

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 prevalent 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, who used to lack financial and social capital, to become entrepreneurs.

1. Introduction

In the early stage of development, impersonal trade is 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 trade in developing countries (Munshi, 2014). Although the trust-based network lowers transaction costs among people within the network, it is costly to build and maintain social networks. In addition, the club nature of networks prohibits those outside the network from entering the business. Network-based impersonal trade is the second-best response to imperfect institutions. (Munshi, 2004) Building sound institutions has been regarded as a necessary condition for transforming personal trade to impersonal trade (North, 1990).

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% of retail sales, compared to 7% in the US (Economist, 2013). Alibaba, the largest online platform, has become the largest IPO in history and 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 rely on trade credit to ease working capital constraints. However, it takes a long time for traders to establish trust and extend trade credit to each other. Disintermediation resulted from e-commerce weakens 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 an escrow account to certify trade and process payments. 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 entry barriers and reduces the need for social networks, thereby opening up space for many potential entrepreneurs. It will particularly benefit those from outside the production centers or marketplaces, who would otherwise be impossible to enter the trading business. Using an administrative universe firm registry dataset from the State Administration of Industry and Commerce (SAIC) in China, we tested this idea and found that the spread of e-commerce has enabled many people, those who used to lack financial and social capital, to become entrepreneurs and start a business. In short, e-commerce has indeed expanded the bandwidth of entrepreneurship.

The remainder of the paper is organized as follows. Section 2 provides the background of Taobao.com, the largest consumer to consumer (C2C) platform and describes the inner workings of Baigou, one of the top “Taobao Towns.” Then, based on survey results, we will discuss the production structure of e-commerce and show how it has resulted in disintermediation and the reduction of dependence 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. 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.com, 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 those in the United States. Production goods involve high transaction costs as they pass 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. 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 traditional "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 access a vast variety of products while keeping abreast of market demand.

2.2. A 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 bags clusters in Hebei Province, ranks among the top.

Baigou is located near Lake Baiyangdian, one of the largest lakes in 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 houses more than 3,000 luggage enterprises and ten thousand family workshops. More than half a million people in the area work in this sector (Yan Xing, 2009). By 2013, Baigou housed at least 3,000 online shops (Alibaba Research, 2013b).

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 of online shops are concentrated in streets near the online shops. We first counted all of them and mapped them out before drawing a random sample for interview.

Most online shops are hidden in ordinary apartment buildings and many of them have not registered with the government. Therefore, it is impossible to get a complete list of online shops. Even the major platforms, such as Taobao.com and JD.com, have only the IP addresses of the online shops and not their physical addresses. The suppliers of online shops only 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 suppliers of online shops, 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

Because the online shops were not a completely random sample, there is a concern that the sample lacks representativeness. To remedy the concern, we compared the sales of online shops in our sample with those listed online in the major platforms. We found that our sample reports a higher amount of sales than the average from the major platforms. This is probably because most online shop owners operate more than one online shop and some of them were inactive. When being interviewed, the owners focused mainly on the sales of the active shops. When excluding the inactive online shops of major platforms, 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 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 products have to pass several layers of intermediaries before reaching consumers. By comparison, very few online shop owners own 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 products to their online shops. After receiving an order online, they go to the stores of online suppliers, buy the merchandise by cash, and have it shipped directly to consumers. 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 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.

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 times more 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. Thanks to the third-party payment system, more than 65% of transactions online do not even need trade credit as shown in row 4. Row 5 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. 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 shown in the row 6. Moreover, most of them do not need credit at all in the first place. As a matter of fact, 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 with only 38% of them reporting to receive full payment within one month. Online sales have a much quicker cash flow than traditional trade.

Thanks to the reduction of financial capital, as Figure 4 shows, outsiders can play fairly with local people in the online business. While in the traditional wholesale business, insiders start their business with a greater advantage.

