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Digital Financial Capabilities and Household
Entrepreneurship

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Abstract

This study investigates the impact of digital financial capabilities on household business ownership and business innovation. Utilizing China Household Finance Survey 2015 data, this paper constructs robust capabilities scores and finds positive associations between digital financial capabilities and household entrepreneurship. After specifying instrumental variables, the results still hold. In addition, we compare the driving forces of impact through componential dimensions, and discuss the different function channels that digital financial capabilities affect business ownership and business innovation. What's more, we add in the interaction term of digital capability and financial capability, illustrate its role in improving the goodness of fit of the models, and further discuss the interaction effect both generally and at each level of the capabilities scores. Finally, we conduct robustness check across socioeconomic groups and provide policy implications. This study highlights the different driving forces of digital financial capabilities concerning different entrepreneurial activities, as well as the importance of interaction effect in understanding how digital financial capabilities affect household entrepreneurship.

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1. Introduction

Over recent years, tremendous attention has been anchored on the digitization of financial services worldwide, for its potential to change real lives, especially those in developing countries. That is why promoting digital financial inclusion has become a critical strategy for both global agencies and emerging economies (Demirgüc-Kunt, Klapper, Singer, Ansar, and Hess, 2018; GPFI, 2016; Lauer and Lyman, 2015; PBOC & WBG, 2018). In China, the mushrooming volume of digital transactions from both commercial and financial activities is a standout phenomenon in the evolution of digital financial inclusion, making China the revenue generation engine of the industry around the world. Such heady growth has brought prominent disruptive changes to the business world (Mckinsey, 2018), where new business models keep flooding out. As a result, digital financial capabilities have steadily become crucial productive capacity for potential and existing business owners.

In fact, both digital literacy and financial literacy have become key policy concerns regarding employment and entrepreneurship in China (NDRC, 2018; PBOC, 2017). Further, mass entrepreneurship and innovation are also expected to make differences in the course of China's supply-side structural reform (The State Council, 2018), including transforming industrial structures and creating jobs (Arzeni, 1997; Hu and Zhang, 2014; Xie, Shen, Zhang, and Guo, 2018). However, literacy might not work well if people do not actually realize financial behaviours (Atkinson, McKay, Collard and Kempson, 2007; Johnson and Sherraden, 2007). Thus, we propose to look at the impact of digital financial capabilities on household entrepreneurship.

Apart from that, by talking about digital finance, we seem to give tacit consent to the interacted relationship between digital technologies and financial services. After all, it is not difficult to observe their mutual influences. However, when it comes to socioeconomic indicators like entrepreneurship or innovation, would one capability significantly influence the marginal effect of the other, on the separate indicator? The answer is till now not clearly examined in the literature.

Using the China Household Finance Survey 2015 data, this paper specifically studies the impact of digital financial capabilities on household business ownership and business innovation. We make three important contributions to the existing literature. First, by taking into account different dimensions of digital financial capabilities to construct measuring scores, we conduct considerably comprehensive examinations around the association between digital financial capabilities and household entrepreneurship. Second, we compare and explain how digital financial capabilities are affecting business ownership and business innovation through different channels. Third, for the first time, we illustrate the interacted impact of digital and financial capabilities, and rigorously examine both the general interaction effect and derivative effects of one capability at each level of the other. Overall, for better understanding the impact of digital financial capabilities on household entrepreneurship, this paper presents new methods and insights, as well as policy implications to benefit strategic development interventions.

The rest of this paper is arranged as follows. The second section illustrates the literature review and explains how we extend existing literature, which is followed by a section describing the data and variables. The fourth and fifth sections introduce our method and result respectively. The final section presents concluding remarks.

2. Literature review

This paper relates to three strands of literature as below. By reviewing studies on digital capability and household entrepreneurship, financial capability and household entrepreneurship, as

well as the interacted impact of both capabilities, we illustrate the critical gaps and key contributions of this paper.

Digital capability and household entrepreneurship

By mentioning digital capability, it is inevitable to refer to the concept 'digital literacy'. Originated by Gilster (1997), digital literacy was initially regarded simply as the literacy in the digital age, about reading, writing, and dealing with information, while using the digital technologies of the time. More specifically, Martin (2006) elaborates about compositional dimensions including awareness, attitude and ability of properly using digital technologies, as well as functionings concerning enabling constructive social action and reflection upon the process. Comparatively, until present, there is no generally accepted consensus on the definition of digital capability, and very limited literature on its framework. However, by learning from the Capability Approach of Sen (1990), and observing the socioeconomic lives widely penetrated by digital technologies, we can think of it as the vector of alternative 'doings' using technologies to make and realize socioeconomic decisions, which meet one's best interest. What makes digital capability distinguished from digital literacy is the 'realization' or behavioural part. When searching, communicating, and trading online, digital literacy is the stepping-stone, but we need more power from attitudes and behaviours to actually make and realize well-informed decisions. While lacking the evidence discussing the association between very comprehensive assessment of digital capability and household entrepreneurship, we try to summarize and review the impact and function channels from three perspectives, namely, digital technologies usage in broad sense, usage of social media and e-commerce, and usage of digital payment, all of which are closely related with socioeconomic lives in China.

To start with, we focus on broad technological categories like internet, mobile phones, and computers. As early as 2003, the European Commission had regarded digital literacy 'fast becoming a prerequisite for creativity, innovation and entrepreneurship' (Martin, 2006). By such statement, being able to use digital technologies appropriately is not only a day-to-day life skill, but also a critical productive capability. Empirical studies shed light on the positive impact of digital technologies usage on household entrepreneurship (Aker and Mbiti, 2010; Andjelkovic and Imaizumi, 2012; Becker, Crandall, Fisher, Kinney, Landry, and Rocha, 2010; Fairlie, 2006; Mathew, 2010; West, 2012; Zhou and Fan, 2018; to name a few). As argued, usage of digital technologies can empower different procedures of starting businesses, from making business plans by searching and investigating information like industry prospect, inventory cost, tax and legal regulations, to locate and reach supply chain and potential customers, and further to increase capital sources and carry out transactions. In developing countries, considerable number of households also started small businesses directly related to ICT services, such as airtime agents and mobile phone repair stores. Besides, Zhou and Fan (2018) also contributes the examination of channels through which internet usage promotes household entrepreneurship, including facilitating information flow, relieving liquidity constraints, benefiting social interactions and transforming risk preference. Beyond that, rigorous examinations on those function channels are still limited.

In addition to the start-up period, digital capability of existing enterprises is also crucial for business innovation. Literature has been increasingly addressing the role of connection or networking in innovation (Berman, 2012; Bughin, Chui, and Johnson, 2008; Chesbrough, Vanhaverbeke, and West, 2006; Huston and Sakkab, 2006; Sadafiyine, Dominguez-Péry, and Le Dain, 2015; Sullivan Mort and Weerawardena, 2006; Westerman, Bonnet, and McAfee, 2014). Compared to traditional mode of R&D, which invests heavily in internal innovation processes, open innovation relying on networking costs less but brings changes prominently, the efficiency of which

lies heavily on functional digital mechanisms to touch both customers and commercial networks frequently. Further, businesses can even organize their digital system to be prepared for unpredictable innovation (Austin, Devin, and Sullivan; 2012; Yoo, Boland Jr, Lyytinen, and Majchrzak, 2012). With open innovation in mind and thinking about small businesses started by households, it is no doubt that small business owners would need such lower-cost innovation mode more. Nonetheless, how would small business owners without R&D budget construct an innovation-enabling digital system? We argue that social media and e-commerce platforms can act as effective public infrastructures for small business innovation (Mount and Martinez, 2014).

Social media and e-commerce are profoundly changing the way people communicate, consume, and create (Aral, Dellarocas, and Godes, 2013). Nowadays, one may find it hard to isolate social media with e-commerce, especially concerning the fast rising of social commerce. That is why we combine the social media and e-commerce when reviewing their impact. As a matter of fact, traditional way of social network, measured by household relational expenditure, has been proved to have positive push on household entrepreneurship (Hu and Zhang, 2014; Ma and Yang, 2011). Apart from that, as addressed by management literature (Sulistyo, 2016), relational capital also has significant influence on business innovation capability. However, most rigorous studies look at digital impact on business transformation, from the standpoint of business management, rather than how they influence households' entrepreneurial decisions. Since experience has been observed on association between social media/ e-commerce usage and household entrepreneurship (Faz and Naji, 2018; Ibrahim, Ros, Sulaiman, Nordin, and Ze, 2014; Jagongo and Kinyua, 2013; Marstio and Kivelä, 2014), it is reasonable to empirically examine the impact on household entrepreneurship. One of our contributions is to examine and compare the impact of social media and e-commerce usage on households' business ownership and innovation.

Further, as the underlying technology of e-commerce, well accepted digital payment is the prerequisite to carry out remote transactions, which is also the pathway of many other digital financial services. Until now, there are two major sources of service providers, namely, banks and third-party institutions. Concerning the latter, both mobile payment in China and mobile money in other developing economies show positive impact on household entrepreneurial activities, such as entrepreneurial decisions, business performance, initiative entrepreneurship and innovative activities. Function channels are found as reducing cost led to by distance and low coverage of financial service points, and relieving credit constraint (Kikulwe, Fischer, and Qaim, 2014; Sekabira and Qaim, 2017; Vong, Fang, and Insu, 2012; Yin, Gong, and Guo, 2019). Comparatively, concerning the former, while there is evidence around the impact of online banking on SMEs' financial status (Dalla Pellegrina, Frazzoni, Rotondi, and Vezzulli, 2017; Han, 2008), little is found on the association between usage of online banking or mobile banking with household entrepreneurial decisions.

In summary, while evidence is observed around the impact of digital capability on household entrepreneurship, rigorous examinations on driving forces and function channels are still needed. We propose to compare the varying impact of different dimensions of digital capability, and explore the driving forces regarding how they are making differences toward different household entrepreneurial activities, beyond thinking of digital technologies generally.

