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Does the business environment promote entrepreneurship?——Evidence from the China Household Finance Survey

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ABSTRACT

Drawing on data from the China Household Finance Survey and China's Urban Business Environment Index, this study examines the effects of the business environment on entrepreneurial behavior in China. The identification uses the instrumental variables approach to address possible endogeneity. The empirical results show that improving the business environment can create more employment opportunities, optimize the structure of employment, and promote entrepreneurship; in terms of different dimensions of the business environment, improvements in public services, the market environment, and the legal environment play a stronger role in promoting entrepreneurship; from the entrepreneurial process perspective, improving the business environment can significantly enhance entrepreneurial willingness, boost the "metabolism" of entrepreneurial groups, and increase individual entrepreneurial identity. Further analyses on the mechanism indicate that improving the business environment is conducive to individual entrepreneurship through the following four channels: (1) creating more entrepreneurial opportunities, (2) reducing operating costs, (3) reducing financing costs, and (4) improving contract enforcement.

1. Introduction

Entrepreneurship is an important driving force for solving employment problems, promoting economic development, and improving individual living standards (e.g., Charles, Hurst, & Notowidigdo, 2018; Liu & Zhang, 2021). China's economy has shifted from a high-speed growth stage to a phase of high-quality development. The country faces many critical challenges, such as reshaping the development mode, optimizing the structure of the economy, and changing the driving force of growth. Promoting residents' entrepreneurship is a key to addressing the above challenges effectively, and it is also an important measure to encourage the construction of the "dual circulation" development pattern.[1] Notably, the "Mass Entrepreneurship and Innovation" strategy proposed by Premier Li Keqiang at the Davos Forum in 2014 provided momentum for individual entrepreneurship. As of 2020, the number of registered private enterprises in China accounted for 95.4% of all registered enterprises, providing an essential guarantee for the long-term stable and sound development of China's economy.

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[1] The "dual circulation" development pattern, a concept first mentioned by Chinese President Xi Jinping at a meeting of the Political Bureau of the Central Committee of the Communist Party of China in May 2020, is at the center of China's recent development policies. The "dual circulation" strategy means an economic development pattern that takes domestic development as the mainstay, with domestic and international development reinforcing each other.

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Since Chinese Premier Li Keqiang proposed "mass entrepreneurship and innovation" at the opening of the Annual Meeting of the New Champions 2014, the Chinese government has strived to remove obstacles to the market and ensure that the market plays a decisive role in resource allocation. China has risen from 84th in 2016 to 31st in 2020 in the "Doing Business" report released by the World Bank. A sound business environment can reduce enterprises' costs of innovation and production activities, improve market efficiency, and promote fair competition. Moreover, improvement of the business environment can effectively increase the market's capacity to attract and guide more small and medium-sized enterprises (SMEs) to engage in production activities. However, there is relatively thin literature on the impact of the business environment on individual entrepreneurship. Therefore, our paper investigates the effect of the business environment on individual entrepreneurship and seeks to answer the following questions. How does the business environment affect individual entrepreneurship? If the business environment can promote individual entrepreneurship, is it a structural adjustment of the employed people or an accumulative effect of expanding the number of employed people? What is the mechanism by which the business environment affects individual entrepreneurial decision making?

This paper utilizes individual-level microdata from the 2017 China Household Finance Survey (CHFS), which covers more than 120,000 individuals in more than 40,000 households. The data provide a rich set of demographic and socioeconomic information on the surveyed individuals and households, including their age, gender, entrepreneurial status, attitudes toward risk, family structure, household assets and liabilities, other, which is valuable for us to conduct this research. We collected measures of the business environment from China's Urban Business Environment Index (CUBEI), which evaluates and scores the urban business environment in China's provinces across various aspects, including public services, market environment, innovation environment, government efficiency, and so forth. To investigate our research questions, we first propose six theoretical hypotheses, which we developed through careful review of the existing literature, and then proceed to test them empirically. We adopt the probit model in our benchmark regression to investigate the impact of the regional business environment on entrepreneurship. To deal with the potential endogeneity problem, we use the number of students studying abroad in each province of China from 1921 to 1925 as an instrument for the business environment.