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:

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

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 ϵ_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, including sex ratio, urbanization, and 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 figures the lowest AIC and the highest adjusted R square, indicating it as 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 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 when Taobao.com 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. It turns out that the coefficient for the e-commerce index is not significant in column 5, muting the concerns of 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 displays the coefficient for the e-commerce index for 2003 and 2013 in regressions on private firms and SOEs, respectively. The coefficients for the e-commerce index in regressions for the SOEs are insignificant in both years of 2003 and 2013. By comparison, it is positively significant for private firms in 2013, but not in 2003 before the era of e-commerce.

Our case study in Baigou also reveals 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 6, 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 puts non-local people who are constrained by a lack of social networks in the same playing field with local people.

4. Robustness Checks

Because we only have one-years' worth of data for the e-commerce 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 5 million RMB or not and repeated the previous regressions on the two subsamples (small firms and big firms). Figure 7 shows that the coefficient for e-commerce is only significant for small firms in 2013, but not for 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 8 reports the estimated coefficient for the e-commerce index in regressions for the four subgroups. As shown in Figure 8, e-commerce plays a major role in facilitating the growth of retail firms and a minor role in fostering the growth of wholesaling and other service industries. Interestingly, e-commerce does not seem to impact the growth of manufacturing firms.

4.3. *Young or old entrepreneurs?*

It takes time to accumulate financial 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:

$$\ln(K_t) = \alpha * Age + \beta * \ln(Ecommerce_{i,2013}) + \gamma * Cluster_{i,2008} + \delta * C_{i,2010} + \epsilon_i \quad (2)$$

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.

Table 3 reports the estimation results. The coefficient for age is significantly positive in the regression for the year of 2003, but not in 2013, suggesting that age becomes less important in the e-commerce era. The coefficient for the e-commerce index is negative, indicating that e-commerce helps reduce the capital barriers to entry. In a word, e-commerce can help easing the constraint of start capital, especially for the young entrepreneurs.

5. **Conclusion**

In history, the transition from personal trade to impersonal trade takes a long time. Sound institutions are foundations 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 lowered the entry barriers to capital and weakened the reliance on social networks in business. Therefore, it offers a new opportunity for potential entrepreneurs who were previously constrained by a lack of financial and social capital. Using the universe firm registry database, we have shown that e-commerce has particularly benefited young and non-local entrepreneurs, taping the previously constrained entrepreneurial talent.

References

- Alibaba Research (2013a), *Zhongguo Chengshi Dianzishangwu Fazhan Zhishu Baogao* (The development of e-commerce in Chinese counties). Alibaba.
- Alibaba Research (2013b), *Taobao Cun Yanjiu Weibaogao 2.0* (Mini Report 2.0 on Taobao Towns). Alibaba
- Banerjee, A., & Munshi, K. (2004). How efficiently is capital allocated? Evidence from the knitted garment industry in Tirupur. *The Review of Economic Studies*, 71(1), 19-42.
- Coase, R. H. (1937). The nature of the firm. *Economica*, 4(16), 386-405.
- Economist (2013). The world's greatest bazaar: Alibaba. *Economist*, March 23.
- Fafchamps, M. (2004). Market institutions in sub-Saharan Africa: Theory and evidence. *MIT Press Books*.
- Greif, A. (1993). Contract enforceability and economic institutions in early trade: The Maghribi traders' coalition. *The American economic review*, 83(3), 525-548.
- Long, C. and Zhang, X. (2011). Cluster-based industrialization in China: Financing and performance. *Journal of International Economics*, 84(1), 112-123.
- Lucking-Reiley, D., and Spulber, D. F. (2001). Business-to-business electronic commerce. *Journal of Economic Perspectives*, 15(1), 55-68.
- Munshi, K. (2014). Community networks and the process of development. *The Journal of Economic Perspectives*, 28(4), 49-76.
- North, D. C. (1990). *Institutions, Institutional Change and Economic Performance*. Cambridge university press.
- Ruan, J. and Zhang, X., (2009). Finance and cluster-based industrial development in China. *Economic Development and Cultural Change*, 58(1), 143-164.
- Ruan, J. and Zhang, X. (2015). A Proximity-based measure of industrial clustering. IFPRI Discussion Paper No. 1468.

Williamson, O. E. (1979). Transaction-cost economics: the governance of contractual relations. *Journal of law and economics*, 22(2), 233-261.