Financial capability and household entrepreneurship

Financial capability is more than financial literacy, in its emphasis on taking actual benefit of financial policies, instruments and services (Johnson and Sherraden, 2007). For a thorough review of literature on financial capability and household entrepreneurship, we illustrate below with regard to impact on household entrepreneurship brought by financial knowledge & skills, financial

attitudes and financial behaviours.

Concerning financial knowledge & skills, only a few studies show their significant and positive impact on household entrepreneurial decisions (Ćumurović, and Hyll, 2019; Yin, Song, Wu, and Peng, 2015). As examined by Yin, Song, Wu, and Peng (2015), the function channels through which financial knowledge promotes household entrepreneurship include changing household borrowing preference, increasing households' demand and accessibility for formal credit, as well as improving households' risk tolerance. With regard to business innovation, though evidence is found on the association between financial knowledge & skills of entrepreneurs and enterprise performance (Adomako, Danso, and Ofori Damoah, 2016; Dahmen and Rodríguez, 2014; Kojo Oseifuah, 2010; Wise, 2013), specific discussion on the relationship between financial knowledge & skills and business innovation is very limited. It is heuristic to look at such relationships since evidence has already been found around the relationship between general knowledge acquisition and business innovation (Darroch and McNaughton, 2002; Kostopoulos, Papalexandris, Papachroni, and Ioannou, 2011; Liao, Wu, Hu, and Tsui, 2010). Besides, till now, little literature concerns comparison of impact on entrepreneurship between financial knowledge & skills and other dimensions of financial capability.

Financial attitudes usually relate to preferences or opinions toward financial matters (Atkinson, McKay, Collard, and Kempson, 2007; Atkinson and Messy, 2012; Kempson, Perotti, and Scott, 2013; Moore, 2003), such as preference toward achieving short-term or long-term financial goals. While positive association is found by Atkinson and Messy (2012) between financial attitudes and financial behaviours in some countries, few studies shed light on the impact of financial attitudes on household entrepreneurship.

When it comes to financial behaviours, usage of many financial services, especially those regarding credit and savings, can be directly related to relieving liquidity constraint, which has long been considered a vital barrier to the entry of firms (Aghion, Fally, and Scarpetta, 2007; Blanchflower and Oswald, 1998; Evans and Jovanovic, 1989; Gnyawali and Fogel, 1994; Kerr and Nanda, 2009). For those regarding insurance and diversified investment, the function channels can be quite different. As followed, we review empirical evidence regarding impact of major financial services usage, including bank loans, credit card, savings, insurance and diversified investment.

With respect to bank loans, evidence is found from both macro and micro perspectives. For the former, deregulation and competition of the banking sector, which extend bank credit to more potential entrepreneurs, increase new incorporations (Black and Strahan, 2002; Cetorelli and Strahan, 2006; Chong, Lu, and Ongena, 2013). For the latter, opinions are divided on the impact of bank loan holdings. For example, Beck, Lu, and Yang (2015) does not find any significant relationship between the use of formal finance and firm growth. Comparatively, not a few studies show the positive impact of bank loan usage on business performance and innovation (Ayyagari, Demirgüç-Kunt, and Maksimovic, 2010, 2011; Demirgüç‐Kunt, Klapper, and Panos, 2011; Hernández‐Trillo, Pagán, and Paxton, 2005). Besides, evidence on the association between bank loan holding and entrepreneurial entry is actually very limited. Thus, our analysis would complement those discussions.

In relation to credit card usage, it is critical to notice that small business owners' personal credit sources are important channels of business credit (Cole and Wolken, 1995; Lahm Jr, Stowe, Carton, and Buck, 2011; Robinson and Finley, 2007). Further, Chatterji and Seamans (2012) shows that the increase in credit card rate extended credit to previously discriminated populations, and led to increased entrepreneurial entries. Herkenhoff, Phillips, and Cohen-Cole (2016) illustrates the important role of consumer credit access for different stage of entrepreneurship. That said, little evidence is found around the specific association between credit card usage and business innovation.

As for savings, many studies find that saving rates are higher for entrepreneurial households (Cagetti and De Nardi, 2006; Gentry and Hubbard, 2004; Quadrini, 2000), which is considered to be caused by high cost of external capital (Eisfeldt and Rampini, 2007). In addition, Buera (2006) also demonstrates higher saving rates of households during years before starting businesses. Thus, we expect savings contribute significantly to household entrepreneurial decisions, but the association between savings and business innovation is in need of exploration.

Apart from credit and savings, insurance adoption is also found to increase the probability of self-employment (Ilmakunnas and Kanniainen, 2001; Olds, 2016; Velamuri, 2012; Wellington, 2001). However, the mechanism is not explained as mitigating liquidity constraint, but rather, a reduction of risk (Olds, 2016). With respect to diversified investment, both Fossen, Rees, Rostam‐Afschar, and Steiner (2018) and Gentry and Hubbard (2004) point out the undiversified pattern of business owners' portfolios, but till now little literature examines the association between diversified investment and household entrepreneurship.

In summary, although the impact of many dimensions of household financial capability on entrepreneurship has been examined by existing literature, there are still blank spaces, as discussed above. What's more, we propose to treat financial capability both as a comprehensive capability and as differential dimensions, to look at their distinct influences on household entrepreneurial decisions and business innovation.

The interacted impact of digital and financial capabilities

It is not difficult to observe the changing trend from the narrative of 'financial inclusion' to 'digital financial inclusion', which demonstrates the digitization of financial services. The digital revolution equips financial system with new opportunities to expand development interventions (Gabor and Brooks, 2017). Taking China as an example, regional gaps of digital financial inclusion shrank significantly from 2011 to 2018.While the digital financial inclusion indices of most cities were lower than 60% of the max value in 2011, those in 2018 were mostly higher than 70% of the max (Guo, Wang, Wang, Kong, Zhang, and Cheng, 2019). However, to our knowledge, there is no rigorous literature on the interacted impact of digital and financial capabilities on any socioeconomic indicator until present.

On the ground of literature review above, studies around the impact of digital financial capabilities on household entrepreneurship are still nascent, especially those concerning their function channels and driving forces. This paper provides a considerably comprehensive view on whether and how digital financial capabilities affect household business entrepreneurship. In addition, our comparison of driving forces corresponding to business ownership and business innovation would strengthen knowledge on different function channels of entrepreneurial activities. Further, we contribute the insight on the interacted impact of digital and financial capabilities on household entrepreneurship, in an effort to unveil empirical evidence on such relationship, which is often referred to but actually rather ambiguous. Last but not the least, we also illustrate future policy implications by comparing the varying influences across different socioeconomic populations.

3. Data

The data we utilize are from the 2015 China Household Finance Survey (CHFS), which collected micro-level information on broad dimensions of household balance, income and expenditure, as well as attitudinal, behavioural and demographic characteristics (Gan, Yin, Jia, Xu, and Ma, 2013). Compared to the first two versions, the third wave of the survey carried out in 2015 asked more about household entrepreneurship and digital behaviors, which benefits us to look into households'

business decisions and digital financial capabilities more comprehensively. Variables are explained as bellow.

Business ownership and business innovation

The dependent variables on household entrepreneurship include business ownership and business innovation. For business ownership, households were asked, "Is your family engaged in production and operation of industry and commerce, including individual business, leasing, transportation, online stores, and enterprises?" Based on the question, we code respondents' "Yes/ no" answers as a binary variable. To look at its relationship with digital financial capabilities, the sample kept are made up with 34,872 respondents, with some observations dropped for missing values of key variables. For business innovation, households were asked, "Compared with the situation of last year/first half of this year1, are there any innovative activities concerned with products, technology, arrangement, culture, marketing, service, etc. such as R&D, new ideas, new methods, etc.?" We also code a binary variable for this question. The sample used to study its relationship with digital financial capabilities are limited within those who reported running businesses when surveyed and take up 15.65% of the entire sample. Thus, there are 4,825 observations after dropping ones with key variables missing.

Digital capability score

Based on the capability approach of Sen (1990), as discussed in the literature review, a vector of capabilities are the choice alternatives to realize specific functioning. To stay focused on our research topic, we measure digital capability of households by centring on dimensions that are closely related with shaping households' socioeconomic decisions, including, online shopping, online banking, mobile banking, social network with a smartphone, and information search with a smartphone. We generate componential variables regarding whether respondents reported their families using those digital services, and then add them up as the digital capability score, which ranges from 0 to 5. As shown by the factor analysis adopting iterated principal-factor method and subsequent scree plot (see Appendix 1 for reference), only the first factor has eigenvalue greater than 1. The percentage of variability explained by factor 1 is 83.9%, accounting for most of the total variability, and the Kaiser-Meyer-Olkin test (Kaiser, 1974) shows the KMO index is 0.7916.

Financial capability score

Compared with digital capability, financial capability is more specific to the functioning of making informed financial decisions, and there are well-developed frameworks to measure financial capability of households (Atkinson, McKay, Collard, and Kempson, 2007; Johnson and Sherraden, 2007; Kempson, Perotti, and Scott, 2013; Lusardi, 2011). We adopt the three dimensional approach which incorporate financial knowledge and skills, financial attitude, and financial behaviors, while allocating more emphasis on the latter dimension for both the availability of survey questions and very diversified nature of financial behaviors. For financial knowledge and skills, there are three related questions, asking about knowledge and skills to calculate interest, inflation, and comparison of potential risks of stocks and funds. Concerning that most financial behaviours can involve knowledge and skills on interest, inflation and risks, it's more reasonable to generate a united financial knowledge and skills variable to be one component of financial capability. We define the componential variable '*Financial knowledge & skills*' as 1 if the respondent provided at least one

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[1] If the business was initiated in the survey year (2015), respondents were asked "Compared with the situation of first half of this year…"

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right answer for the three questions, which is the median level in the survey. For financial attitude, we use the question asking about respondents' degree of attention to economic and financial information. We define the componental variable '*Economic & financial information awareness*' as 1 if a respondent reported paying at least some attention to economic and financial information, compared to paying little or no attention. For financial behaviours, there are five componental variables. '*Use credit card*' indicates whether the household reported using credit cards. '*Have outstanding bank loans*' indicates whether the household reported having outstanding bank loans. '*Invest: liquidity*' indicates whether the household reported having deposit[2] no less than the value of 3-month household consumption[3]. '*Invest: risk management*' indicates whether the household reported using any commercial insurance. '*Invest: growth*' indicates whether the household reported investing in any financial instrument other than deposit or insurance. We then add up the 7 componental variables to form the financial capability score, which ranges from 0 to 7. As shown by the factor analysis adopting iterated principal-factor method and subsequent scree plot (also see Appendix 1), only the first factor has eigenvalue greater than 1. The percentage of variability explained by factor 1 is 75.6%, accounting for most of the total variability, and the KMO index is 0.7772.