The following are our main findings. First, the business environment has a positive effect on individuals' entrepreneurship. The results remain significant after a variety of robustness checks. Second, various dimensions of the business environment have different effects on entrepreneurship, among which improvements in public services, the market environment, and the legal environment play a strong role in promoting entrepreneurship. Third, our results indicate that the business environment promotes entrepreneurship through four channels: (1) creating more entrepreneurial opportunities, (2) reducing operating costs, (3) reducing financing costs, and (4) improving contract enforcement. The business environment has also played an essential role in promoting the recovery of the industrial economy and improving individuals' willingness to start businesses. According to the heterogeneity analysis, because the business environment reduces the cost and difficulty of starting a business, it significantly promotes entrepreneurship for families with higher entrepreneurial costs, that is, poor and less educated families. Finally, the improvement of the business environment has promoted entrepreneurship in almost every aspect of the whole process. It can improve residents' entrepreneurial willingness and sense of identity, promote the succession of new entrepreneurs, and inject new vitality into the market.

Our work contributes to the literature in the following aspects. First, we examine the impact of the business environment on individual entrepreneurship. To the best of knowledge, we found that most of the existing literature on the business environment remains at the enterprise level (Gogokhia & Berulava, 2021; Paunov, 2016; Véganzonès-Varoudakis & Nguyen, 2018). For example, Paunov (2016) analyzed the impact of corruption on firms using firm-level data from 48 developing and emerging countries. Using a sample of firm-level data from 28 transitional economies, Véganzonès-Varoudakis and Nguyen (2018) examined the relationship between the business environment and firm performances such as firm R&D, innovation and productivity. Gogokhia and Berulava (2021) investigated the effect of investment climate on production performance at the firm level based on the World Bank Enterprise Survey. Different from these researches, this paper focuses on the individuals and examines how business environment affect individual entrepreneurial behaviors. Starting from Schumpeter, it has been widely recognized that "entrepreneurship" is essential in promoting technological innovation, increasing employment, and driving economic development (Aghion & Howitt, 1992; Beugelsdijk & Noorderhaven, 2004). Entrepreneurship is not only the external display of the entrepreneurial spirit, but more importantly the rational choice made by entrepreneurs within a certain market environment. Therefore, investigating the relationship between the business environment and residents' entrepreneurship from the individual perspective can deepen our understanding of the significance of the business environment to economic development.

Second, the data used to measure the regional business environment is comprehensive one. It consists of 18 indicators across seven dimensions, i.e., public services, human resources, market environment, innovation environment, financial services, legal environment, and government environment. This data enables us to investigate the role of the regional business environment in promoting residents' entrepreneurship more precisely, and further helps us to identify which aspects of the business environment have a stronger impact on promoting residents' entrepreneurship. The empirical results of our paper reveal that public services, market environment, and legal environment have a more significant role in stimulating individual entrepreneurship.

Third, we examine the structural impact of the business environment on employment and conduct empirical tests of the structural and incremental effects of the business environment on entrepreneurship, lending support to the literature. Compared with the impact on the entry and exit of the whole entrepreneurial group, the existing literature pays more attention to the effects of the business environment on individual choices. For example, Dong, Wang, Zhang, and Zhong (2022) find that the behavior of entrepreneurs is significantly affected by the institutional environment and the stability of government policies. When the business environment in a region is unstable, entrepreneurs will spend more energy and time on unproductive activities, which affects the performance of enterprises. Brixiova and Égert (2017) evaluate the impact of the institutional and business environments on the establishment of productive enterprises by using cross-sectional data from more than 100 countries. The results show that a better business system and

environment can promote the production performance of enterprises. Furthermore, following the existing literature, we analyze the impact of the business environment on the entry and exit of the whole entrepreneur group, strengthening the results in the literature.

Finally, our work complements the existing literature (Dong et al., 2022; Liu & Zhang, 2021; Xie, Wang, Xie, Dun, & Li, 2021) by pointing out the impact mechanism of the business environment on individual entrepreneurship through both theoretical and empirical analyses.

The rest of the paper is organized as follows. Section 2 presents the related literature and develops the research hypotheses. Section 3 describes the data and introduces the methods used in the empirical analysis. The empirical results and analysis are provided in Section 4. Section 5 discusses the mechanisms by which the business environment affects entrepreneurship. We conclude the paper in Section 6.

2. Literature review and research hypotheses

Entrepreneurship plays an essential role in the economic development of a region, not only because it can significantly reduce the unemployment rate of the area (Leitner, 1990), but also because it can promote innovation by improving the competitive level of a region (Anderson, Potočnik, & Zhou, 2014; Block, 2012). Since the 1980s, researchers have shown great enthusiasm for entrepreneurship research, thus resulting in a large literature.