Xing, Y. (2009). *Hebei Sheng Baigou Xiao Chengzhen Fazhan Tansuo* (Study on the Urbanization Model of Baigou). Master thesis, Hebei University.

Zhang, Xiaobo and Zhu, W. (2015). The spatial patterns of E-commerce in China. Paper presented at the annual Allied Social Science Meetings, January 3-5, 2016, San Francisco.

Table 1: The Characteristic of Online Business and Traditional Business

	(1)		(2)		T-test
	Online		Traditional		
	Obs.	Mean	Obs.	Mean	(1)-(2)
Outsiders(%)	180	79%	107	42%	0.37***
Inventory(piece)	113	515.62	95	1,145.35	-629.73***
Start Capital (10 thousand Yuan)	181	2.48	108	39.71	-37.23***
Fraction of businessman without trade credit (%)	180	66.30	108	0.00	66%***
No. of deals before obtaining trade credit	52	4.42	44	6.16	-1.74
Length before obtaining trade credit (Month)	42	3.21	31	13.77	-10.57***
Receiving Full Payment in a Month(%)	181	67%	108	38%	0.29***

Source: Authors' survey in Baigou.

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

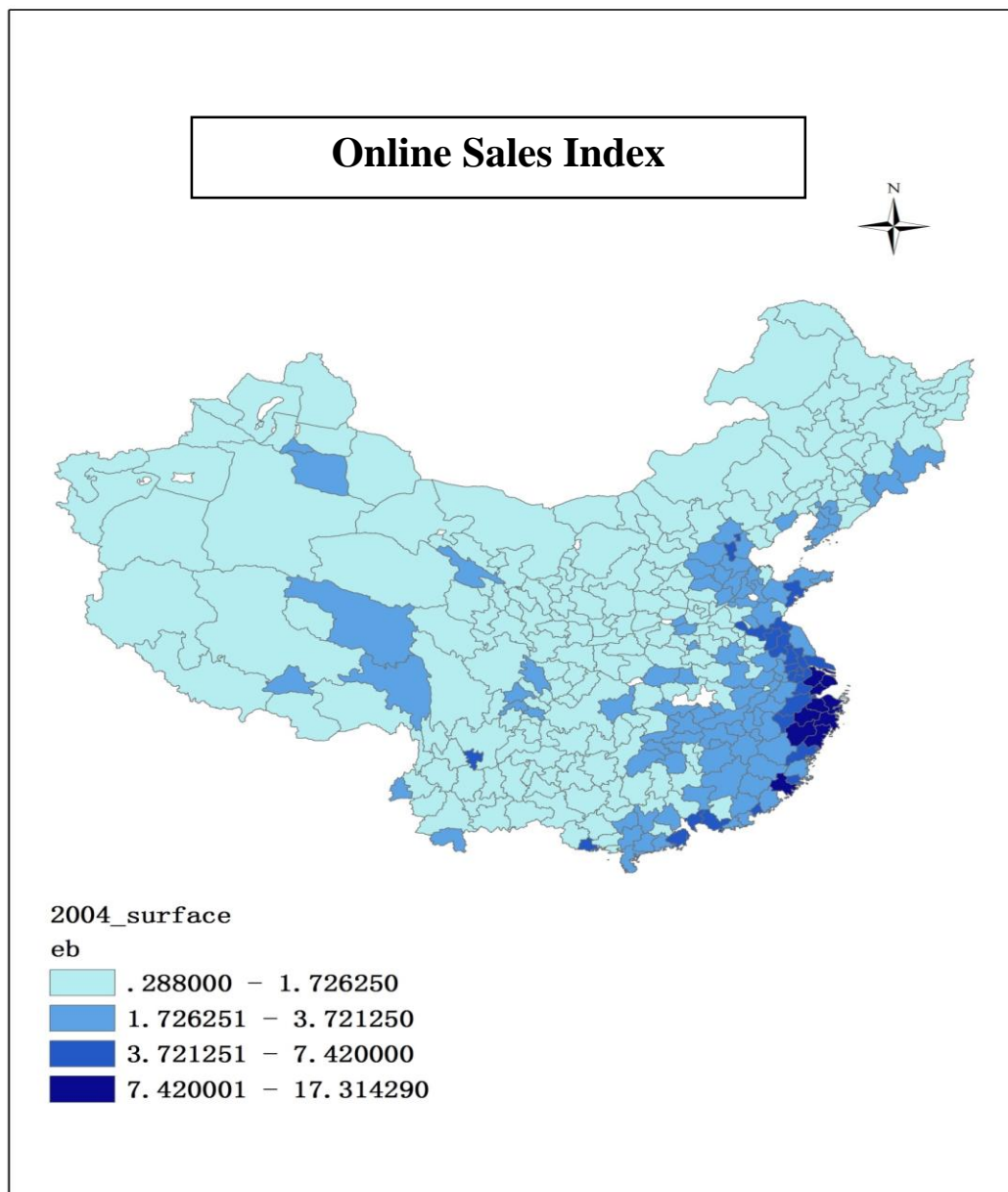
Note: Growth rate is the ratio of net increased firms to total firms, all calculated from the firm registry database; E-commerce index is calculated by the size of online sales, reported by Alibaba; Clustering index is calculated by Ruan and Zhang (2015); Sex ratio is the ratio of prim-age males to females based on China Population Census 2010; Urbanization ratio is share of population living in the city or town based on China Population Census 2010; Service ratio is the share of employment in the service sector in total employment based on China Population Census 2010; Industrial ratio is the share of employment in the industry sector in the total employment based on China Population Census 2010; Education is the average year of schooling based on China Population Census 2010

