[ Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \mu, \] Where \( \alpha \) is a constant term, and \( \beta_1, \beta_2, \beta_4 \) are relevant coefficient of each impacting factor, and \( X_3 \) is a dummy variable. \( \mu \) is a random error term, representing other factors that have an impact on the total scale of traditional import and export trade.

The following conclusions are obtained by using OSL method to estimate the parameter of the model and using Eviews software to analyze:

Table 2.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>-180319.1</td>
<td>46357.55</td>
<td>-3.889747</td>
<td>0.0177</td>
</tr>
<tr>
<td>X1</td>
<td>-3.360404</td>
<td>0.495763</td>
<td>-6.778245</td>
<td>0.0025</td>
</tr>
<tr>
<td>X2</td>
<td>0.681573</td>
<td>0.097917</td>
<td>6.960691</td>
<td>0.0022</td>
</tr>
<tr>
<td>X3</td>
<td>39766.63</td>
<td>8516.257</td>
<td>4.669496</td>
<td>0.0095</td>
</tr>
<tr>
<td>X4</td>
<td>0.013879</td>
<td>0.005856</td>
<td>2.370153</td>
<td>0.0768</td>
</tr>
</tbody>
</table>

\[ R^2 = 0.973578 \quad \text{Mean dependent var} = 203323.8 \]
\[ \text{Adjusted R}^2 = 0.947156 \quad \text{S.D. dependent var} = 24889.66 \]
\[ \text{S.E. of regression} = 5721.594 \quad \text{Akaike info criterion} = 20.44206 \]
\[ \text{Sum squared resid} = 1.31E+08 \quad \text{Schwarz criterion} = 20.55163 \]
\[ \text{Log likelihood} = -86.98929 \quad \text{Hannan-Quinn criter.} = 20.20561 \]
\[ \text{F-statistic} = 36.84721 \quad \text{Durbin-Watson stat} = 2.873207 \]
\[ \text{Prob(F-statistic)} = 0.002057 \]

Concluded from the above: \( Y = -180319.1 - 3.360404 X_1 + 0.681573 X_2 + 39766.63 X_3 + 0.013879 X_4 \)
\[ t = (-3.889747)(-6.778245)(6.960691)(4.669496)(2.370153) \]
\[ R^2 = 0.947156 \quad F = 36.84721 \quad DW = 2.873207 \]

The adjusted \( R^2 \) is 0.966646, representing a high goodness of fit. The model passed the test under a significance level of 0.05, which is significant. As of Table 2.
1. The correlation coefficient of the scale of cross-border E-commerce trade is -3.680697, indicating that the total scale of traditional import and export will decrease by 3.680697 units averagely if the scale of cross-border E-commerce trade increases by 1 unit and other conditions remain the same.

2. The correlation coefficient of GDP is 0.724280, indicating that the total scale of traditional import and export will increase by 0.724280 unit averagely if GDP increases by 1 unit and other conditions remain the same.

3. The correlation coefficient of financial crisis is 41452.45, indicating that the total scale of traditional import and export will increase by 41452.45 units average if financial crisis occurs and other conditions remain the same.

4. The correlation coefficient of FDI is 0.013681, indicating that the total scale of traditional import and export will increase by 0.013681 unit averagely if FDI increases by 1 unit and other conditions remain the same.

It is therefore believed that the scale of cross-border E-commerce trade, GDP, financial crisis and FDI have a very strong impact on the total scale of traditional import and export trade.

Conclusions and Policy Recommendations

Research Conclusions

(1) The main impact factor on the import and export trade in China is the development of cross-border E-commerce. Traditional import and export trade has complicated procedures, and the intermediate links consume great cost of labor and time, and final price of terminal product has increased significantly. However, the appearance of cross-border E-commerce fundamentally changes trade mode and process of cross-border trade, saving plentiful cost of labor and time. Cost and threshold of import and export trade shall reduce, and more convenient trade channel shall be provided so that it can be more competitive during the competition with the cross-border E-commerce.

(2) Two important macro factors that influence China’s import & export trade: GDP and FDI. Three driving factors for gross domestic product are consumption, investment and net export. When the gross domestic product of a country grows, three driving factors that consist the gross domestic product will bound to grow. FDI’s impact on a country’s import and export trade doesn’t exist independently, and the rapid development of import and export trade scale can increase attraction for foreign investment, which can promote the development of import and export trade of the host country. Therefore, in order to develop the import and export trade, relatively steady development of GDP and FDI shall be sustained.

(3) In short time, the factor that influences the development of China’s import and export trade is the cross-border E-commerce development, and such influence is negative. With the gradual economic globalization and increasing China’s comprehensive national strength and government’s continuous support for the cross-border E-commerce and input, cross-border E-commerce develops more and more rapidly. More and more medium- and small-sized enterprises and individuals are get involved in the cross-border E-commerce development. In the short term, it may pose certain impact on the traditional import and export trade to a certain extent.

Policy Recommendations

(1) Government shall have an international vision. International trade development situation keeps changing. The government shall have an international vision, and correctly guide the enterprise to closely follow international trade development situation, namely the rapid development of cross-border E-commerce. In order to support the development of cross-border E-commerce, enhance coordination of relevant departments and feasibility of relevant policies, the government may take such measures as tax break, export rebate, increase of trial cities, establishment of free trade zone and provision of foreign trade planning for enterprise. The government shall clearly know the market demand and reasonably support the cross-border E-commerce development.
(2) Optimize industry structure. We shall reform the production and organization mode of the industry and optimize industry structure. Facing diverse, multi-echelons and individual demands of overseas consumers, we shall focus on consumers, enhance cooperative innovation and establish an all-round service system. Parallel with improving product manufacture workmanship and quality, and enhancing research, development, design and brand sales, we shall reconstruct value and industry chain to give full play to the optimal allocation of resources.

(3) Enterprise shall pursue transformation and enhance competitiveness. Firstly, the corporate leaders shall think about new operation mode and means under the internet platform based on its actual situation, and such move will help improve their management cognition level. Secondly, we shall select product, market, platform and proper staff. We shall get to know the product performance and characteristics and seek the matching market to maximize economic benefits of the product; the E-commerce development relies on the selection of trade platform. With varied platform threshold, charging rate and market object differ, and it’s an important basis of corporate earlier transformation to choose the appropriate trade platform based on the product positioning; with respect to the selection of proper staff, it’s recommended to use the young talents of the new economic era because they are aligned with the market development, and can keenly capture market development trend.

Acknowledgments
The key project of social science program for Beijing Municipal Education Commission 2016(SZ201610011208). Construction of service capability of scientific and technological innovation—Transformation of scientific and technological achievements- Promotion plan project “Cooperative Development Research on the used clothing recycling and resource utilization system in Beijing Tianjin Hebei region” (PXM2016_014216_000022).

References