The business environment has a far-reaching impact on economic development, fiscal revenue, and social employment. Since the World Bank's Doing Business Project was launched in 2001, an extensive literature has focused on research on the business environment. Many empirical studies on China show that the institutional environment between different cities or regions has an essential impact on the differences in regional development (Banerjee, Duflo, & Qian, 2020; Zhang, Wang, & Wang, 2012; Tang, Wang and Yu, 2020). Démurger (2001) finds that infrastructure construction facilitates regional economic development, by studying the relationship between infrastructure construction and regional economic growth from 1985 to 1998. The intellectual property protection system also plays an essential role in regional economic development. There is a positive correlation between the property protection system and enterprises' research and development (R&D) activities, but severe corruption might adversely affect enterprises' R&D activities. Notably, the business environment is more closely associated with entrepreneurship than the intellectual property system and regional infrastructure. Using panel data from 28 transition economies, Gogokhia and Berulava (2021) find that improving the business environment can effectively enhance enterprises' innovation ability and performance. In summary, the business environment has a long-term and profound impact on many aspects of society, providing the necessary support for entrepreneurship. Based on the above analysis, we formulate our first hypothesis as follows:

Hypothesis 1. Improvement of the business environment can effectively promote entrepreneurship.

The business environment is a comprehensive ecosystem composed of many elements (Acs, Estrin, Mickiewicz, & Szerb, 2018). The business environment index used in this paper includes seven dimensions: public services, human resources, market environment, innovation environment, financial services, legal environment, and government environment. For the various dimensions of the business environment, there may be different mechanisms that affect individual entrepreneurship.

2.1. Market environment and entrepreneurship

The market is an important means of "invisible" resource allocation. The urban market environment has a direct and decisive effect on the consumption channels of enterprises' products and the scale of market demand. A highly open and sound market environment reduces the barriers to market access, increases the environmental carrying capacity, and results in entrepreneurs having more entrepreneurial opportunities, thus promoting the creation of new enterprises (Aldrich & Ruef, 2018; Ali, Kelley, & Levie, 2020; Sambharya & Musteen, 2014). At the same time, with a perfect market economic system, enterprises face more development opportunities and a fairer competitive environment.

2.2. Public services and entrepreneurship

First, the level of public services reflects the level of infrastructure services used to meet citizens' immediate needs for their standard of living, survival, and development. Thus, the level of public services produces resource constraints or strong support for the production and operation activities of enterprises in the region (Muto & Yamano, 2009). Public services such as infrastructure drive market demand for relevant materials and services through the multiplier effect to improve the overall carrying capacity of the environment and create more entrepreneurial opportunities (Ma, Niu, & Sun, 2021). Second, infrastructure is a quasi-public good with positive externalities, which can reduce the operating costs of enterprises. Research shows that infrastructure is conducive to reducing manufacturing production costs (Audretsch, Heger, & Veith, 2015), thereby promoting entrepreneurship. Hence, we postulate our second hypothesis as:

Hypothesis 2. The business environment can facilitate individual entrepreneurship by creating more entrepreneurial opportunities.

2.3. Innovation environment and entrepreneurship

Innovation is the "new combination" of factors of production (Schumpeter, 1934). The innovation environment helps new

enterprises integrate resources, cultivate core competitiveness, and stimulate innovation and entrepreneurship activities. In the innovation environment, new enterprises can compete for a niche in the existing market, expand the niche, and explore new opportunities (Sahut & Peris-Ortiz, 2014). Improvement of the innovation environment will improve the innovation efficiency of enterprises, increase the innovation output, and reduce the operating costs of enterprises (Ciftci & Cready, 2011).

2.4. Government environment and entrepreneurship

The government is an important part of the business environment. Government efficiency not only reflects the level of administrative service of the local government (Acs, Autio, & Szerb, 2014; Bosma, Content, Sanders, & Stam, 2018; Dong, Xu, & Cha, 2021; Xue, Liu, De Bruyne, Hynes and Shi, 2022), but also the transaction cost of the local government. It has a significant impact on the type of economic behavior in a region (Farinha, Lopes, Bagchi-Sen, Sebastião, & Oliveira, 2020). A high-quality government environment can promote entrepreneurial activities by improving the efficiency of government services, improving the quality of tax services, reducing ineffective policy intervention, and reducing institutional transaction costs. Thus, we posit our third hypothesis as:

Hypothesis 3. The business environment can facilitate individual entrepreneurship by reducing residents' operating costs.