Control variables

Krasniqi (2009) identifies determinants impacting household entrepreneurial activities, including age, gender, marital status, education, family size, rural/urban residence, as well as industries and regions. Astebro (2014) complements the list by pointing out the limitation of basing entrepreneurship on standard theories of risk and return, and provides behavioural insights on the relationship between risk preferences, overconfidence, nonpecuniary benefits preference, and the probability of becoming entrepreneurs. Hvide and Panos (2014) also confirms that more risk tolerant individuals are more likely to become entrepreneurs. In addition, both Ma and Yang (2011) and Hu and Zhang (2014) point out the impact of social network on household entrepreneurship, which, in the background of Chinese culture, can be especially measured by household relational expenditure. Further, Yin, Gong, and Guo (2019) takes into consideration number of children, number of labour force, number of family members who have poor health, as well as household asset. Benefiting from existing research, we utilize two comprehensive lists of control variables respectively for both the business ownership model and the business innovation model. For the latter, we also include some variables capturing business characteristics, namely, business history in years, business motivations, business e-accounting, online/offline business models, as well as whether the business received tax deduction.

Descriptive statistics of control variables for both samples are shown separately in Table 1. In the entire sample for studying digital financial capabilities and business ownership, the average age of respondents[4] was around 52 years old, 47.51% of whom were female, while 84.90% were married. Regarding educational levels, we adopt the 9-year compulsory education standard, which means whether the respondent finished only junior high school or below education. Shown by the statistics, 63.95% of respondents attained no more than junior high school education. Besides, we utilize the variable '*Risk tolerant*'[5] as the indicator for risk preference, and '*Happiness*'[6] as the indicator for

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[2] Here, deposit includes current deposit, fixed term deposit, and balance of social security account.

[3] Calculated by dividing household annual total consumption last year by 4.

[4] We adopt the demographics of the respondent who answered all the questions for the household, because as required by the survey, the respondent should be the one who knew best about household economic conditions.

[5] In the 2015 CHFS questionnaire, respondents were asked, "Which of the choice below do you want to invest most if you have adequate money?" We define 'Risk tolerant' as 1 if the respondent reported preferring average or above risk and return.

optimism, as discussed above, individuals' behavioural preferences might well influence their probability of becoming entrepreneurs. From the perspective of household demographics, the average family size were 3 to 4 people. 30.83% of surveyed households resided in rural areas, 30.29% had at least one family member whose health was poor , 37.18% had at least one child 15 years old or below, and 47.52 had at least one elder 60 years old or above. Concerning household economic conditions, 91.46% of the entire sample owned home, the average household asset[7] was 823212.82 yuan, the average household income per capita was 27095.07 yuan, while the average household relational expenditure was 4206.41 yuan.

In the business sample for studying digital financial capabilities and business innovation, which contains households who reported running businesses, respondents were averagely over 6 years old younger than the entire sample, 2.25% fewer were females, 3.74% more were married, and 2.91% fewer attained only junior high school or below education. Regarding behavioural characteristics, 10.56% more respondents were risk tolerant, while 4.04% more were happy or extremely happy. As for household demographics, average family size in the business sample was larger and nearly 10% fewer households resided in rural areas. The average household relational expenditure was 35.29% more than that of entire sample. With respect to business characteristics, the average business history was more than 10 years, 25.04% of business owners started the business for the possibility to earn more, while 12.60% did it for ambition[8], which can act as one indicator for nonpecuniary benefits preference discussed above. 8.73% of business owners used computers or mobile phones as the bookkeeping tool, 3.03% had only online businesses, 3.44% had both online and offline businesses and 7.67% business owners received business tax deduction last year[9].

Table 1. Descriptive statistics of sample demographics.

Entire sample	N=34,872	Business sample	N=4,825
Age (years)	51.98	Age (years)	45.11
Female (%)	47.51	Female (%)	45.26
Married (%)	84.90	Married (%)	88.64
Education: Junior high or below (%)	63.95	Education: Junior high or below (%)	61.04
Risk tolerant (%)	25.88	Risk tolerant (%)	36.44
Happiness (%)	60.89	Happiness (%)	64.93
Family size (#)	3.35	Family size (#)	3.92
Rural (%)	30.83	Rural (%)	21.64
Poor health (%)	30.29	Household relational expenditure (CNY)	5690.86
Has child (%)	37.18	Business history (years)	10.31
Has elder (%)	47.52	Business for more money (%)	25.04
Own home (%)	91.46	Business for ambition (%)	12.60
Household asset (CNY) *	823212.82	Business with e-accounting (%)	8.73
Household income per capita (CNY)	27095.07	Business online only (%)	3.03
Household relational expenditure (CNY)	4206.41	Business online & offline (%)	3.44

[6] In the 2015 CHFS questionnaire, respondents were asked, "How happy do you feel?" We define 'Happiness' as 1 if the respondent reported "Extremely happy" or 'Happy'.

[7] Here we exclude business asset from household asset.

[8] In the 2015 CHFS questionnaire, respondents were asked, "Why did your household start a business?" We define 'Business for ambition' as 1 if the respondent chose 'Ideal job/Entrepreneurial drive'.

[9] For those businesses, which were started in 2015, the question asked about the situation in the first half of the year.

Received business tax deductions (%)	7.67

Table 2 provides an initial glimpse on the relationship between digital financial capabilities and household entrepreneurial activities through descriptive statistics. What we can first observe and calculate from numbers of observations in different groups is that, the proportion of business owners in the entire sample is 15.65%, while that of business owners who undertook innovative activities in the business sample is 10.53%. Both percentages are relatively small. Second, means of the capability scores and componential dimensions are impressively larger for business owners in the entire sample and those who undertook business innovation in the business sample. Third, the differences among the four sub groups, i.e., column (2), (3), (5) and (6), are generally greater regarding digital capability score and its componential variables, compared with those regarding financial capability and its componential variables.

When we take a further step to look specifically at componential variables, some eye-catching gaps stand out. In respect of digital capability, the greatest gaps, measured by percentage difference, are those regarding *'Mobile banking'*. Only 8.95% of non-business owners reported their families using mobile banking, while the percentages for business owners and innovation executors were 20.50% and 36.22% respectively, with the latter quadrupled. As for *'Online banking'*, the gaps are also impressive. While 15.55% of non-business owners reported their families using online banking, those of business owners and innovation executors were 30.68% and 50.59%, nearly doubled and more than tripled respectively. Comparatively, the gaps regarding *'Online shopping'*, *'Social network with a smartphone'* and *'Information search with a smartphone'* are smaller, though not remarkably. However, from the perspective of absolute values, penetration rates with regard to these three dimensions are generally higher. For innovation executors, i.e., column (5), penetration rate of social network with a smartphone is as high as 71.65%, while those of online shopping and information search with a smartphone are 61.61% and 51.77% respectively.

With regard to financial capability, the greatest gap between business owners and non-business owners is that regarding *'Have outstanding bank loans'*. While only 10.46% of non-business owners had outstanding bank loans, the proportion for business owners doubled as 22.90%. In comparison, the greatest gap between innovation executors and non-innovation executors is that regarding *'Use credit card'*. While 23.91% of non-innovation executors reported their families using credit card, the percentage for innovation executors doubled as 50%. Concerning absolute values, those of *'Financial knowledge & skills'*, *'Economic & financial information awareness'* and *'Invest: liquidity'* are generally higher. The relatively high rate of liquidity investment seems to accord with the 'saving genes' of Chinese; however, it also raises the question of financial security. Though over half of surveyed households prepared savings no less than 3-month household consumption, there were still more than 40% who did not. If they met unexpected shocks, such as job losses, there might well be challenges for them to remain financially resilient before transferring to new jobs. Further, from the statistics of *'Invest: risk management' and 'Invest: growth'*, we can see that investment diversification was still not widely realized for most surveyed households. The result is especially impressive if we recall that *'Invest: growth'* indicates any investment other than deposit or insurance.

Table 2. Digital financial capabilities and household entrepreneurial activities.

	Entire sample			Business sample		
	(1)	(2)	(3)	(4)	(5)	(6)
%	All	Business owner	Non-business owner	All	Innovation executor	Non-innovation executor
	N=34,872	n=5,459	n=29,413	N=4,825	n=508	n=4,317
Digital capability score (#)	1.05	1.71	0.93	1.60	2.72	1.47
Online shopping	24.22	39.44	21.39	37.33	61.61	34.47
Online banking	17.92	30.68	15.55	27.77	50.59	25.09
Mobile banking	10.76	20.50	8.95	18.57	36.22	16.49
Social network with a smartphone	30.54	46.73	27.54	44.62	71.65	41.44
Information search with a smartphone	21.42	33.74	19.13	31.92	51.77	29.58
Financial capability score (#)	2.08	2.75	1.95	2.64	3.67	2.51
Financial knowledge & skills	57.98	70.42	55.67	69.49	87.20	67.41
Economic & financial information awareness	32.99	40.85	31.53	39.05	57.28	36.90
Use credit card	17.79	29.79	15.57	26.65	50.00	23.91
Have outstanding bank loans	12.41	22.90	10.46	21.53	36.61	19.76
Invest: liquidity	53.90	63.18	52.17	62.49	69.29	61.69
Invest: risk management	15.71	25.50	13.90	24.19	31.30	23.35
Invest: growth	16.89	22.82	15.79	20.25	35.43	18.46

Source: 2015 China Household Finance Survey (CHFS)

Note: The business sample contains fewer observations than those who reported running businesses, because some observations are not included for missing variables.