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

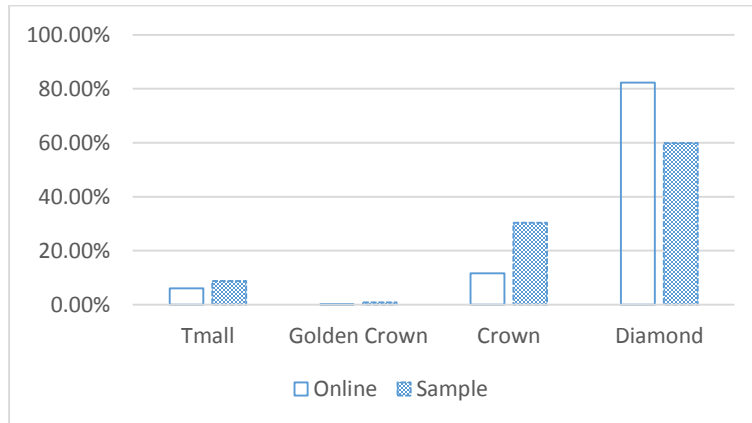
Table3: Impact of E-commerce on the Starting Capital of Private Firms

Dependent Variable	(1)	(2)
	2003	2013
	Registered Capital	
Age	0.007*** (0.001)	0.000 (0.001)
E-commerce Index	0.013** (0.005)	-0.018*** (0.006)
Cluster	0.006 (0.008)	0.008 (0.017)
Observations	173,449	689,447
R-squared	0.007	0.015

Note: Age is the age of a firm's legal representative at the year of its establishment. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Figure 1: E-commerce Sales Distribution

Source: Alibaba

Figure 2: Distribution of online shops' rate

Source: For the online data, we pick up the online bag\suitcase shops belonging to Baigou using Spider.

Figure 3: Manufacturing and Retailing structure of the traditional and online business