2.5. Financial services and entrepreneurship

The higher is the level of regional financial services, the smaller are the financing constraints and costs, which is conducive to enterprise management. Charfeddine and Zaouali (2022) find that financial activities supporting entrepreneurship in a country or region can promote entrepreneurial activities with high growth. Due to the limited support for new entry, start-ups rely more on external resources, such as financial services. A good financial system and available financing can activate entrepreneurial activities (Banerjee, Breza, Duflo, & Kinnan, 2017). Accordingly, our fourth hypothesis is postulated as follows:

Hypothesis 4. The business environment can facilitate individual entrepreneurship by reducing residents' financing costs.

2.6. Legal environment and entrepreneurship

A good legal environment can maintain the fairness of the market system. Enterprises need to sign various contracts with different subjects in the operation process. The effective implementation of contracts plays an important role in the normal operation of enterprises (Antunes, Cavalcanti, & Villamil, 2008; Lu & Tao, 2009; Sharma, Sousa, & Woodward, 2022). A good legal environment can effectively improve contract enforcement to promote residents' entrepreneurship (Gao, Meng, Ling, Liao, & Cao, 2022). Hence, we state our fifth hypothesis as:

Hypothesis 5. The business environment can facilitate individual entrepreneurship by improving contract enforcement.

2.7. Human resources and entrepreneurship

Human resources determine the level of supply of human capital in the business environment. As the core resource of enterprises, human resources directly participate in production and operation, which helps to improve labor productivity and promote enterprise innovation activities (Murphy, Shleifer, & Vishny, 1991; Nasiri & Bageriy, 2020). Human resource agglomeration can enhance the environmental carrying capacity of the urban entrepreneurial ecosystem (Millán, Congregado, Román, van Praag, & van Stel, 2014), to optimize the distribution of the entrepreneurial structure and promote entrepreneurial activities. Based on these reasons, we posit our sixth hypothesis as:

Hypothesis 6. The business environment can optimize the entrepreneurial structure and promote entrepreneurs to change from low-level entrepreneurship to high-level entrepreneurship.

3. Research design

3.1. Data collection and processing

The data used in this paper mainly include the following three parts. (1) The urban business environment data were obtained from the CUBEI released by the China urban business environment assessment group in 2019. The main reasons for selecting the index are as follows. First, based on the ecosystem theory (Cavallo, Ghezzi, & Balocco, 2019; Nicotra, Romano, Del Giudice, & Schillaci, 2018), the data define the business environment as a comprehensive ecosystem of the external environment faced by enterprises when engaging in business activities. The index includes the government management system and mechanism, legal factors, financial services, human capital, and other factors that affect the operation of enterprises in the index system, ensuring the rationality and scientific aspects of the data. Second, the data used in this index are from the public data of various cities, objectively reflecting the impact of social, economic, and other factors on the business environment of enterprises, which ensures the authenticity and accuracy of the index. Third, the following steps are taken for processing missing data and outliers: (i) manually compile the relevant city statistical yearbooks and Statistical Bulletins for verification, And (ii) if they cannot be verified, the outliers are treated as missing values and processed using the mean value interpolation, smoothing method, regression interpolation, Bayesian simulation, and other methods.

Table 1 shows the index system of China's urban business environment.

(2) Individual microdata are from the China Household Finance Survey (CHFS), the first micro-level data set focusing on household finance in China.[2] The survey covers 29 provinces and municipalities (excluding Tibet Autonomous Region, Xinjiang Uygur Autonomous Region, Hong Kong, Macao, and Taiwan). The 2017 CHFS data encompass information on the personal characteristics, family characteristics, assets and liabilities, insurance and security, expenditure, and income of 127,012 individuals in 40,012 households. This paper mainly focuses on the labor force group ages 16 to 65. First, the paper distinguishes different forms of employment: entrepreneurship, employed, and unemployed. Second, there are different entrepreneurial groups according to the number of employed workers, business model, and entrepreneurial motivation. According to the number of people employed, entrepreneurs can be divided into low-level, medium-level, and high-level entrepreneurship. According to the business model, entrepreneurs can be divided into three types: online entrepreneurship, offline entrepreneurship, and both. According to entrepreneurial motivation, entrepreneurs can be divided into active and passive entrepreneurship. Due to the developed economy and sound environment, people in the four municipalities directly under the central government often possess more employment opportunities (Huang & Qian, 2010). There is strong particularity of the municipalities directly under the central government in strategic positioning and economic policies (Li & Li, 2020), so the motivation of individual entrepreneurship may be restrained. Therefore, the paper only retains the samples of non-municipalities and obtains 111,307 effective individual samples, of which the population ages 16 to 65 accounts for 70.23%.