4. Method

Digital financial capabilities and business ownership

To explore the impact of digital financial capabilities on households' business ownership, we first adopt probit model (1) to look at the marginal effects of digital and financial capabilities simultaneously. As in practice, both digital and financial capabilities could have impact on household entrepreneurial decisions.

$$Business\ ownership_i = \alpha_{11} + \alpha_{12}D_i + \alpha_{13}F_i + \boldsymbol{\beta X} + \varepsilon_{1i} \tag{1}$$

where dependent variable $Business\ ownership_i$ represents whether or not household i is a business owner. Independent variables D_i and F_i are digital and financial capabilities of household i respectively. The vector $\boldsymbol{X}$ represents household i's socioeconomic characteristics, as well as Providence dummies, as described in table 1. ε_{1i} is the error term. We specify to obtain robust standard errors in all our models, otherwise clarified.

What cannot be ignored in model (1) is that, there can probably be two-way relationships between digital financial capabilities and business ownership. Though we propose to look at the impact of digital financial capabilities on household entrepreneurial activities, it is also likely for households to become business owners first, and then acquire some digital financial capabilities in an effort to optimize business operation. To address such endogeneity in model (1), we utilize '*Own smart devices*'[10] as the instrumental variable for digital capability (Yin, Gong and Guo, 2019)), *"Trust in banks"*[11] as the IV for financial capability, and conduct two-step IV regression. The

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[10] In the 2015 CHFS questionnaire, respondents were asked, "What durable goods does your family currently own?" and, "Which kind of mobile phone do you use?" We define "Own smart devices" as 1 if the respondent reported having computer or smart phone.
[11] In the 2015 CHFS questionnaire, respondents were asked, "If you can borrow money from all of the following channels, which one is the most reliable way you think?" We define 'Trust in banks' as 1 if the respondent chose 'Bank'.

argument is that, owning smart devices is much related with digital capability, but can only have impact on entrepreneurial activities through their functions, which are components of digital capability. Similarly, trust in banks would not make differences to household entrepreneurship without counting on households' financial knowledge and skills, financial attitudes and financial behaviours. By comparing the significance of coefficients and margins from both probit and IV probit, as well as checking instruments weakness, over identification and exogeneity, we illustrate the validity of model settings.

On the ground of model (1) discussion, which shows the difference of marginal effects between digital and financial capabilities, we then turn to explore the driving forces of impact, that is, which componential dimensions in digital financial capabilities are driving significant and larger marginal effect? What are the characteristics of those acting as driving forces? To realize it, we put all the componential variables into model (2). By looking at the marginal effects, we try to capture what matters more for household entrepreneurial activities.

$$Business\ ownership_i = \alpha_{21} + \boldsymbol{\varphi D} + \boldsymbol{\omega F} + \boldsymbol{\theta X} + \varepsilon_{2i} \tag{2}$$

where, $\boldsymbol{D}$ stands for the vector of all the componential variables of digital capability, $\boldsymbol{\varphi}$ presents the vector of $\boldsymbol{D}$'s coefficients; $\boldsymbol{F}$ stands for the vector of all the componential variables of financial capability, $\boldsymbol{\omega}$ presents the vector of $\boldsymbol{F}$'s coefficients.

In addition, by observing the development of digital finance, it is easy for us infer that the impact of financial capability on household entrepreneurship might well be influenced by their digital capability, or vice versa. To testify such hypothesis, we take one more step to look at the changes brought by the interaction term of digital and financial capabilities, as shown in model (3).

$$Business\ ownership_i = \alpha_{31} + \alpha_{32}D_i + \alpha_{33}F_i + \alpha_{34}D_i * F_i + \boldsymbol{\rho X} + \varepsilon_{3i} \tag{3}$$

where, $D_i * F_i$ is the interaction term of digital and financial capabilities.

To account for the endogenous regressors and their interaction term, we adopt the Control Function Approach (Papies, Ebbes, and Van Heerde, 2017; Wooldridge, 2015) to conduct the estimation. By regressing digital capability and financial capability on the IVs and relevant control variables respectively, we store the residuals for the Control Function and acquire the instrumented result. By checking the significance and "+/-" sign of its coefficient, we can infer the general relationship between one capability and the marginal effect of the other.

Further, to illustrate on how digital financial capabilities are interacting with each other concerning their impact on household entrepreneurship, as well as the policy implications shown by the process, we turn to compute and compare the marginal effect of one capability at each level of the other, based on model (3).

Digital financial capabilities and business innovation

In order to study the impact of digital financial capabilities on business innovation among business owners, we turn to the business sample, which has 4825 observations. As discussed and shown in the data section, we adopt a different list of control variables, to address distinct influencing factors. Apart from that, the modelling process is the same as above, during which we use model (4), (5) and (6).

$$Business\ innovation_i = \alpha_{41} + \alpha_{42}D_i + \alpha_{43}F_i + \boldsymbol{\gamma Y} + \varepsilon_{4i} \tag{4}$$

$$Business\ innovation_i = \alpha_{51} + \boldsymbol{\tau D} + \boldsymbol{\mu F} + \boldsymbol{\sigma Y} + \varepsilon_{5i} \tag{5}$$

$$Business\ innovation_i = \alpha_{61} + \alpha_{62}D_i + \alpha_{63}F_i + \alpha_{64}D_i * F_i + \boldsymbol{\delta Y} + \varepsilon_{6i} \tag{6}$$

where, $\boldsymbol{Y}$ is the vector of a different list of control variables, including industry and province dummies. $\boldsymbol{\tau}$ and $\boldsymbol{\mu}$ present the vectors of $\boldsymbol{D}$'s and $\boldsymbol{F}$'s coefficients.

As for the endogeneity issue, we expect there would be much weaker endogeneity problems. Considering the varieties of pressures from running a business, as well as the actual low ratio of households who undertook business innovation (10.53% of all surveyed business owners), we expect there would be the need of relatively strong attitudinal and behavioural power to initiate any business innovation. After all, for those who were actually running businesses, only 12.60% of them reported doing business for ambition, while most business owners were probably faced with the stress of making a living. Undertaking business innovation does not seem to be a have-to-do issue for running a business. As a result, there might well be the need of push power like digital financial capabilities, to realize some sort of innovation. We then testify the exogeneity of independent variables with Wald test of exogeneity.

Robustness checks by socioeconomic groups

To check the robustness of results, we conduct probit regressions by different socioeconomic populations, including gender, age cohorts, rural/urban, and whether the household is relatively poor concerning their consumption levels. On such basis, we further analyse heterogeneous impacts of digital financial capabilities among different populations and discuss relevant policy implication.

5. Result

Digital financial capabilities and household business ownership

Table 3 first presents the probit results on the relationship between digital financial capabilities and household business ownership from estimation of model (1), showing, households with higher digital financial capabilities were more likely to be a business owner. The controlled individual and household characteristics show expected relationships with household business ownership. Younger, male, less educated, risk tolerant and happy individuals were more likely to be business-running households' respondents[12]. Apart from that, households, with fewer, unhealthy, elder family members, residing in rural areas, with less asset, income per capita, relational expenditure, were less likely to be business owners.

However, as discussed in the method section, there can probably be endogeneity in model (1). We then continue to conduct two-step IV probit estimation, using '*Own smart devices*'[13] as the IV for digital capability, *"Trust in banks"* for financial capability. From the Kleibergen-Paap rk LM statistic, we can see that there is no under identification issue. Kleibergen-Paap rk Wald F statistic is larger than the10% maximal IV size critical value of Stock-Yogo weak ID test. Multivariate F-tests for both capabilities are significant. Thus, we can conclude that instrumental variables are not weak, much related to the independent variables. Besides, we can see from the Durbin-Wu-Hausman test that the statistics reject the hypothesis that the explanatory variables are exogenous. Therefore, the IVs are valid and we do need to conduct the IV regression. With other variables at means, one-unit increase in digital capability score from its mean results in a 5.2% increase in the probability of a household being a business owner, at 5% confidence level; one-unit increase in financial capability score from its mean results in a 5.1% increase in the probability of a household being a business owner, at 5% confidence level.

Table 3. Digital financial capabilities and household business ownership.

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[12] Recall that the respondent was designed and required by the survey, to be the one who knew best about household economic conditions.

[13] See Data and Method sections for variable definitions, The same hereinafter.

Business ownership	Probit	IV Probit
Digital capability score	0.0043***	0.0520**
	(0.0017)	(0.0254)
Financial capability score	0.0098***	0.0505**
	(0.0015)	(0.0229)
N	34,872	34,872
Kleibergen-Paap rk LM statistic		137.997
Kleibergen-Paap rk Wald F statistic		69.686
- Stock-Yogo weak ID test critical values: 10% maximal IV size		7.03
Multivariate F-test for Digital capability		644.40
Multivariate F-test for Financial capability		481.99
Durbin (score) chi2(2)		52.9937
Wu-Hausman F(2,34824)		26.5007

Standard errors in parentheses, * p<.1, ** p<0.05, *** p<0.01. The same hereinafter.
Note: 1. For brevity, we used but do not list control variables here. The same hereinafter, see Appendix 2 for complete lists of results.
2. We report margins at means in the table. The same hereinafter, otherwise clarified.

To look further at the driving forces among different dimensions of digital financial capabilities, we conduct probit regression as model (2). Table 4 presents the relationships between componential variables of digital financial capabilities and household business ownership. All componential variables of financial capability except "use credit card" have significant impact. Comparatively, concerning digital capability, only online shopping and mobile banking have significant impact on household business ownership.

