

# **E-commerce Expands the Bandwidth of Entrepreneurship**

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## **Abstract:**

Personal trade is widespread in developing countries. In the absence of formal institutions, strong social networks are often needed to maintain personal trade. However, it is costly to build and maintain social networks. The high cost of social capital imposes an entry barrier on people who lack social networks, such as those from outside local communities. In this paper, using a primary survey in Baigou, one of the largest industrial and e-commerce clusters in China, we show that e-commerce reduces transaction costs and results in vertical disintegration, thereby lowering capital entry barriers. Moreover, the timely payment of e-commerce reduces the reliance on the network-based trade credit that is embedded in traditional trades, easing the need for social networks. Using an administrative universe firm registry dataset, we show that the spread of e-commerce has enabled many people, people who used to lack financial and social capital, to become entrepreneurs.

## 1. Introduction

In the early stage of development, impersonal trades are less common due to the lack of formal institutions to enforce trade contracts. Instead, people rely more on relational contracts to conduct trades (Grief, 1993; Fafchamps, 2004). Social networks based on hometown, kinship, religion, caste, or tribes have been widely used in personal trades in developing countries (Munshi, 2014). Although the trust-based network lowers transactions among people within the network, it is costly to build and maintain social networks. In addition, the club nature of networks prohibit those outside the network from entering the business. Network-based impersonal trade is the second-best response to imperfect institutions. Building sound institutions has been regarded as a necessary condition for transforming personal trade to impersonal trade.

Without denying the importance of institutions, we want to show that technology, such as e-commerce, can also play a role in facilitating the transition from personal to impersonal trade. In the past decade, e-commerce has taken off in many countries, especially in China. China has overtaken the US as the largest e-commerce market in the world with online sales accounting for more than 10%, compared to 8% in the US (Economist, 2013). Alibaba, the largest online platform, has been listed in NASDAQ since 2014.

E-commerce has transformed domestic trade in at least two ways. First, it has greatly reduced the number of intermediaries between producers and consumers. Traditional trades have to go through multiple intermediaries from producers to consumers, involving a large amount of working capital. Traders often have to rely on trade credit to ease working capital constraints. It takes a long time for traders to establish trust and extend trade credit to each other. Disintermediation resulted from e-commerce reduces the reliance on trade credit.

Secondly, e-commerce has solved the delayed payment problems that plagues traditional trade, especially long-distance trade. For example, Alibaba has set up Alipay as a third party to certify trade and process payment. Sellers can quickly receive payment from Alipay after it certifies that a transaction is successful. With speedy payment, trade credit is no longer needed, thereby diluting the value of social networks underlying trade credit.

E-commerce lowers capital entries barriers and reduces the need for social networks, thereby opening up space for many potential entrepreneurs, such as those from outside the production centers or marketplaces, who would otherwise be impossible to entry the trading business.

Using an administrative universe firm registry dataset from the State Administration of Industry and Commerce (SAIC) in China, we find that the spread of e-commerce has enabled many people, who used to lack financial and social capital to start a business, to become entrepreneurs. In short, e-commerce has expanded the bandwidth of entrepreneurship.

The remainder of the paper is organized as follows. The first section provides the background of Taobao, the largest consumer to consumer (C2C) platform and describes the inner workings of Baigou, one of the top “Taobao Towns.” Section 2 discusses the production structure of e-commerce and shows how it has resulted in disintermediation and the reduction of reliance on social capital. Section 3 presents baseline empirical results using an administrative dataset from SAIC to demonstrate that e-commerce boosts entrepreneurship in China. Section 4 further reports more robustness checks to the main results and discusses major channels as to how e-commerce shapes entrepreneurship. Section 5 concludes.

## **2. Background of China’s E-commerce**

### *2.1. Brief Review of E-commerce in China*

E-commerce has rapidly taken off in China in the past decade. Alibaba, the largest e-commerce company, has set up two major platforms for e-commerce. Taobao, a consumer to consumer (C2C) platform, was established in 2003. Tmall.com was set up in 2008 to promote business to consumer (B2C) trade. JD.com is another major e-commerce platform. Although it has grown more rapidly than Alibaba in the past several years, its market share is still dwarfed by Alibaba.

China’s brick and mortar businesses have been much less developed than in the US. Production goods involve high transaction costs as it o passes through many intermediaries

from producers to consumers. The rudimentary nature of China's retails provides an opportunity for e-commerce to flourish. In addition, the spread of smartphones has made online shopping much easier than before and the express delivery industry, one of the most competitive industries in China, has penetrated to almost all corners of China. In all, the spread of e-commerce has greatly expanded market size.

On the supply side, it is less costly to open an online shop than a real store. The online payment systems greatly reduce online retailers' reliance on trade credit, which has been an enormous barrier in the wholesale and retail business, in particular for those who are outside the network. E-commerce provides lower requirements for financial and social capital, which helps open doors to many potential entrepreneurs. This is a point we will test in the later sections.

Online shops are mainly concentrated in industrial clusters as shown in Figure 1 (Zhang and Zhu, 2015). With production centers nearby, online shops can get access to a vast variety of products while keeping abreast of market demand.