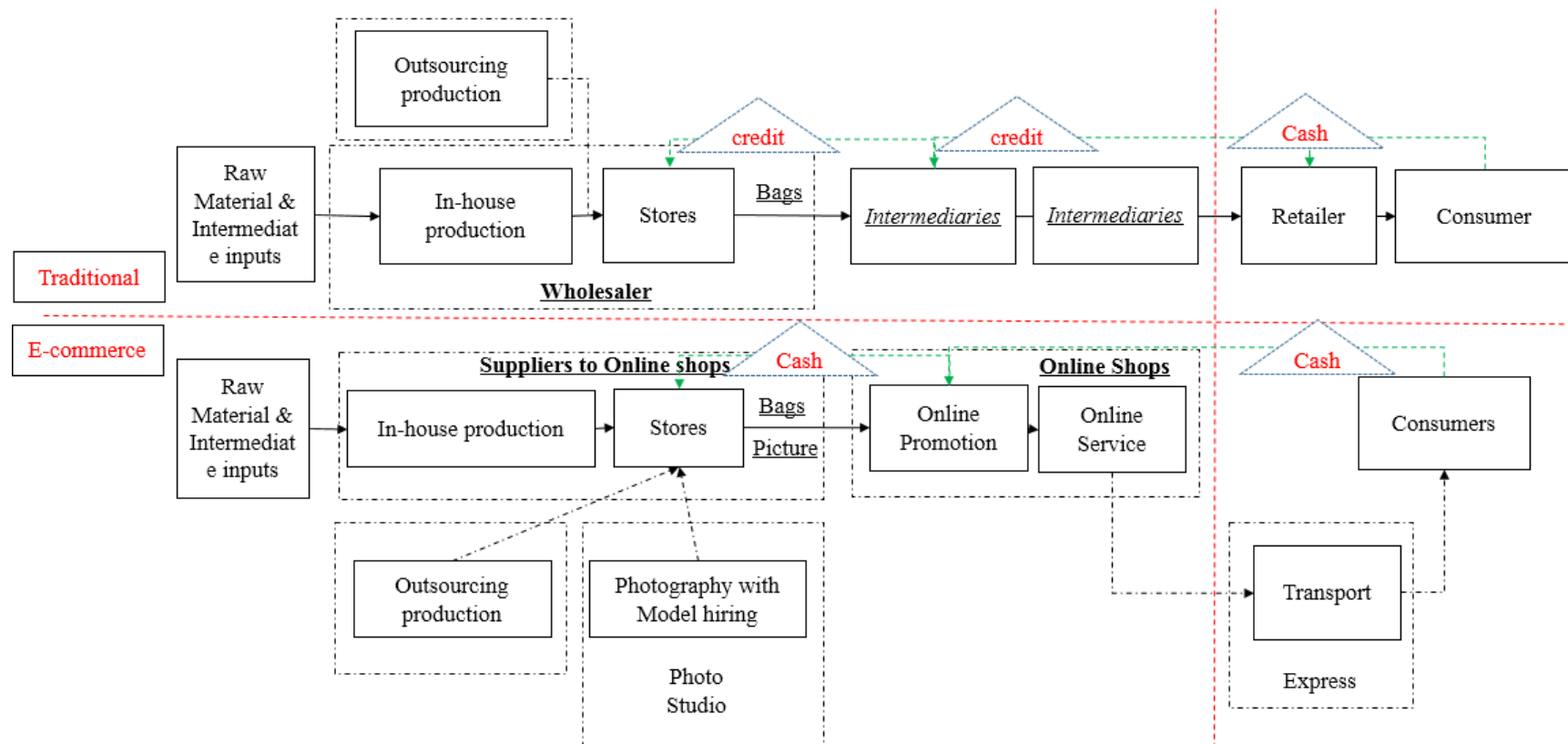