In order to understand the marginal effects of componential dimensions measuring digital capability, we propose to look back at the development dynamics of digital finance during and before the survey year. The significant impact of online shopping goes along with the booming phenomenon of digital finance in China, i.e., the fast growth of e-commerce. According to Yang (2016), e-commerce transaction volume in China, rose from 1.55 trillion yuan in 2006 to 20.82 trillion yuan in 2015, more than tenfold in ten years. The fast penetration of e-commerce not only benefited mass customers, but also inspired households to start online businesses or provide products to online retailers (Faz and Naji, 2018). With regard to online banking and mobile banking, shown by Table 2, penetration rate of online banking was much larger than that of mobile banking in 2015. However, online banking was actually experiencing a downward turning during that year, by market size of active customers. As reported by China Financial Certification Authority (CFCA), number of online banking customers who did carry out transactions dropped dramatically during 2015, compared to previous years[14]. Major reason pointed out was the mobilization of trading scenarios, including popularity of third-party payment, as well as substitution effect of mobile banking. An investigation in the report also revealed that, 43% of mobile banking customers preferred mobile banking to online banking, who only used online banking for functions unrealizable by mobile banking. Thus, the reason why mobile banking has significant impact on household business ownership, while online banking does not, may be that, households using mobile banking were generally more active e-banking users, practically adopting mobile banking as a tool for day-to-day usage, right at hand. We suppose the effect could be even more standout for small business owners whose transactions have smaller values. In fact, over 90% of surveyed business owners in 2015 CHFS reported their formation of businesses as individual businesses or non-formal organizations. In comparison, the impact of social network and information search is not significant when regressed together with componential variables discussed above, though we

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[14] See, http://zhuanti.cebnet.com.cn/upload/pdf/dcbg.pptx.

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expected that they might have peer and information effect. Thus, we can infer that, digital capability directly related with transactions, no matter for fund transfer or business trading, could have more significant and larger impact on household business ownership, than information search and sharing channels. Although the 2015 CHFS does not provide us with mobile payment variable, we are lucky to capture the componential variables in our list, which enable us to not only explore the impact of heated areas like online shopping, social network, and information search, on household business ownership, but also compare the effects of online and mobile banking as above.

The marginal effects of componential dimensions measuring financial capability are consistent with existing literature (Aghion, Fally, and Scarpetta, 2007; Evans and Jovanovic, 1989; West, 2012; Wise, 2013; Yin, Song, Wu, and Peng, 2015; to name a few). *'Financial knowledge & skill', 'Economic & financial information awareness'*, as well as aspects related to mitigating liquidity constraints, namely, *'Have outstanding bank loans'*, *'Invest: liquidity',* are found to have positive impact on entrepreneurship. The significant and positive impact of *'Invest: risk management'*, which represents the usage of commercial insurance, may not only indicate the importance of planning and preparation for risks, but also show the power of insurance to reduce the fear of shocks. With the risk floor provided by insurance, households can become more confident to invest in their businesses. Analogous phenomena have already been observed on agricultural areas (Cole, Giné, and Vickery, 2017; Karlan, Osei, Osei-Akoto, and Udry, 2014). The significant and negative impact of *'Invest: growth'* accords with Gentry and Hubbard (2004), which points out undiversified pattern of portfolios held by entrepreneurial households, who invest most assets in their own businesses, rather than various financial products.

Table 4. Componential variables of digital financial capabilities and household business ownership.

Business ownership

Digital capability score		Financial capability score	
Online shopping	0.0120**	Financial knowledge & skills	0.0077*
	(0.0049)		(0.0042)
Online banking	-0.0010	Economic & financial information awareness	0.0067*
	(0.0060)		(0.0040)
Mobile banking	0.0211***	Use credit card	0.0086
	(0.0063)		(0.0052)
Social network with a smartphone	0.0005	Have outstanding bank loans	0.0401***
	(0.0051)		(0.0050)
Information search with a smartphone	0.0029	Invest: liquidity	0.0104**
	(0.0050)		(0.0040)
		Invest: risk management	0.0335***
			(0.0047)
N	34,872	Invest: growth	-0.0351***
R-squared	0.134		(0.0056)

When mentioning 'digital finance' and thinking of its evolution, it is not difficult to observe the enabling force of digital technologies toward financial services. Hence, we take a further step to come up with the question, 'Does the level of digital capability impact the marginal effect of financial capability on household entrepreneurship, or vice versa?' To examine how they interact with each other's marginal effect on household business ownership, we introduce the interaction term of digital and financial capabilities scores to our model (3). Distinguished from model (1), there arises the need of a different method to address the endogeneity issue in model (3) for the existence of the interaction term. We then utilize the Control Function Approach to address the

endeogeneity of independent variables and their interaction term. From Table 5, the coefficients of the interaction term from both probit and IV probit are significant, indicating that, first, the interaction term improves the goodness of fit of the model (Karaca‑Mandic, et al., 2012); second, digital and financial capabilities have significant impact on each other's marginal effect on household business ownership.

Table 5. Digital financial capabilities and household business ownership with the interaction term.

Business ownership (N=34,872)	Probit Coefficients		IV Probit Coefficients
Digital capability score	0.1004***		0.4419***
	(0.0142)		(0.1273)
Financial capability score	0.0888***		0.1846*
	(0.0096)		(0.1053)
The interaction term	-0.0234***		-0.0164***
	(0.0034)		(0.0036)
	Margins of digital capability		Margins of financial capability
Financial capability score=0	0.0192***	Digital capability score =0	0.0182***
	(0.0028)		(0.0020)
Financial capability score=1	0.0156***	Digital capability score =1	0.0141***
	(0.0024)		(0.0017)
Financial capability score=2	0.0115***	Digital capability score =2	0.0094***
	(0.0021)		(0.0017)
Financial capability score=3	0.0068***	Digital capability score =3	0.0044**
	(0.0019)		(0.0020)
Financial capability score=4	0.0016	Digital capability score =4	-0.0012
	(0.0020)		(0.0027)
Financial capability score=5	-0.0041*	Digital capability score =5	-0.0072**
	(0.0025)		(0.0036)
Financial capability score=6	-0.0105***		
	(0.0033)		
Financial capability score=7	-0.0174***		
	(0.0043)		

Note: The standard error in IV Probit based on the Control Function Approach was obtained by bootstrapping 1000 times (Papies, Ebbes, and Van Heerde, 2017).

To illustrate the varying marginal effects of one capability at different levels of the other, we conduct further computation of the marginal effects of digital capability score while financial capability score changes from 0 to 7, as well as the marginal effects of financial capability score while digital capability score changes from 0 to 5, as shown by the lower part of Table 5. Concerning digital capability, its impact on household business ownership keeps significant, positive and decreasing when financial capability score ranges from 0 to 3, then turns insignificant when financial capability score is 4, while turns significant and decreasing again from the 5-to-7 range. However, the difference is that the marginal effect turns negative through the latter range. Similarly, financial capability's impact on household business ownership keeps significant, positive and decreasing when the household's digital capability score ranges from 0 to 3, but becomes

insignificant when the household's digital capability score is 4, and negative when the household's digital capability score is 5. The rationality of those patterns is that, households who previously had lower digital or financial capabilities were more likely to have unsatisfactory employment status. Thus, the improvement of their digital and financial capabilities was more likely to empower them to start their own businesses. Comparatively, for households with high digital or financial capabilities, it is more likely for them to hold satisfactory jobs. There would be more opportunity cost for them to take the risk of starting businesses with unpredictable returns. Thus, one capability's marginal impact on household business ownership decreases when the score of the other rises high.

From table 2, we can see that the means of digital capability score and financial capability score for the entire sample are only 1.05 and 2.08 respectively. In addition, Figure 1 illustrates the percentage distribution of digital and financial capabilities scores. Based on discussion on Table 5 above, groups, whose probability of being business owners could be significantly increased by improvement of digital or financial capabilities, were those who scored 3 or lower concerning either capability score, taking up majority of the sample. Therefore, there is still much space for both capabilities to have positive push on household entrepreneurship.
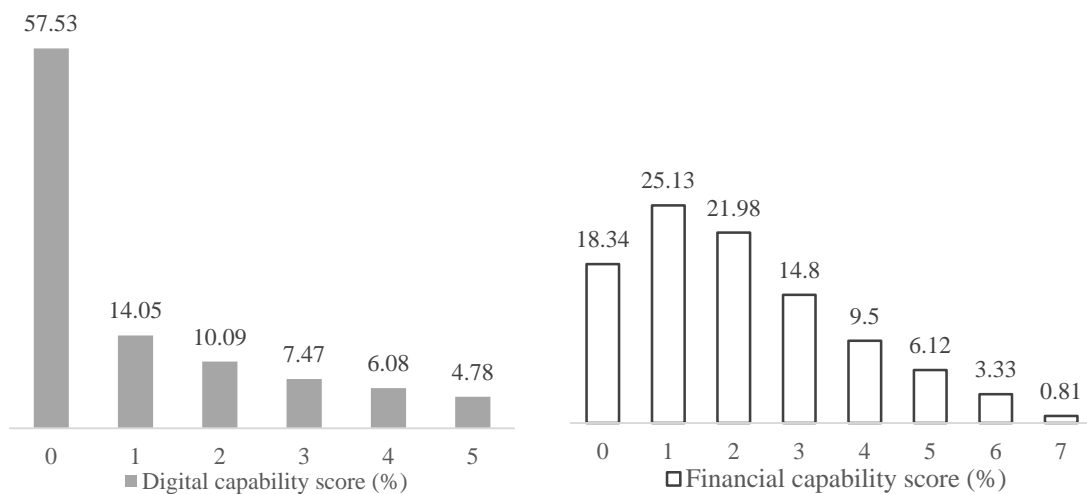
Figure 1. Distribution of digital and financial capabilities scores (%)

Digital financial capabilities and household business innovation

Table 6 first presents the Probit results on the relationship between digital financial capabilities and household business innovation from estimation of model (4), showing business owners with more digital financial capabilities were more likely to be innovation executors. The controlled individual, household and business characteristics show expected relationships with household business ownership. Younger, male, married, risk tolerant individuals were more likely to be the respondents of innovation-undertaking households. Apart from that, households with more relational expenditure were also more likely to be innovation executors. With regard to business characteristics, businesses, which had shorter history, used computer-based or mobile-based accounting, were operated online or both online and offline, received tax deduction, were more likely to undertake innovative activities. Besides, motivations, like making more money, or starting businesses for ambition (ideal job/entrepreneurial drive), also have significant and positive marginal effect on business innovation.