## 2.2. *An Case Study of "Taobao Town" Baigou*

In order to understand the inner workings of e-commerce, we first provide an anatomy of Baigou, a top "Taobao Town" based on our field work and primary surveys. Alibaba published a list of "Taobao Towns" in China in 2013 according to Taobao online sales. Baigou, one of the largest suitcase and baigou clusters in Hebei Province, ranks among the top.

Baigou is located near Lake Baiyangdian, one of the largest lakes in the Hebei Province, and is about two hours away from Beijing. It used to be a major port by the lake and an important market town. In the past three decades, it has evolved into one of the largest suitcase/bag production and market centers. It has more than 3,000 luggage enterprises and ten thousand family workshops. More than half of a million people in the area work in this sector. In 2014, Baigou housed at least 3,000 online shops and was ranked in the "Top 10 Taobao Towns" by Alibaba.

In order to better understand how e-commerce has shaped the real economy, we conducted a field survey in Baigou in 2015. We focused on three major groups: traditional stores in the suitcase/bag wholesale market, suppliers to online shops, and online shops. Because of the presence of physical shops, wholesale stores and suppliers to online shops can be easily spotted and interviewed. We randomly sampled stores in the wholesale market based on the store list provided by the wholesale market administration. The suppliers to online shops are concentrated in a few streets. We first counted all of them and mapped them out before randomly drawing a sample for interview.

Most online shops are hidden in ordinary apartment buildings and only a few of them have registered with the government. Therefore, it is impossible to get a complete list of online shops. Even the major platforms, such as Taobao and JD, have only the IP addresses of the online shops and not their physical addresses. The suppliers of online shops have a rough idea of where the online shops are located. In fact, most online shops are concentrated in apartment buildings near online suppliers. Based on the information provided by online suppliers, we mapped out the major apartment buildings that host online shops. We randomly selected a few buildings, knocked on all the doors in the chosen buildings, and interviewed the owners of online shops if an apartment was used for online stores.

Because the online shops were not a complete random sample, there is a concern that the sample lacks representativeness. To remedy the concern, we compare the sales of online shops in our sample with those listed online in the major platforms. We find that our sample reports higher amount of sales. This is probably because most online shop owners operate more than one shop and some of them were inactive. When being interviewed, they mainly talked about the sales of the active shops. When excluding the inactive online shops in the comparison group, as shown in Figure 2, the distribution of our sample mirrors closely to the online shops listed in major platforms for the same type of suitcase/bag business.

### *2.3 Business Models of Online Shops and Wholesale Stores*

In Baigou, the traditional wholesale stores and online shops can have different business models. As shown in Figure 3, the store owners in the wholesale market also often operate a production workshop or factory nearby. Their goods have to pass several layers of

intermediaries before reaching consumers. By comparison, very few online shop owners operate a workshop or factory. Rather, they visit suppliers to online shops, select a few favorite samples displayed in the stores of online suppliers, and upload the photos of chosen merchandise to their online shops. After receiving an order online, they go to the stores of online suppliers, buy the merchandise with cash, and have it shipped directly to consumers. The model of online sales results in a vertical disintegration. Because online shop owners do not need to operate a workshop or factory and rent a physical store, their cost of doing business is much lower than a traditional store as seen in the wholesale market. Because payments are guaranteed by Alipay or another third party, it is not necessary for online shop owners to spend time building connections with other intermediaries to secure trade credit, as what traditional wholesalers do. It is apparent that the model of online sales has lowered the need for both financial and social capital. Therefore, the vertical disintegration and the less need for social networks associated with e-commerce development will likely lower the barriers to entry. This opens more space for potential entrepreneurs, people who were once constrained by financial and social capital.

Table 1 further compares the mode of operation between online shops and traditional wholesale stores. Several features are apparent from the Table. Firstly, as shown in the first row, the percentage of people from outside the area among online shop owners is much higher than among wholesalers, suggesting a less need for social networking for online retail businesses.

Secondly, it is less costly to run an online shop than a real shop in the wholesale market. As indicated in the second and third rows, online shops maintain lower monthly inventories and require smaller amounts of starting capital. It takes 15 more times of starting capital to start a wholesale store than an online shop.

Thirdly, it involves much more social trust to run a traditional wholesale business than an online shop. Row 4 asks how many transactions are needed to obtain the first trade credit from customers or suppliers. A traditional wholesaler reports more than six times the amount of successful transactions, compared to four times for an online shop. As a matter of fact, due to the third-party payment system, more than 70% of transactions online do not need trade credit= and 67% of them receive full payment within one month, as shown in the last row. By comparison, the share for traditional stores is much lower, for only 38% of

them report to receive full payment within one month. Online sales have a much quicker cash flow than traditional trade. On average, it takes more than a year (14 months) of doing business before two parties in the traditional wholesale sector begin to exchange trade credit. The length shortens to three months for an online shop although most of them do not need credit in the first place.

The case study in Baigou demonstrates how online trade has diminished the role of social networking in the trade business, making it easier for outsiders to enter the business of online sales. However, it is not clear whether the observation in Baigou holds true for China as a whole. This is a hypothesis we are going to test in the next section.