(3) For the instrumental variable analysis, data on the number of students studying abroad in Chinese provinces from 1921 to 1925 were manually collected by reviewing literature and historical materials.

Due to the limitation of data availability and privacy issues, we could not obtain personal residence information below the provincial level. Therefore, the paper integrates the urban business environment data to the provincial level by taking the population of cities at each prefecture level as the weight. The paper combines CHFS data from 2017 with urban business environment data in China. To ensure the robustness of the results, we construct provincial-level business environment data in different ways.

3.2. Econometric model

We develop a *probit* model to investigate the impact of the business environment on individuals' entrepreneurial behavior. The regression specification is shown in eq. (1):

$$Prob\left(Entrepreneur_{ij}=1\right)=\Phi\left(\beta_0+\beta_1 DBA_{i,}+\sum_i \alpha_i \times Controls\right), \tag{1}$$

where $Entrepreneur_{ij}$ represents whether the j-th individual in the i-th province starting a business. DBA_i represents the business environment index of the i-th province. *Controls* represent a series of control variables at the individual, family, and provincial levels. Individual-level characteristics include gender (*Gender*), age (*Age*), age squared (*Age_2*), political orientation (*Politics*), marital status (*Marry*), physical status (*Health*), household registration type (*Hukou*), number of brothers and sisters (*NBS*), and risk attitude (*Risk*). Among them, the squared value of age is used to control the nonlinear impact of age as existing studies suggest that the effect of age is not linear (Zhang & Acs, 2018). Political orientation is assigned the value of 1 if the respondent is a member of the Communist Party of China (CPC) and 0 otherwise. Marital status equals 1 if the respondent is married and 0 otherwise. We identify the risk attitude of a respondent from his/her answer to the following question: "If you have a fund for investment, which investment project would you most like to choose?" If a respondent chooses "high-risk and high-return projects," it is defined as 1, otherwise it is defined as 0. The control variables at the family level include the number of family members (*NFM*), child dependency ratio (*CDR*), elderly dependency ratio (*ODR*), proportion of healthy members (*HFM*), number in the labor force (*WFM*), and net assets per capita of the household (*PCA*). The control variables at the provincial level include the income ratio of urban residents to rural residents (*UR_gap*), share of primary industry in gross domestic product (GDP) (*P_industry*), share of secondary industry in GDP (*S_industry*), percentage of the population ages 16 to 65 (*Labor*), proportion of people with higher education (*Education*), annual average temperature (*Temperature*), annual average precipitation (*Precipitation*), and average dimension of each city in the province (*Dimension*). As some studies argue that culture has an impact on individual entrepreneurial decisions (Pinillos & Reyes, 2011), we use the number of Confucian schools, academies, and Confucian temples in each province as the proxy variable for culture to capture the effect (*Confucian*). In addition, market access has an important impact on individual entrepreneurial decisions (Bertoni, Bonini, Capizzi, Colombo, & Manigart, 2021), so we also use the average shortest distance between cities in the province and the nearest seaport to control for the impact of market access (*Seaport*). Table 2 presents the definitions and statistical descriptions of all the variables.

3.3. Descriptive statistics

Table 3 compares the descriptive statistics of the main variables between entrepreneurs and non-entrepreneurs. Clearly, entrepreneurs are usually older, non-Communist Party members, married, and healthier males. In terms of family characteristics, entrepreneurs generally have fewer family members and more children.

[2] The CHFS is administered by the Southwestern University of Finance and Economics; see https://chfs.swufe.edu.cn/.

Table 1
Index of China's urban business environment.

	One-level indicators	Two-level indicators	Data sources
China's Urban Business Environment Index	Public service (15%)	Natural gas supply (25%)	China urban and rural construction database
		Water supply (25%)	
		Power supply (25%)	China City database
		Medical condition (25%)	
	Human resources (15%)	Human resources reserve (70%)	China City database
		Labor cost (30%)	
	Market environment (15%)	Economic indicators (40%)	
		Import and export (30%)	China City database
		Corporate bodies (30%)	
	Innovation environment (15%)	Investment in innovation (50%)	China City database
		Innovation output (50%)	China urban statistical yearbook
	Financial services (15%)	Business scale (50%)	China City database
		Financing services (50%)	
	Legal environment (10%)	Social security (30%)	China judgment document network
		Judicial services (40%)	TianYanCha (https://www.tianyancha.com/)
		Public judicial information(30%)	Municipal Judicial Bureaus / Intermediate People's Courts
	Government environment (15%)	Government expenditure (50%)	China City database
		Government business relationships (50%)	Ranking of China's urban political and commercial relations

Note: The weight in brackets is used for calculation of indicators.