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When it comes to the IV probit part, the results become insignificant. As discussed in the method section, we suspect the endogeneity of model (4). Since the Kleibergen-Paap statistics and Multivariate F-tests show that instrumental variables are not weak, we turn to analyse the endogeneity of independent variables. To examine our analysis, we conduct Durbin-Wu-Hausman test on the endogeneity of explanatory variables of model (4). The bottom two rows of Table 6 show that we cannot reject the hypothesis that the explanatory variables are exogenous. Therefore, there is no significant endogeneity problem and we just need to base our following analysis around business innovation on the probit model in Table 6.

According to probit result in Table 6, both digital and financial capabilities improves the probability of household business innovation significantly. While other variables are at mean values, each one-unit increase in digital capability score from its mean, results in a 1.4% increase in the probability of a business owner undertaking innovative activities at 1% confidence level. Similarly, while other variables are at mean values, each one-unit increase in financial capability score from its mean, results in a 1.4% increase in the probability of a business owner undertaking innovative activities at 1% confidence level.

Table 6. Digital financial capabilities and household business innovation.

Business innovation	Probit	IV Probit
Digital capability score	0.0135***	0.0128
	(0.0029)	(0.0444)
Financial capability score	0.0140***	0.0198
	(0.0029)	(0.0445)
N	4,825	4,825
Kleibergen-Paap rk LM statistic		19.370
Kleibergen-Paap rk Wald F statistic		9.722
- Stock-Yogo weak ID test critical values: 10% maximal IV size		7.03
Multivariate F-test for Digital capability		169.93
Multivariate F-test for Financial capability		111.39
Durbin (score) chi2(2)		0 .0173 (p = 0.9914)
Wu-Hausman F (2,4767)		0 .0086 (p = 0.9915)

To illustrate the driving forces of business innovation, we put all the componental variables of digital financial capabilities into model (5), and conduct probit regression shown as Table 7.

Looking at the componental variables of digital capability whose margins are significant, *'Social network with a smartphone'* is eye attracting, especially concerning that, we have already applied "household relational expenditure" as one control variable for household social network. Hence, we suppose there is extra digital empowerment from online social network for innovative activities to happen. The argument is that, while there is endless information available on the internet, pretty much of which even free to acquire, business innovation seems to be more influenced by information received from business owners' social network. In principle, this might well go along with the open innovation practice adopted by some global giants, such as IBM and P&G. Compared with spending bulk of investment on internal R&D processes, they partially transformed to circulating problem-defining briefs throughout their global networks to find whether there had already been ready-made solutions in the world. Such open innovation practice helped reduce costs and increase R&D productivity tremendously (Huston and Sakkab, 2006). When it comes to small business owners like those in 2015 CHFS, we can expect there could be very limited intentionally spared resources for innovative activities. Luckily, the popularity of social network based on smartphones gives rise to the opportunity for small business owners to gain learning

capability (Alegre and Chiva, 2013) and innovate through connecting and learning. In the much flatter internet world nowadays, information received from digital social network is not only news or words, but also views incorporated with the values and nudge of disseminators, some of whom could probably be well-known professionals. What's more, such connections are much more efficient and frequent, compared to traditional channels. Those may be the reasons why *'Social network with a smartphone'* has significant and positive marginal impact on business innovation, while *'Information search with a smartphone'* does not. Apart from that, we can also observe that the marginal effect of online shopping on business innovation is still very significant. Similar to the explanation in the business ownership model, we think the usage of online shopping opens a door to countless business ideas, especially during such a period as the transaction volume of e-commerce mushroomed in China.

With respect to componential variables of financial capability, we can also find different patterns compared to the business ownership model. While we might regard *"Use credit cards"* and *"Have outstanding bank loans"* as sources of financial support for business innovation, these two variables have the common character of improving status in quo by taking some degree of risk. Since there would always be the possibility that one cannot pay back debt or bill in full, which is similar to the case of business innovation, where changes would not always increase returns. As a result, taking credit, no matter by a credit card or a bank loan, not only provides actual financial resources for business innovation, but also implicates the attitudinal and behavioural traits to embrace risk for change. As for *'Financial knowledge & skills'* and *'Economic & Financial information awareness'*, they may function as the literate and attitudinal boosters for business innovation to happen.

Table 7. Componential variables of digital financial capabilities and household business innovation.

Business innovation

Digital capability score		Financial capability score	
Online shopping	0.0252***	Financial knowledge & skills	0.0318***
	(0.0087)		(0.0098)
Online banking	0.0059	Economic & Financial information awareness	0.0180**
	(0.0101)		(0.0079)
Mobile banking	0.0067	Use credit card	0.0310***
	(0.0104)		(0.0086)
Social network with a smartphone	0.0263***	Have outstanding bank loans	0.0310***
	(0.0099)		(0.0083)
Information search with a smartphone	0.0041	Invest: liquidity	-0.0036
	(0.0087)		(0.0079)
		Invest: risk management	-0.0074
			(0.0084)
N	4,825	Invest: growth	-0.0021
R-squared	0.168		(0.0091)

Like it in the business ownership model, we introduce the interaction term of digital and financial capabilities scores to examine their mutual impact on each other's marginal effect on business innovation. Shown by Table 8, the coefficient of the interaction term is significant, which means it improves the goodness of fit of model (6), and digital and financial capabilities have significant impact on each other's marginal effect on business innovation.

Table 8. Digital financial capabilities and household business innovation with the interaction term.

Business innovation (N=4,825)	Probit Coefficients

	Margins of digital capability		Margins of financial capability
Digital capability score	0.2151***		
	(0.0400)		
Financial capability score	0.1839***		
	(0.0313)		
The interaction term	-0.0339***		
	(0.0098)		
Financial capability score=0	0.0235***	Digital capability score =0	0.0234***
	(0.0053)		(0.0045)
Financial capability score=1	0.0227***	Digital capability score =1	0.0218***
	(0.0045)		(0.0039)
Financial capability score=2	0.0212***	Digital capability score =2	0.0193***
	(0.0039)		(0.0035)
Financial capability score=3	0.0187***	Digital capability score =3	0.0155***
	(0.0036)		(0.0038)
Financial capability score=4	0.0150***	Digital capability score =4	0.0103**
	(0.0039)		(0.0052)
Financial capability score=5	0.0098*	Digital capability score =5	0.0034
	(0.0052)		(0.0077)
Financial capability score=6	0.0028		
	(0.0077)		
Financial capability score=7	-0.0060		
	(0.0111)		

Table 8 also illustrates the different marginal effects of one capability at each level of the other. Regarding digital capability, its impact on household business innovation keeps positive and decreasing when financial capability score ranges from 0 to 5, but turns insignificant when the household's financial capability is as high as 6 or 7. Likewise, financial capability's impact on household business innovation keeps significant and positive and decreasing when digital capability ranges from 0 to 4, but turns insignificant when the household's digital capability score is 5. In general, the changing trend holds with the negative sign of the interaction term in model (6) that, the larger one capability score is, the smaller the marginal effect the other will have on household business innovation. To understand the reason why the interaction effect of digital and financial capabilities scores is still negative concerning innovative activities among business owners, we propose to reflect on and compare the roots of entrepreneurship and the functionings corresponding to digital financial capabilities. As pointed out by Astebro, Herz, Nanda, and Weber (2014), standard theories of risk and return cannot provide a complete basis for entrepreneurship, because the risk-adjusted returns of entering and persistence in entrepreneurship are actually low (Hamilton, 2000). Behavioural factors, such as risk preferences, do matter. Similarly, undertaking business innovation can always be a bold step toward changes. While an excellent innovation executor may have better skills in seizing opportunities, he/she does not objectively know the distribution of returns (Knight, 1921). Comparatively, no matter for policy makers or multilateral NGOs, the improvement of digital financial capabilities is aimed at enabling households to make informed decisions, from a rational standpoint. Thus, we suppose, while digital financial capabilities bring business owners innovative inspiration and resources, or even higher risk tolerance (Okičić, and Selimović, 2017), the accumulation of capabilities also make them more rationally think of

innovation from the standpoint of risk-adjusted returns. So, one capability's marginal impact on business innovation decreases as the other rises to higher levels, while those of both stay significant and positive within ranges as discussed above.

Robustness checks by socioeconomic groups

Since the empowerment from digital financial capabilities can be an important lever to increase households well-beings and especially benefit vulnerable populations (Aker, 2008; Jensen, 2007; Kempson, Perotti, and Scott, 2013), we look further at their diversified effects among different socioeconomic groups, which also acts as a robustness check with regard to model (3) and (6), with the interaction term included.

Table 9 presents the probit margins of digital financial capabilities on household business ownership by groups classified regarding gender, age cohorts, rural/ urban residence, and relative poverty. In line with the result from model (3), marginal effects are significant and positive across all groups, mostly at 1% confidence level, showing strong robustness. What's more, there are distinct patterns of trend concerning marginal effects of digital and financial capabilities, which should not be overlooked. Specifically, digital capability's marginal effect on household business ownership is more pronounced for male respondents and rural, relatively poor households. In comparison, financial capability's marginal effect on household business ownership is more standout for female respondents and urban, non-relatively poor households. When it comes to age cohorts, the largest marginal effects are those for middle-aged groups, regarding both digital and financial capabilities, while that of financial capability is also larger for young groups.

Such distinct patterns leave us inspirations for future policy emphasis. On one hand, digital capability is especially pro-rural and pro-poor regarding business ownership. Since the beginning of China's Rural Vitalization Strategy and Targeted Poverty Alleviation Policy, much attention and numerous efforts have been paid to such areas, yet effective methods are still under exploration. Shown by our analysis, improvement of digital capability would have significantly larger influence on probability of rural and relatively poor households being business owners. The rationality is embedded in the characteristics of both human capital and digital technologies. Generally, populations, who live in rural areas and are relatively poor, may find it harder to meet formal employment requirement, especially for jobs with such satisfactory income as to help change a whole family's economic status. The widely connected, efficient and low-cost features of digital commerce and finance in China helped create a well-functioning ecosystem to benefit them in starting and running their own businesses. This gives us confirmation to promote the utilization of digital technologies among those vulnerable populations. On the other hand, both digital and financial capabilities have significantly larger influence on probability of middle-aged respondents being business owners, compared to other two age cohorts. The argument is that, middle-aged group might well face heavier life burdens, as well as implicit age discrimination, especially for jobs without high technical requirement. Thus, with the empowerment of digital financial capabilities, middle-aged group have greater tendency to become entrepreneurs. Concerning it is also the group with largest population, and considerable proportion of whom would enter elder group in the near future, the improvement of their digital financial capabilities has important implication for policies dealing with aging problems.