### 3. Empirical Framework and Baseline Results

In this section, we make use of a unique universal firm registry database from the State Administration of Industry and Commerce (SAIC) in China to test if e-commerce has promoted the entrepreneurship of outsiders. The database includes the personal IDs of all the entrepreneurs. The first six digits of their IDs reveal the place, mostly hometowns, of obtainment prior to 18 years old. By comparing the addresses with the firm registration addresses, we can infer whether the entrepreneurs come from local areas or not.

The basic specification is as follows:

$$\ln\left(\frac{y_{i,t+1}}{y_{i,t}}\right) = \alpha * \ln(y_{i,t}) + \beta * \ln(E - commerce_{i,2013}) + \gamma * Cluster_{i,2008} + \delta * C_{i,2010} + f_p + \epsilon_i,$$

where  $i$  refers to county *and*  $t$  means year;  $y_{i,t}$  is the number of private firms in county  $i$  and year  $t$ ;  $C_{i,2010}$  is a set of control variables including sex ratio, urbanization ratio, share of industrial and service employment in total employment, population density, and average year of schooling.  $f_p$  indicates provincial fixed effect and  $\epsilon_i$  is the random error term.

Table 2 reports the estimation results. The first column is the most parsimonious specification with only the e-commerce index. The coefficient for the variable is insignificant. In the second column, we add the clustering index at the county level. The clustering variable is highly positive and significant, but the e-commerce index remains insignificant. In the third column, more control variables, such as share of industrial and service employment are included. In the fourth column, we further control for province fixed effects. Among the four

specifications, the fourth one has the lowest AIC and highest adjusted R square, suggesting that it has the best fit. In the fourth regression, the e-commerce index is positive and significant at the 1% level. This suggests that e-commerce index is positively associated with the growth of private firms.

Although we have controlled for province fixed effects and other factors in column 4, there is still a possibility that the e-commerce index actually captures some omitted variables, which happen to be associated with the growth of private firms. To remedy this concern, we run a falsification test in column 5. In China, e-commerce did not start until 2003, the year Taobao was established. Therefore, the annual growth of private firms from 2002 to 2003 should have little to do with the e-commerce index observed in 2013. If the e-commerce index captures some unobserved factors contributing to firm growth in a county, we should observe that the index matters to firm growth from 2002 to 2003 prior to the e-commerce era. The coefficient for the e-commerce index is not significant in column 5, muting the concerns on omitted variable bias.

Unlike private firms, the state-owned enterprises (SOEs) are less constrained by financial and social capital. If the main role of e-commerce is to reduce financial constraints and a reliance on social networks, e-commerce development should matter much less to the growth of SOEs than to private firms. As a placebo test, Figure 5 shows the coefficient for the e-commerce index for the years 2003 and 2013 in regressions on private firms and SOEs, respectively. The coefficient for the e-commerce index in regressions for the SOEs are insignificant both years, while it is positively significant for private firms in 2013.

Our case study in Baigou also shows that the penetration of e-commerce particularly benefits those people who are from other areas and lack local social networks. Since the firm registry data can tell whether a newly established firm is owned by a local person or a non-local person, we further look at the effect of e-commerce development on the growth of local and non-local entrepreneurship. As shown in Figure 5, the coefficient for the e-commerce index in regressions for the outsiders sample is highly positive and significant in 2013, but not in regressions for the growth of business by local people. Apparently, e-commerce has facilitated the transition from personal trade to impersonal trade, which favors non-local people constrained by a lack of social networks.



#### 4. Robustness Checks

Because we only have one-year's data of e-commerce development index at the county level, it is hard to draw a strong causal relationship between e-commerce and the growth of private firms -- particularly by those from outside the local areas. In this section, we conduct a few more robustness checks to the main findings.

##### 4.1. *Small firms or big firms?*

If the main channel that e-commerce uses to shape extensive firm growth is through lowering capital barriers to entry and reducing the reliance on social networks, we would expect smaller firms to have a faster growth because they were more likely to be constrained by financial and social capital prior to the e-commerce era. To test this conjecture, we split the sample into two groups depending on whether the registered capital is over 500 thousand RMB or not and repeated the previous regressions on the two subsamples (small firms and big firms). Figure 6 shows that the coefficient for e-commerce is only significant for small firms in 2013, but not for the growth of big firms.

##### 4.2. *Producers or retailers?*

In our field survey in Baigou, we observed booming online shops and related service industries, such as express, photography, and IT service. To examine the potential heterogeneous effect on different sectors, we categorized industries into four groups: light manufacturing industry, wholesaling, retailing, and service industry. Figure 7 reports the estimated coefficient for the e-commerce index in regressions for the four subgroups. As shown in Figure 7, e-commerce plays a great role in facilitating the growth of retail firms and a smaller role in fostering the growth of wholesaling and other service industries. Interestingly, e-commerce does not seem to matter much to the growth of manufacturing firms.