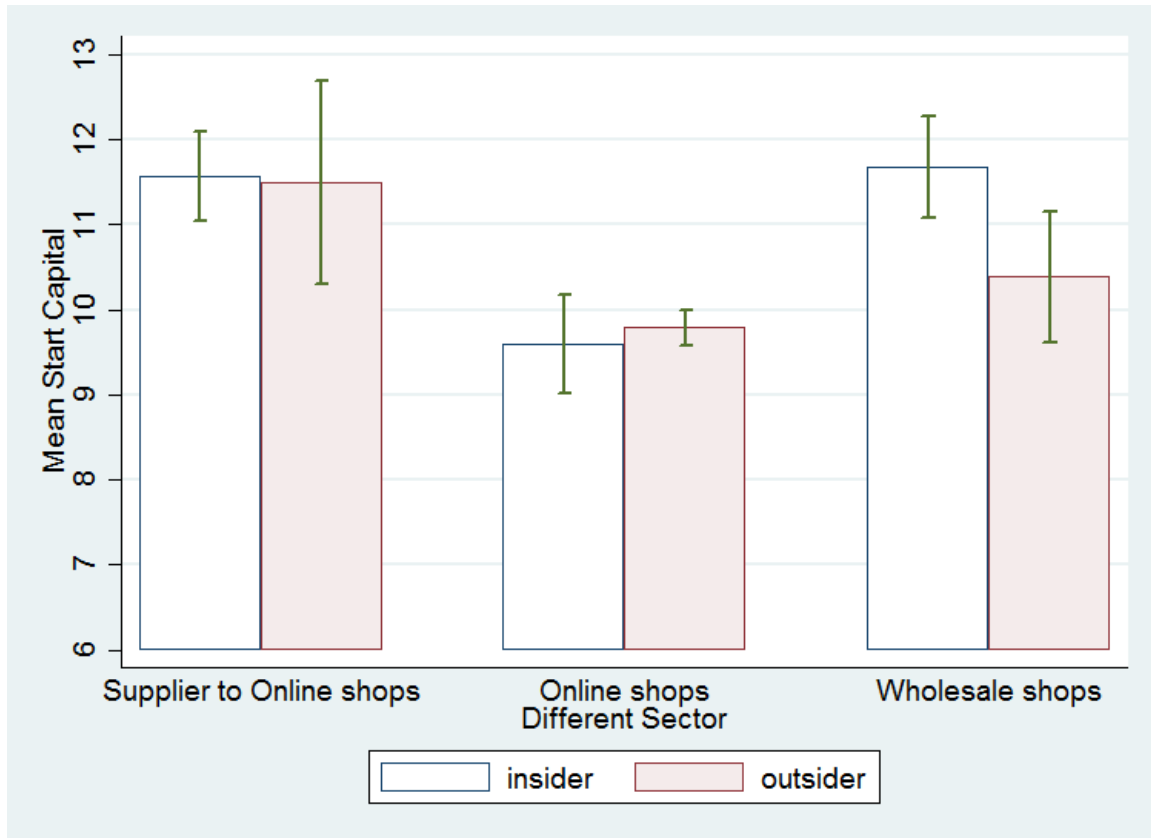