Table 10 presents the probit margins of digital financial capabilities on household business innovation by gender, age cohorts, rural/ urban residence, and relative poverty. While results are still robust across almost all socioeconomic groups, patterns of trend are quite different from those around business ownership. Prominently, both digital and financial capabilities' marginal effects on business innovation are larger for male, young and non-relatively poor groups. With regard to rural/

urban residence, marginal impact of digital capability is larger for urban group, while that of financial capability is larger for rural group. Concerning the componential dimensions of digital financial capabilities, which have significant and positive marginal effects on business innovation, we suppose larger influence might be the result of greater peer network regarding both capabilities and innovative activities. Detailed examination can rely on future studies regarding different populations.

In summary, results by different socioeconomic groups demonstrate strong robustness of our models, implicating improvement of digital financial capabilities can promote household entrepreneurship widely across different populations. Concerning problems like rural vitalization, poverty alleviation, and society aging, special emphasis can be targeting improving digital capability of rural and relatively poor households, as well as both digital and financial capabilities of middle-aged group.

Table 9. Probit margins on business ownership by socioeconomic groups.

Business Ownership	(1) Female	(2) Male	(3) Age 16~35	(4) Age 36~59	(5) Age 60~max	(6) Rural	(7) Urban	(8) Relatively poor	(9) Non-relatively poor
Digital capability	0.0109***	0.0110***	0.0092*	0.0101***	0.0068*	0.0154***	0.0062***	0.0119***	0.0078***
	(0.0028)	(0.0028)	(0.0053)	(0.0030)	(0.0038)	(0.0037)	(0.0023)	(0.0043)	(0.0023)
Financial capability	0.0131***	0.0137***	0.0130**	0.0170***	0.0042**	0.0138***	0.0135***	0.0127***	0.0128***
	(0.0023)	(0.0024)	(0.0054)	(0.0026)	(0.0018)	(0.0025)	(0.0021)	(0.0027)	(0.0020)
N	16568	18304	5287	18021	11564	10752	24120	9157	25715
R-squared	0.125	0.139	0.075	0.094	0.138	0.158	0.124	0.107	0.133

Note: 1. The interaction terms is included in the regressions.
2. Numbers of sample in different sub groups do not add up to 34,872, because of drops caused by some missing control variables after splitting the entire sample into different groups.
3. Based on Chen and Ravallion (2012), we define a household as being "relatively poor", if its total consumption per capita was less than 50% of per capita consumption at provincial level.

Table 10. Probit margins on business innovation by socioeconomic groups.

Business Innovation	(1) Female	(2) Male	(3) Age 16~35	(4) Age 36~59	(5) Age 60~max	(6) Rural	(7) Urban	(8) Relatively poor	(9) Non-relatively poor
Digital capability	0.0117***	0.0246***	0.0244***	0.0152***	0.0187***	0.0113**	0.0185***	-0.0036	0.0208***
	(0.0044)	(0.0048)	(0.0082)	(0.0040)	(0.0065)	(0.0055)	(0.0038)	(0.0062)	(0.0038)
Financial capability	0.0146***	0.0210***	0.0197**	0.0169***	0.0010	0.0187***	0.0169***	0.0091*	0.0194***
	(0.0046)	(0.0045)	(0.0086)	(0.0038)	(0.0043)	(0.0051)	(0.0037)	(0.0050)	(0.0037)
N	2,101	2,641	1,173	2,943	455	896	3,781	570	4,036
R-squared	0.170	0.176	0.156	0.154	0.277	0.263	0.158	0.207	0.152

Note: 1. The interaction terms is included in the regressions.
2. Numbers of sample in different sub groups do not add up to 4,825, because of drops caused by some missing control variables after splitting the entire sample into different groups.

6. Concluding remarks

Using the China Household Finance Survey (CHFS) 2015 data, this paper provides evidence on the impact of digital financial capabilities on household entrepreneurship from a relatively comprehensive view. First, we construct robust scores to measure both digital and financial capabilities. Second, we illustrate consistent and strong evidence that digital financial capabilities have significant and positive impact on household business ownership and innovation, based on both probit and IV probit analysis. Third, we compare the varying impact of different componential dimensions of digital financial capabilities on household entrepreneurship, and highlight differential driving forces regarding their impact on business ownership and innovation. In particular, we adopt the interaction term of digital and financial capabilities scores to analyse their interacted impact on household entrepreneurship. As shown by the result, the interaction term improves the goodness of fit of the model, and digital and financial capabilities have significant influence on each other's impact on household entrepreneurship. By comparing the varying influences across different socioeconomic populations, we prove the robustness of our empirical result, and explore policy implications for vulnerable groups.

Compared with previous studies, this paper extends the literature by three major contributions. Primarily, the examination we conduct is considerably comprehensive around the association between digital financial capabilities and household entrepreneurship, taking into account more dimensions of capabilities simultaneously. In addition, we illustrate and compare how digital financial capabilities are affecting business ownership and business innovation through different function channels. Further, for the first time, we point out the interacted impact of digital and financial capabilities, and rigorously examine both the general interaction effect and derivative effects of one capability at each level of the other, on household entrepreneurship. All in all, this paper provides new methods and insights for better understanding the relationship between digital financial capabilities and household entrepreneurship, as well as policy implications to benefit strategic development interventions.

While this paper addresses households' entrepreneurial decisions and business innovation, other entrepreneurial activities could also be affected by digital financial capabilities. Thus, there is the potential for a new breed of studies. Given the limits of CHFS 2015 data, we do not include such phenomenal service as mobile payment in China. In future research, the role of mobile payment, or any other influential new service in a specific market, should be explored and compared with other componential dimensions.

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Appendix 1. Factor analysis results of digital financial capabilities scores
Table 1. Digital capability score - Factor analysis

Factor	Eigenvalue	Difference	Proportion	Cumulative	Variable	KMO
Factor1	2.46389	2.07758	0.8390	0.8390	Online shopping	0.8493
Factor2	0.38632	0.30593	0.1315	0.9705	Online banking	0.7596
Factor3	0.08039	0.07394	0.0274	0.9979	Mobile banking	0.7808
Factor4	0.00645	0.00662	0.0022	1.0001	Social networking with a smartphone	0.7873
Factor5	-0.00017	.	-0.0001	1.0000	Information search with a smartphone	0.7962
Method	Iterated principal factors				Overall	0.7916
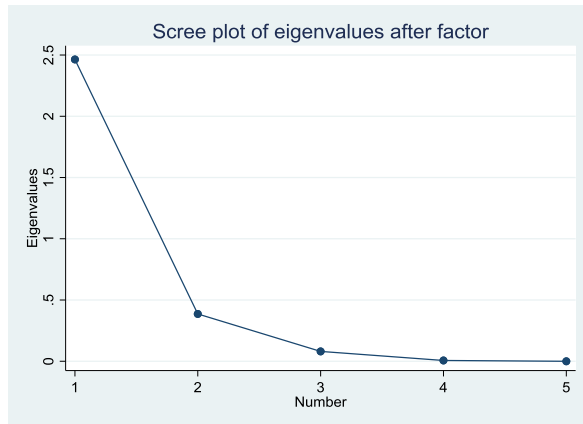
Figure 1. Scree plot of digital capability factors.

Table 2. Financial capability score - Factor analysis

Factor	Eigenvalue	Difference	Proportion	Cumulative	Variable	KMO
Factor1	1.68989	1.44453	0.7556	0.7556	Financial knowledge & skills	0.8002
Factor2	0.24536	0.07130	0.1097	0.8654	Economic & Financial information awareness	0.7978
Factor3	0.17406	0.06943	0.0778	0.9432	Use credit card	0.7504
Factor4	0.10463	0.08619	0.0468	0.9900	Have outstanding bank loans	0.7447
Factor5	0.01844	0.01425	0.0082	0.9982	Invest: liquidity	0.7955
Factor6	0.00419	0.00440	0.0019	1.0001	Invest: risk management	0.8205
Factor7	-0.00020	.	-0.0001	1.0000	Invest: growth	0.7564
Method	Iterated principal factors				Overall	0.7772

Figure 2. Scree plot of financial capability factors.

Appendix 2. Complete regression results
Table 3. Digital financial capabilities and household business ownership.