##### 4.3. *Young or old entrepreneurs?*

It takes time to build social capital. In traditional personal trade, young people often face a disadvantage compared to their senior counterparts. Here we want to test if e-commerce has provided more benefits to young entrepreneurs by using the following specification:

$$\ln(K_t) = \alpha * Age + \beta * \ln(Ecommerce_{i,2013}) + \theta * Age * Ecommerce + \gamma * Cluster_{i,2008} + \delta * C_{i,2010} + \epsilon_i,$$

where  $K_t$  is the registered capital for a new firm in year  $t$  and age is measured by the age of a firm's legal representative at the year of its establishment. The variable of interest is the interaction term between age and the e-commerce index.

Table 3 reports the estimation results. The coefficient of age is significantly positive in the regression for the year of 2003, but not in 2013, suggesting that age becomes less important in the age of e-commerce. The coefficient for the e-commerce index is negative, indicating that e-commerce helps reduce the capital barriers to entry.

However, the interaction term between age and e-commerce is positive, contrasting to expectations. This is probably because older entrepreneurs are less subject to the constraints of social capital and therefore, less impacted by e-commerce. Figure 8 reports the coefficient for the interaction between e-commerce and age of those younger than 40 years old. In 2013, the coefficient is not significant, suggesting that e-commerce probably has offset the disadvantage of a lack of social capital for younger entrepreneurs.

## 5. Conclusion

In history, the transition from personal trade to impersonal trade takes a long time. Sound institutions are necessary conditions for impersonal trade. However, it is a daunting task to build up sound institutions in the first place. In this paper, we used China as an example to show how e-commerce has offered a faster route for the transition to impersonal trade

E-commerce has taken off rapidly in China. It helps lower the entry barriers to capital and weakens the reliance on social networks in doing business. Therefore, it offers a new opportunity for potential entrepreneurs who were previously constrained by a lack of financial and social capital. Using the universal firm registry database, we have shown that

e-commerce has particularly benefited young and non-local entrepreneurs. E-commerce has tapped the previously depressed entrepreneurial talent.

**Table 1: The Characteristic of Online Business and Traditional Business**

	(1)		(2)		T-test (1)-((2))
	Online		Traditional		
	Obs.	Mean	Obs.	Mean	
Outsiders (%)	180	79%	107	42%	0.37***
Inventory (piece)	113	515.62	95	1,145.35	-629.73***
Starting capital (10 thousand Yuan)	181	2.48	108	39.71	-37.23***
No. of deals before obtaining trade credit	52	4.42	44	6.16	-1.74
Length before receiving the first trade credit (Month)	42	3.21	31	13.77	-10.57***
No. of contacting before 1st Deal	134	1.28	40	1.63	-0.34*
Receive full payment within one month (%)	181	67%	108	38%	0.29***

Source: Authors' survey.

**Table 2: Impact of E-commerce on the Growth of Private Firms**

Dependent Variable	(1)	(2)	(3)	(4)	(5)
	2013				2003
	Growth Rate				Falsification
Ln(Survival number)	-0.052*** (0.007)	-0.056*** (0.008)	-0.047*** (0.008)	-0.047*** (0.009)	-0.071*** (0.009)
E-commerce Index	0.002 (0.006)	-0.001 (0.006)	0.005 (0.006)	0.016*** (0.006)	0.005 (0.006)
Cluster Index		0.009*** (0.003)	0.009*** (0.003)	0.015*** (0.003)	0.010*** (0.004)
Sex Ratio			0.006 (0.055)	-0.104* (0.062)	0.090 (0.091)
Urbanization Ratio			0.062 (0.043)	-0.032 (0.040)	0.011 (0.043)
Service ratio			-0.417*** (0.097)	-0.104 (0.082)	0.051 (0.096)
Industrial ratio			0.001 (0.003)	0.004** (0.002)	-0.015*** (0.003)
Education			-0.016** (0.007)	-0.003 (0.010)	0.020* (0.012)
Primary ratio			-0.130* (0.075)	-0.245** (0.111)	-0.068 (0.111)
Population density			-0.001 (0.001)	-0.000 (0.001)	0.001** (0.000)
Provincial Fixed Effect	NO	No	No	Yes	Yes
Observations	1,819	1,819	1,793	1,793	1,774
AIC	-1927.589	-1936.201	-1949.825	-2241.192	-1687.724
Adjusted R2	0.165	0.170	0.196	0.326	0.248