Table 2
Descriptive statistics of the main variables.

Variable	Description	Obs	Mean	Std. Dev.
DBA	Weighted at the provincial level by the population of each prefecture-level city (natural logarithm)	75,088	5.396	2.668
Gender	Male = 1, Female = 0	75,088	0.503	0.500
Age	Year of the survey – Year of birth	75,088	42.185	14.294
Age_2	Age squared	75,088	1983.879	1181.141
Politics	Member of the CPC = 1, others = 0	75,088	0.055	0.227
Marry	Marriage =1, Others = 0	75,088	0.758	0.428
Health	Physical health = 1, others = 0	75,088	0.862	0.345
NBS	Number of brothers and sisters	75,088	0.241	0.808
Risk	Risk preference = 1, risk aversion = 0	75,088	0.018	0.133
Hukou	Rural household registration = 1, others = 0	75,088	0.647	0.478
NFM	Number of family members	75,088	3.959	1.648
CDR	Number of people under 15 / total number of people in the family	75,088	0.121	0.155
ODR	Number of people over 64 / total number of people in the family	75,088	0.064	0.133
HFM	Number of people in good health / total number of people in the family	75,088	0.861	0.237
WFM	Number of working people in the family	75,088	2.037	1.194
PCA	Household net assets / total household population	75,088	8.690	2.827
UR_gap	Average urban income / average rural income	75,088	1.096	0.025
Education	Logarithm of mean years of education	75,088	2.394	0.111
Labor	Proportion of the population ages 14–65 in the total population	75,088	0.693	0.038
P_industry	Share of primary industry in GDP	75,088	8.904	4.387
S_industry	Share of secondary industry in GDP	75,088	41.978	6.074
Temperature	Annual average temperature in degrees Celsius of each city in the province (natural logarithm)	75,088	2.734	0.408
Precipitation	Annual average precipitation (mm) of each city in the province (natural logarithm)	75,088	6.845	0.535
Dimension	Average dimension of each city in the province (natural logarithm)	75,088	3.478	0.217
Confucian	Number of Confucian schools, academies, and temples in the province (natural logarithm)	75,088	4.412	1.927
Seaport	Average distance from each city in the province to the nearest seaport (natural logarithm)	75,088	5.286	1.553

4. Empirical results

4.1. Baseline regressions

Table 4 shows the baseline regression results. The business environment (*DBA*) is positively associated with individual entrepreneurship and statistically significant as reported in all the columns in the table. The estimation results are quite stable regardless of whether we include the sole explanatory variable of the business environment or add individual, family, and provincial characteristics into the regression step-wisely. From the regression results in column (1), the marginal impact of the business environment is 0.0049, which is significant at the 1% level, indicating that the business environment significantly improves the probability of entrepreneurship. To eliminate the interference of other related variables, the analysis gradually adds individual control variables and family control variables. Column (2) shows that adding individual characteristics into the control variable list, the marginal impact of the

Table 3
Comparison of main variables between entrepreneurs and non-entrepreneurs.

Variable	Entrepreneur	Non-entrepreneur
DBA	5.687	5.112
Gender	0.647	0.488
Age	43.473	42.043
Politics	0.050	0.055
Marry	0.906	0.742
Health	0.917	0.856
Risk	0.024	0.017
Hukou	0.682	0.643
NFM	3.999	3.954
CDR	0.149	0.118
ODR	0.050	0.065
HFM	0.913	0.855
WFM	2.353	2.003
PCA	9.600	8.590

business environment is 0.0042, which is significant at the 1% level. In column (3), individual and family characteristics control variables and regional fixed effects are introduced. The results suggest that the marginal impact of the business environment is 0.0038, which is significant at the 1% level. With all the variables described above controlled, the results in column 4 show that the marginal impact of the business environment on entrepreneurship is 0.0032. The results are significant at the 1% level, indicating that the business environment has a significant and positive impact on entrepreneurship.