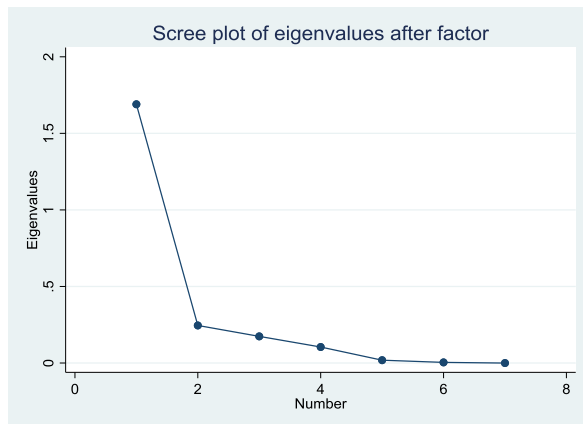|	(1) Probit	(2) IV probit
Digital capability score	0.0043**	-.----
	(0.0017)	(-.----)
Financial capability score	0.0098***	-.----
	(0.0015)	(-.----)
Digital capability score (instrumented)	-.----	0.0520**
	(-.----)	(0.0254)
Financial capability score (instrumented)	-.----	0.0505**
	(-.----)	(0.0229)
Age	-0.0027***	0.0001
	(0.0002)	(0.0007)
Female	-0.0208***	-0.0172***
	(0.0036)	(0.0050)
Married	0.0036	-0.0053
	(0.0058)	(0.0102)
Education: Junior high or below	0.0588***	0.1253***
	(0.0047)	(0.0096)
Risk tolerant	0.0126***	-0.0249***
	(0.0043)	(0.0085)
Happiness	0.0129***	0.0134***
	(0.0037)	(0.0041)
Family size	0.0308***	0.0331***
	(0.0015)	(0.0018)
Rural	-0.0533***	-0.0322***
	(0.0048)	(0.0057)
Poor health	-0.0275***	-0.0156***
	(0.0045)	(0.0045)
Has child	-0.0042	-0.0086
	(0.0044)	(0.0058)
Has elder	-0.0437***	-0.0396***
	(0.0044)	(0.0053)
Own home	-0.0681***	-0.0307***
	(0.0080)	(0.0096)
ln (Household asset)	0.0295***	0.0066
	(0.0020)	(0.0043)
ln (Household income per capita)	0.0034***	-0.0027*
	(0.0012)	(0.0016)
ln (Household relational expenditure)	0.0022***	-0.0011
	(0.0006)	(0.0007)
Providence dummies and constant	Not listed for brevity	
N	34872	34872
pseudo R^2	0.129	-.---

Standard errors in parentheses, * p<.1, ** p<0.05, *** p<0.01

Table 4. Componential variables of digital financial capabilities and household business ownership

Business ownership (Probit)

Digital capability score		Financial capability score	
Online shopping	0.0120**	Financial knowledge & skills	0.0077*
	(0.0049)		(0.0042)
Online banking	-0.0010	Economic & Financial information awareness	0.0067*
	(0.0060)		(0.0040)
Mobile banking	0.0211***	Use credit card	0.0086
	(0.0063)		(0.0052)
Social network with a smartphone	0.0005	Have outstanding bank loans	0.0401***
	(0.0051)		(0.0050)
Information search with a smartphone	0.0029	Invest: liquidity	0.0104**
	(0.0050)		(0.0040)
		Invest: risk management	0.0335***
			(0.0047)
		Invest: growth	-0.0351***
			(0.0056)
Age	-0.0026***	Has child	-0.0066
	(0.0002)		(0.0044)
Female	-0.0206***	Has elder	-0.0419***
	(0.0036)		(0.0044)
Married	0.0008	Own home	-0.0720***
	(0.0057)		(0.0080)
Education: Junior high or below	0.0554***	ln (Household asset)	0.0295***
	(0.0046)		(0.0020)
Risk tolerant	0.0161***	ln (Household income per capita)	0.0033***
	(0.0043)		(0.0012)
Happiness	0.0136***	ln (Household relational expenditure)	0.0021***
	(0.0037)		(0.0006)
Family size	0.0300***	Providence dummies and constant	Not listed
	(0.0015)		For brevity
Rural	-0.0550***	**N**	34872
	(0.0048)	R-squared	0.134
Poor health	-0.0276***		
	(0.0045)		

Table 5. Digital financial capabilities and household business ownership with the interaction term.

	Probit Coefficients	IV Probit Coefficients
Digital capability score	0.1004***	-.----
	(0.0142)	(-.----)
Financial capability score	0.0888***	-.----
	(0.0096)	(-.----)
The interaction term	-0.0234***	-.----
	(0.0034)	(-.----)
Digital capability score (instrumented)	-.----	0.4419***
	(-.----)	(0.1245)
Financial capability score (instrumented)	-.----	0.1846*
	(-.----)	(0.1041)
The interaction term (instrumented)	-.----	-0.0164***
	(-.----)	(0.0035)
Age	-0.0124***	0.0031
	(0.0009)	(0.0034)
Female	-0.1002***	-0.0946***
	(0.0179)	(0.0228)
Married	0.0168	0.0896*
	(0.0287)	(0.0501)
Education: Junior high or below	0.2952***	0.6293***
	(0.0231)	(0.0463)
Risk tolerant	0.0674***	-0.1730***
	(0.0210)	(0.0380)
Happiness	0.0612***	0.0261
	(0.0186)	(0.0197)
Family size	0.1524***	0.1790***
	(0.0073)	(0.0080)
Rural	-0.2529***	-0.1443***
	(0.0243)	(0.0299)
Poor health	-0.1280***	-0.0914***
	(0.0223)	(0.0239)
Has child	-0.0140	-0.0848***
	(0.0221)	(0.0240)
Has elder	-0.2175***	-0.2556***
	(0.0219)	(0.0235)
Own home	-0.3266***	-0.1411***
	(0.0402)	(0.0467)
ln (Household asset)	0.1440***	0.0511**
	(0.0103)	(0.0206)
ln (Household income per capita)	0.0168***	-0.0122
	(0.0060)	(0.0078)
ln (Household relational expenditure)	0.0098***	-0.0028
	(0.0029)	(0.0035)
Providence dummies and constant	Not listed for brevity	
N	34872	34872
pseudo R^2	0.131	-.---

Table 6. Digital financial capabilities and household business innovation.

Business innovation	(1) Probit	(2) IV Probit
Digital capability score	0.0135***	-.----
	(0.0029)	(-.----)
Financial capability score	0.0140***	-.----
	(0.0029)	(-.----)
Digital capability score (instrumented)	-.----	0.0128
	(-.----)	(0.0444)
Financial capability score (instrumented)	-.----	0.0198
	(-.----)	(0.0445)
Age (years)	-0.0012***	-0.0010
	(0.0004)	(0.0012)
Female (%)	-0.0237***	-0.0262**
	(0.0073)	(0.0111)
Married (%)	0.0346***	0.0254
	(0.0122)	(0.0280)
Education: Junior high or below (%)	-0.0053	-0.0055
	(0.0087)	(0.0164)
Risk tolerant (%)	0.0233***	0.0316**
	(0.0079)	(0.0151)
Happiness (%)	0.0035	0.0018
	(0.0079)	(0.0089)
Family size (#)	-0.0037	-0.0040
	(0.0027)	(0.0034)
Rural (%)	0.0101	0.0076
	(0.0102)	(0.0114)
Household relational expenditure (CNY)	0.0028**	0.0027*
	(0.0013)	(0.0016)
Business history (years)	-0.0010**	-0.0011*
	(0.0005)	(0.0007)
Business for more money (%)	0.0196**	0.0228**
	(0.0085)	(0.0110)
Business for ambition (%)	0.0316***	0.0413**
	(0.0102)	(0.0163)
Business with e-accounting (%)	0.0347***	0.0639***
	(0.0112)	(0.0220)
Business online only (%)	0.0379**	0.0743*
	(0.0179)	(0.0409)
Business online & offline (%)	0.0705***	0.1466***
	(0.0157)	(0.0379)
Received business tax deductions (%)	0.0314**	0.0464**
	(0.0123)	(0.0204)
Province, industry dummies and constant	Not listed for brevity	
N	4825	4825
pseudo R^2	0.157	-.---

Table 7. Componential variables of digital financial capabilities and household business innovation.

Business innovation (Probit)

Digital capability score		Financial capability score	
Online shopping	0.0252***	Financial knowledge & skills	0.0318***
	(0.0087)		(0.0098)
Online banking	0.0059	Economic & Financial information awareness	0.0180**
	(0.0101)		(0.0079)
Mobile banking	0.0067	Use credit card	0.0310***
	(0.0104)		(0.0086)
Social network with a smartphone	0.0263***	Have outstanding bank loans	0.0310***
	(0.0099)		(0.0083)
Information search with a smartphone	0.0041	Invest: liquidity	-0.0036
	(0.0087)		(0.0079)
		Invest: risk management	-0.0074
			(0.0084)
		Invest: growth	-0.0021
			(0.0091)
Age (years)	-0.0009**	Business history (years)	-0.0009*
	(0.0004)		(0.0004)
Female (%)	-0.0229***	Business for more money (%)	0.0198**
	(0.0073)		(0.0083)
Married (%)	0.0305**	Business for ambition (%)	0.0332***
	(0.0119)		(0.0100)
Education: Junior high or below (%)	-0.0041	Business with e-accounting (%)	0.0318***
	(0.0085)		(0.0109)
Risk tolerant (%)	0.0207***	Business online only (%)	0.0355**
	(0.0078)		(0.0173)
Happiness (%)	0.0045	Business online & offline (%)	0.0694***
	(0.0077)		(0.0155)
Family size (#)	0.0115	Received business tax deductions (%)	0.0285**
	(0.0101)		(0.0118)
Rural (%)	-0.0039	Province, industry dummies and constant	Not listed
	(0.0026)		For brevity
Household relational expenditure	0.0030**	**N**	4825
	(0.0013)	R-squared	0.168

Table 8. Digital financial capabilities and household business innovation with the interaction term.

Business innovation	Probit Coefficients
Digital capability score	0.2151***
	(0.0400)
Financial capability score	0.1839***
	(0.0313)
The interaction term	-0.0339***
	(0.0098)
Age (years)	-0.0079***
	(0.0028)
Female (%)	-0.1651***
	(0.0541)
Married (%)	0.2527***
	(0.0891)
Education: Junior high or below (%)	-0.0400
	(0.0634)
Risk tolerant (%)	0.1724***
	(0.0579)
Happiness (%)	0.0156
	(0.0581)
Family size (#)	-0.0274
	(0.0197)
Rural (%)	0.0911
	(0.0759)
Household relational expenditure (CNY)	0.0193**
	(0.0098)
Business history (years)	-0.0077**
	(0.0034)
Business for more money (%)	0.1398**
	(0.0628)
Business for ambition (%)	0.2275***
	(0.0752)
Business with e-accounting (%)	0.2493***
	(0.0808)
Business online only (%)	0.2817**
	(0.1298)
Business online & offline (%)	0.5244***
	(0.1136)
Received business tax deductions (%)	0.2258**
	(0.0895)
Province, industry dummies and constant	Not listed for brevity
N	4825
pseudo R^2	0.161