Robust standard errors in parentheses

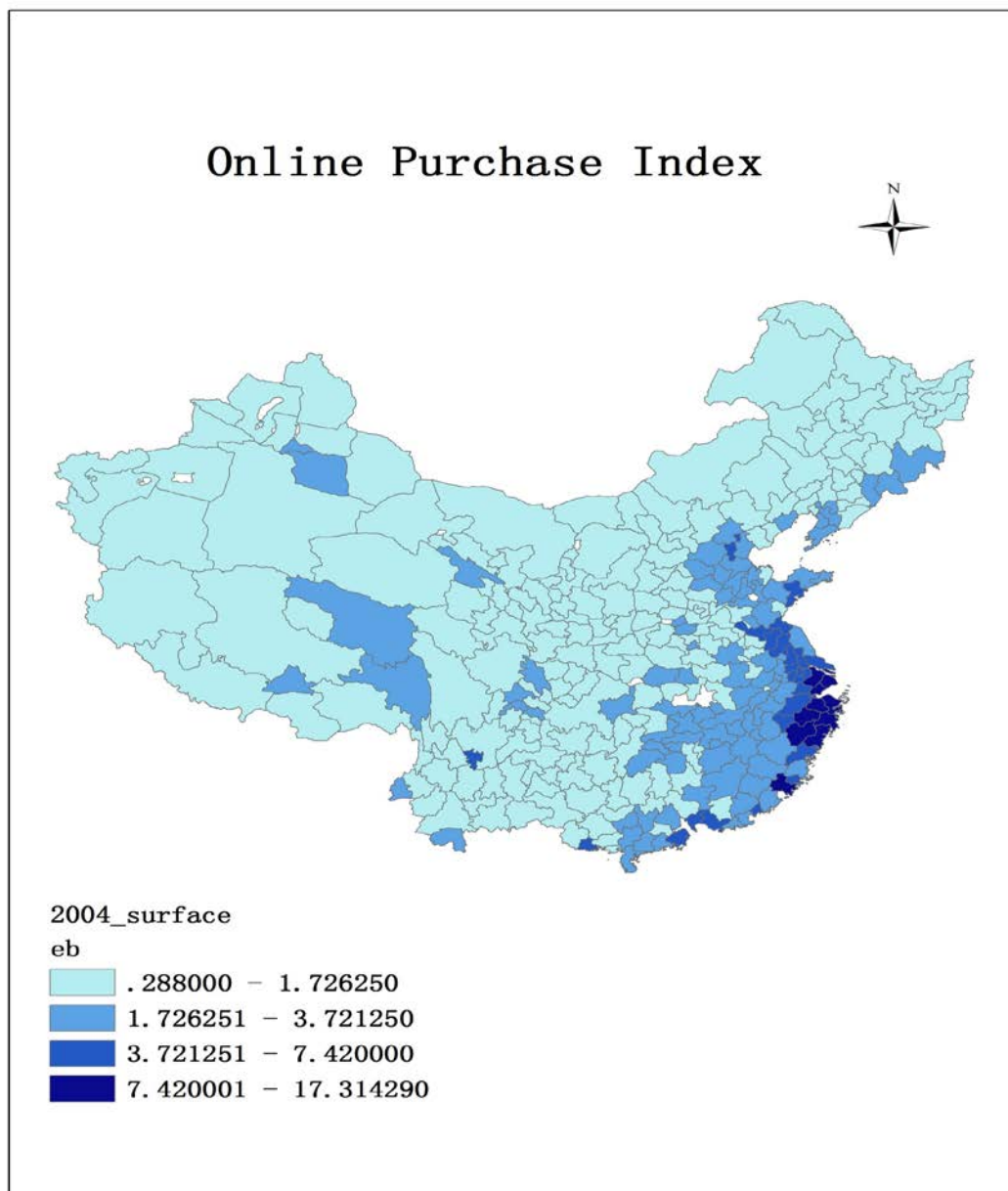
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