According to the estimation results of the individual-level control variables presented in column (4) in Table 4, we have the following empirical findings. First, gender plays a significant role in individual entrepreneurship, as male individuals are more likely to start a business than female individuals. This may be because the family occupies more energy and time for women. Second, age has an inverted U-shaped effect on the choice of individual entrepreneurship. As age increases, the probability of individual entrepreneurship first increases and then decreases, which is consistent with Zhang and Acs (2018). Third, members of the Communist Party tend to have a lower probability of starting a business. This may be related to the fact that the number of entrepreneurs is growing faster than the number of Communist Party members. Fourth, married individuals are more likely to start a business, which may be because when the individual's emotional status is in a stable state, they will have more energy, time, and courage to engage in entrepreneurial activities. Fifth, the individual's physical condition also matters when deciding whether to start a business, as individuals who are in better physical condition are more likely to engage in entrepreneurship. Furthermore, individuals with more siblings are more likely to engage in entrepreneurial activities. Notably, the paper also provides microscopic support for the theoretical model constructed by Vereshchagina and Hopenhayn (2009). Individuals with higher risk appetites are more likely to engage in entrepreneurial activities, reflecting that entrepreneurship is a relatively risky job. Individuals with urban *hukou* are more likely to engage in entrepreneurial activities than individuals with rural *hukou*.[3]

Our empirical results at the household level reveal that some household characteristics also have important impacts on individual entrepreneurship. Specifically, the number of family members is inversely proportional to the individual's probability of choosing entrepreneurial activities. The higher is the child dependency ratio, the higher is the probability of self-employment, possibly due to the high cost of raising children for Chinese families. For families with a relatively high child dependency ratio, the wages obtained through work may not be adequate, so the probability of individuals choosing to start a business will increase. The old-age dependency ratio has no significant effect on the probability of an individual starting a business. The healthier individuals in the family are, the more likely the individual is to choose to start a business, which is self-explanatory. When the number of unhealthy family members is significant, individuals need more time and energy to take care of these members, but entrepreneurial activities tend to occupy more time for individuals. Individuals with a more significant number of laborers ages 15 to 64 in the family are more likely to choose to start a business. The explanation given in this paper is that entrepreneurship is a risky activity, and the greater is the number of laborers in a family, the more likely it is that the risk can be shared. Individuals with more family assets are more likely to start a business, possibly because individuals with substantial household assets are less prone to financial constraints in the early stage of entrepreneurship, which requires a significant investment of resources.

In addition, our estimation results suggest that individuals' entrepreneurial activities can be affected by regional factors. Specifically, the larger is the income gap between urban and rural areas, the lower is the probability of individuals choosing to start a business. Consistent with Yin, Gong, Guo, and Wu (2019), the level of regional human capital significantly positively affects the probability of individuals choosing to start a business. The industrial structure of the region also has a specific impact on the probability of individual entrepreneurship. The higher is the proportion of primary and secondary industries, the lower is the probability of individual entrepreneurship. The analysis of climatic factors shows that in places with high precipitation, residents are more likely to

[3] Hukou is the Chinese term that refers to the household registration system in China, which is used to define access to welfare (urban versus rural) and control population movement. The system records every Chinese citizen as a permanent resident of a particular city or county. Before 1980, citizens were strictly required to stay in their neighborhood of birth and could not seek employment or education elsewhere in the country (Randau & Medinskaya, 2015).

Table 4
Business environment and entrepreneurship.

	(1)	(2)	(3)	(4)
Variable	Entrepreneurship			
	Probit			
DBA	0.0049***	0.0042***	0.0038***	0.0032***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Gender		0.0605***	0.0601***	0.0602***
		(0.0000)	(0.0000)	(0.0000)
Age		0.0235***	0.0218***	0.0217***
		(0.0000)	(0.0000)	(0.0000)
Age_2		−0.0003***	−0.0003***	−0.0002***
		(0.0000)	(0.0000)	(0.0000)
Politics		−0.0311***	−0.0363***	−0.0360***
		(0.0000)	(0.0000)	(0.0000)
Marry		0.0463***	0.0388***	0.0389***
		(0.0000)	(0.0000)	(0.0000)
Health		0.0481***	0.0196***	0.0196***
		(0.0000)	(0.0000)	(0.0000)
NBS		0.0104***	0.0102***	0.0103***
		(0.0000)	(0.0000)	(0.0000)
Risk		0.0288***	0.0272***	0.0273***
		(0.0001)	(0.0002)	(0.0002)
Hukou		0.0169***	0.0085***	0.0081***
		(0.0000)	(0.0005)	(0.0008)
NFM			−0.0164***	−0.0162***
			(0.0000)	(0.0000)
CDR			0.0875***	0.0863***
			(0.0000)	(0.0000)
ODR			−0.0032	−0.0019
			(0.7320)	(0.8392)
HFM			0.0446***	0.0444***
			(0.0000)	(0.0000)
WFM			0.0174***	0.0175***
			(0.0000)	(0.0000)
PCA			0.0151***	0.0151***
			(0.0000)	(0.0000)
UR_gap				−0.0028
				(0.7993)
Education				0.0304***
				(0.0010)
Labor				0.2448**
				(0.0059)
P_industry				−0.0037***
				(0.0006)
S_industry				−0.0017*
				(0.0169)
Temperature				0.0170
				(0.2812)
Precipitation				0.0307***
				(0.0002)
Dimension				0.0731*
				(0.0270)
Confucian				−0.0057**
				(0.0096)
Seaport				0.0035*
				(0.0127)
Region FE	N	N	Y	Y
N	75,088	75,088	75,088	75,088