Figure 4: The Starting Capital for Outsiders and Insiders in Different Business

Note: Outsiders means that they are born in other counties instead of Baigou

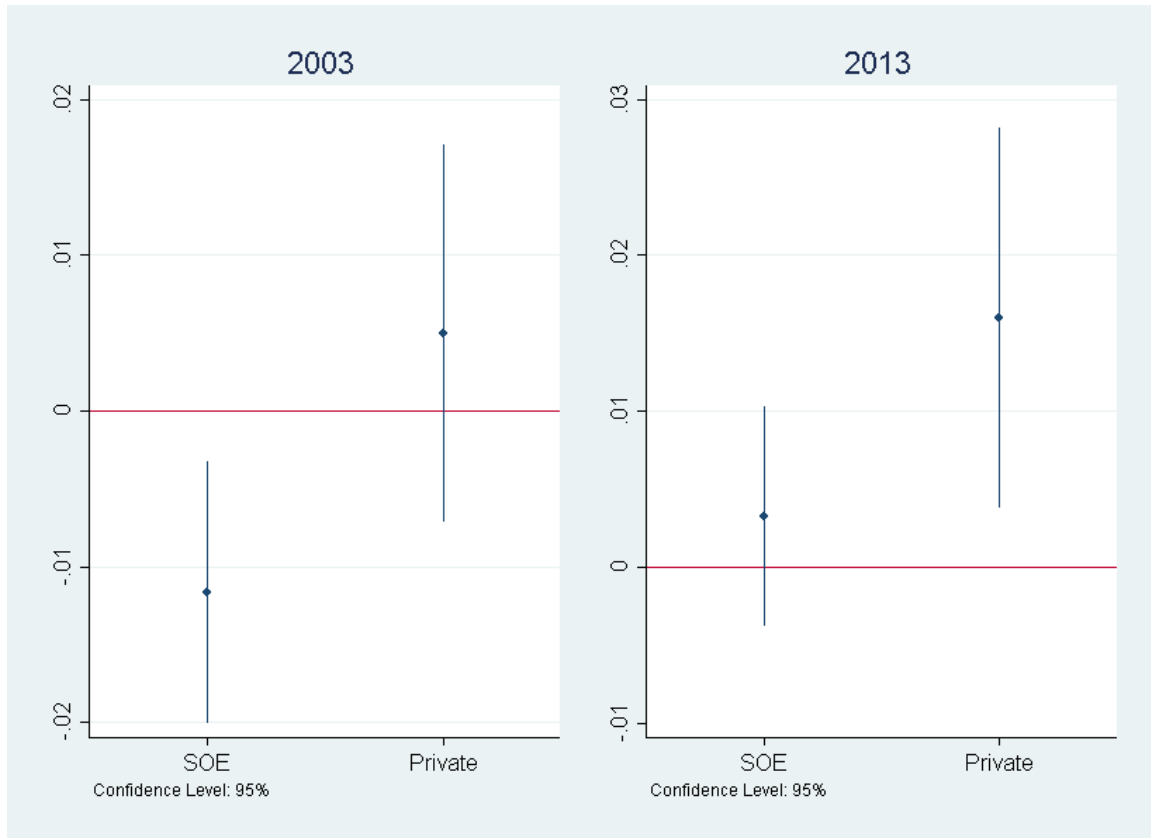
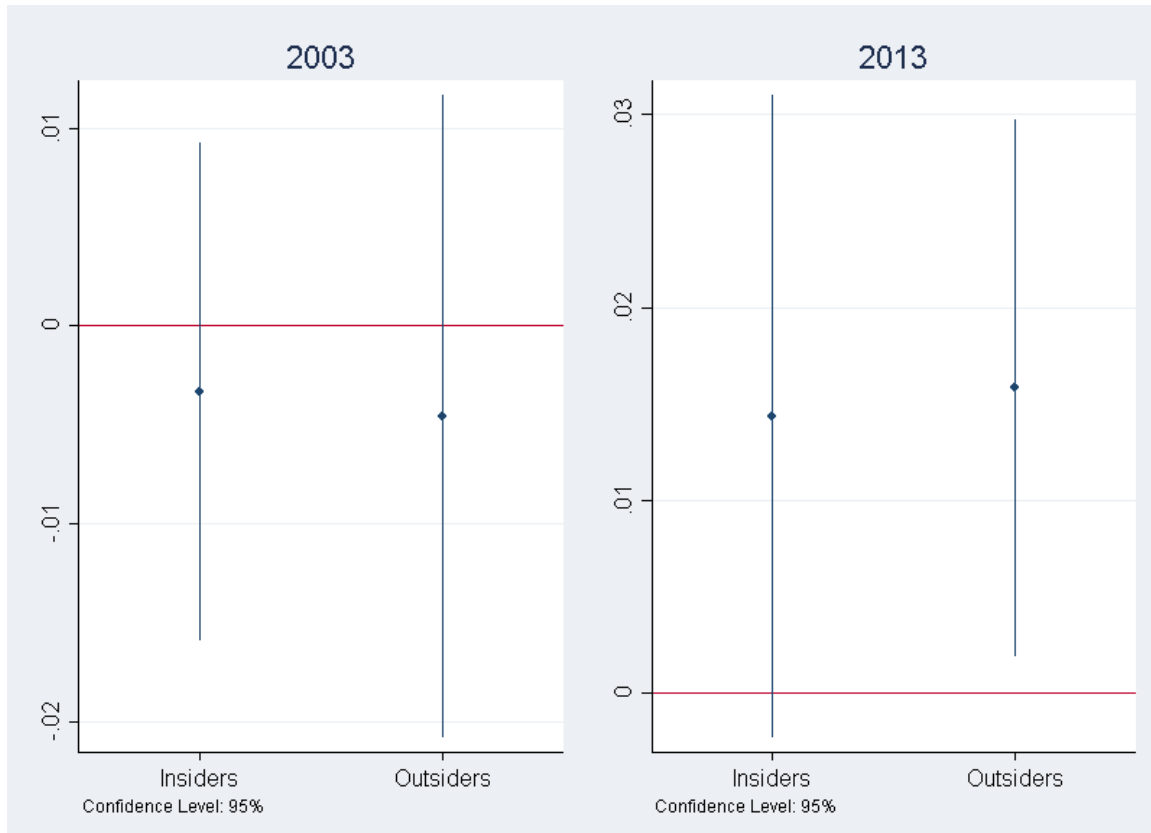
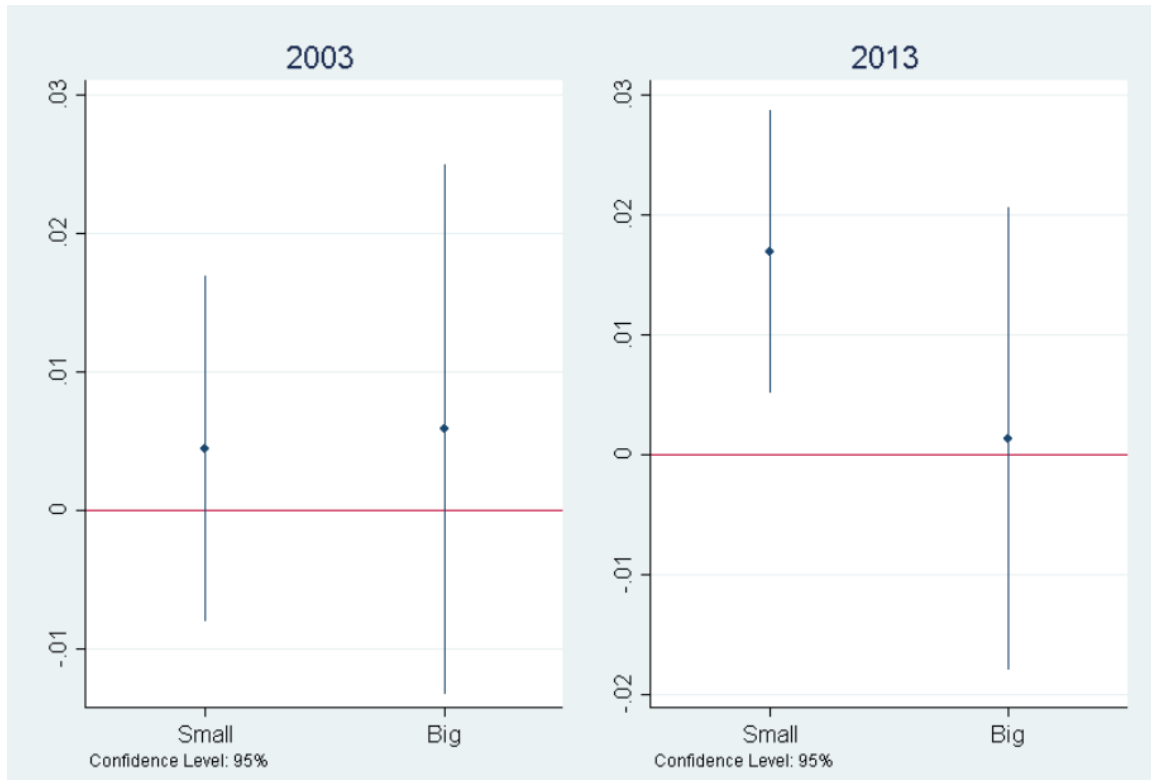
Figure 5: Impact of E-commerce on SOE & Private Firms

Figure 6: Impact of E-commerce for Insiders and Outsiders

Note: Outsiders mean that these entrepreneurs are born in different county from firm's location.

Figure 7: Impact of E-commerce for Small Firms and Big Firms

Note: Small represents firms which registered capital are less than 5 million RMB

Figure 8: Impact of E-commerce for Different Types of Industries