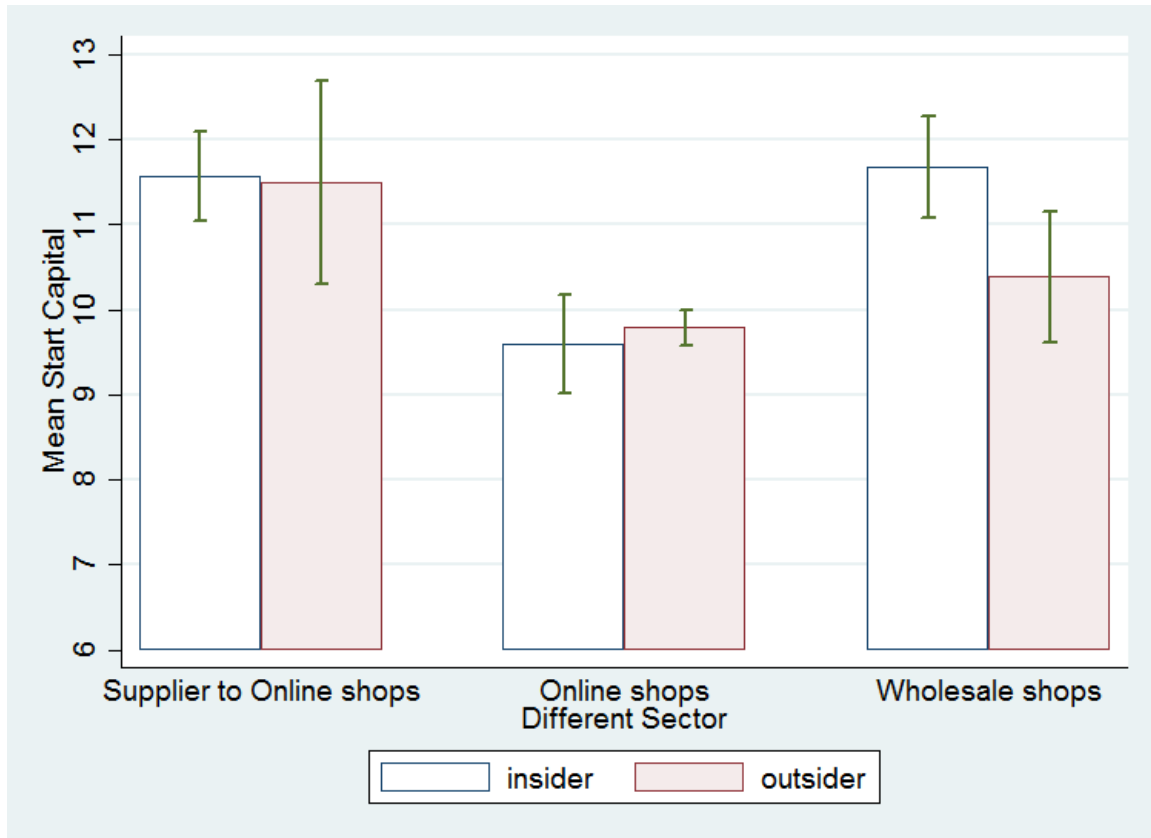
**Table3: Impact of E-commerce on the Starting Capital of Private Firms**

	(1)	(2)	(3)	(4)
	2002	2003	2012	2013
Dependent Variable	Registration capital			
Age	0.004*** (0.001)	0.007*** (0.001)	0.006*** (0.002)	0.000 (0.001)
E-commerce index	0.009* (0.005)	0.013** (0.005)	-0.040*** (0.012)	-0.018*** (0.006)
Age*e-commerce	-0.000*** (0.000)	-0.001*** (0.000)	0.000 (0.000)	-0.000** (0.000)
Clustering	0.005 (0.009)	0.006 (0.008)	-0.019 (0.018)	0.008 (0.017)
Observations	139,688	173,449	483,735	689,447
R-squared	0.007	0.007	0.026	0.015

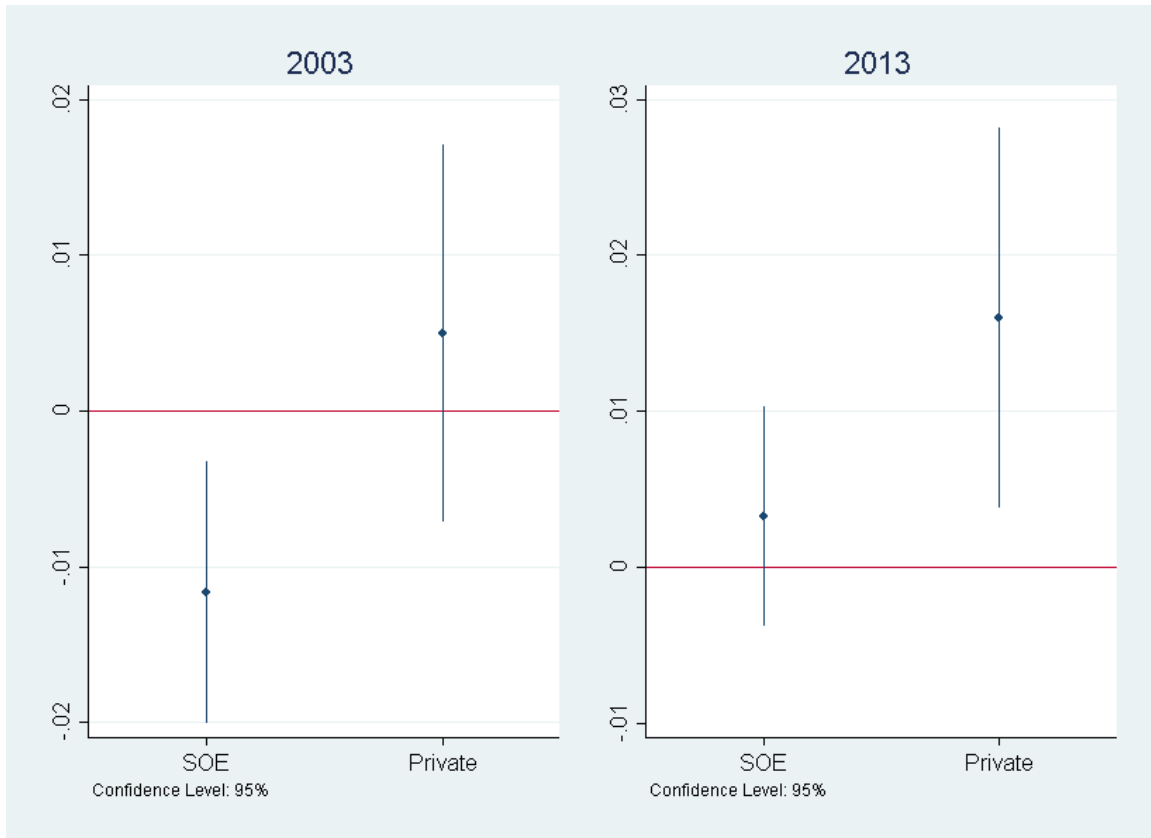
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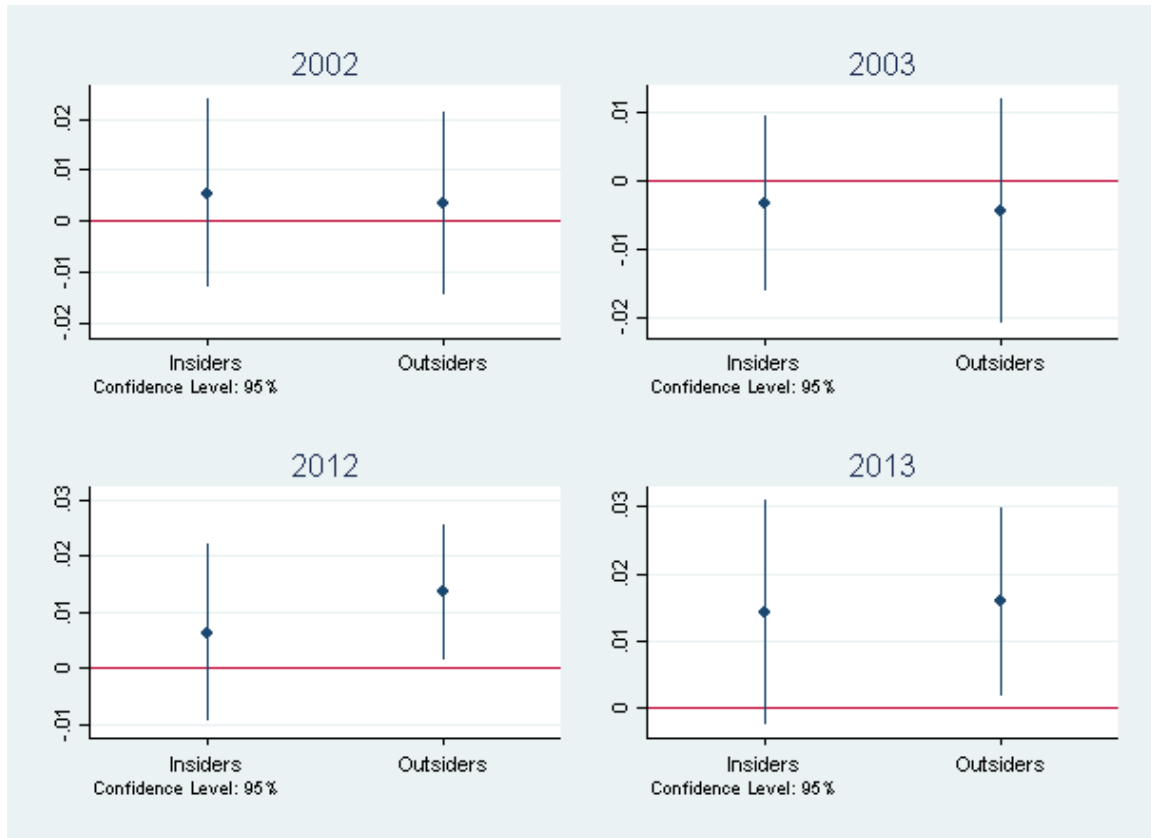
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

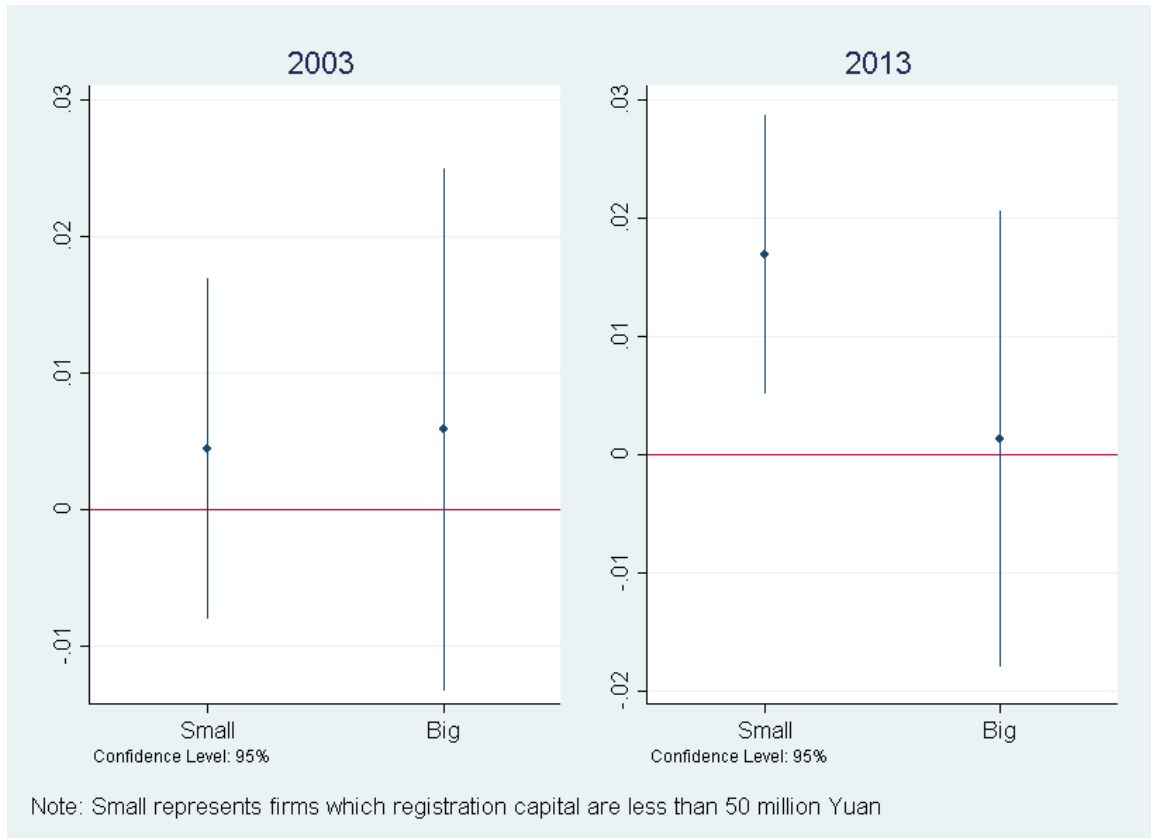
**Figure 1: E-commerce Distribution**

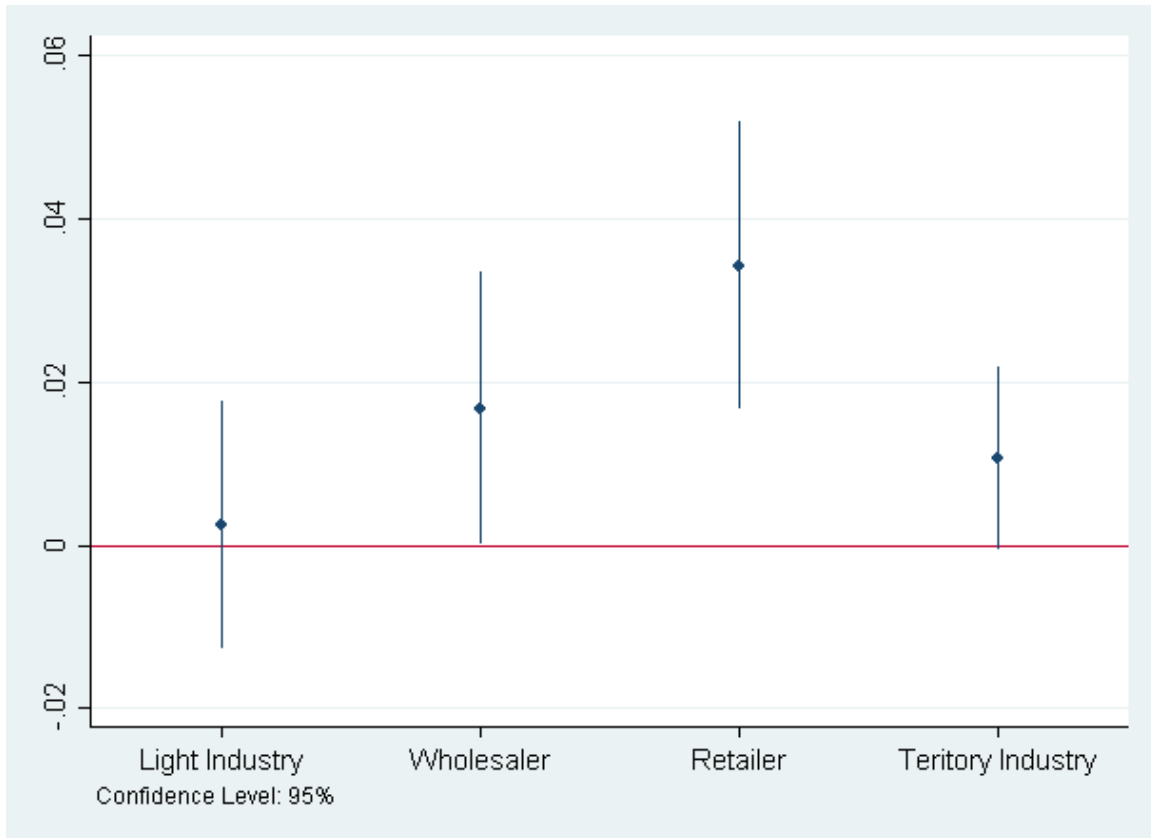
**Figure 1: The Starting Capital for Outsiders and Insiders in Different Business**



**Figure 2: The Impact of Ecommerce on SOE & Private Firms**

**Figure 3: The Impact of E-commerce On Insiders and Outsiders**

**Figure 4: Impact of E-commerce on Small Firms and Big Firms**

**Figure 5: Impact E-commerce on Different Types of Business**

**Figure 6: Impact of E-commerce with Age for Young Entrepreneurs**