Note: The probit model is used. The marginal effects rather than regression coefficients are presented for the convenience of explanation. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. The numbers in parentheses are standard deviations. The regions are divided into three parts: East, Central, and West.

start a business. Residents who are highly influenced by Confucian culture are less likely to choose entrepreneurship. In addition, the closer the place is to the nearest port, the higher is the probability that the residents choose to start their own business.

Overall, the regression results of the coefficients of these business environment indicators are consistent with our hypothesis. At the same time, the signs of the coefficients for other indicators, such as gender, age, marital status, physical status, family structure, family assets, and regional industrial structure, are in line with our expectations and consistent with the findings in the existing literature (Dong et al., 2022; Li & Li, 2020; Yin et al., 2019).

4.2. Impacts of different dimensions of the business environment on entrepreneurship

The business environment can be classified into seven dimensions, and different dimensions may have different impacts on residents' entrepreneurship. Therefore, we empirically investigate the differential impacts on residents' entrepreneurship. The estimation results are shown in Table 5. In terms of the magnitude of the estimated coefficient, it is clear that public services, market environment, and legal environment exhibit relatively larger impacts on residents' entrepreneurial decision making than other dimensions. In column (1), the estimate shows that the marginal impact of public services on entrepreneurship is 0.0017, which is significant at the 10% level. This implies that the basic public services provided by cities for market players, such as water, electricity, gas, and medical and health care, can significantly promote entrepreneurship. Therefore, the government should vigorously promote infrastructure construction and provide enterprises a convenient business and sales environment. The result reported in column (3) indicates that the marginal impact of the market environment on entrepreneurship is 0.0062, which is significant at the 5% level, which is direct evidence of the positive correlation between the market environment and enterprise management. This implies that in areas with a perfect market system, the probability of residents choosing to start a business will increase significantly. Therefore, the government should promote the improvement of the market environment and development and expansion of local enterprises. In column (6), the result shows that the marginal impact of the legal environment is 0.0022, which is significant at the 5% level, indicating that the legal environment significantly improves the probability of entrepreneurship. Enterprises often need to deal with various contracts in the process of operation, and improvement of the legal environment can effectively facilitate the enforcement of contracts. Thus, improving the legal system is particularly important for stimulating entrepreneurial vitality.

4.3. Heterogeneity

We have found the important impact of local institutional quality on entrepreneurship and starting a new business. However, this effect may be heterogeneous for different subgroups. Thus, we investigate the potential heterogeneity by introducing interaction terms between the business environment (DBA) and individual, household, or regional characteristics, that is, individual education level, household economic condition (rich or poor), and two regional characteristics. The positive estimate of the interaction term between the business environment and poor households (*PH*) is shown in column (1) in Table 6, which indicates that the impact of the business environment on the entrepreneurial activities of poor households is more pronounced than those of nonpoor households.[4] This implies that while improving the business environment promotes individual entrepreneurship, it plays an important role in poverty alleviation. In terms of the heterogeneous effects of education levels, the estimation result in columns (2) show that the interaction terms of business environment and education are negative but not significant, indicating that entrepreneurial behavior is insensitive to the business environment for individuals with primary education level. The regression results of the interaction terms in columns (3) and (4) show that the effect of the business environment on entrepreneurship is significantly strengthened for individuals with junior high school education compared with the illiterate (the benchmark). In contrast, high school and vocational high school education plays a suppressive role in individuals' decision to start a business. The estimation results in columns (5) and (6) show that the interaction terms of business environment and education are negative but not significant, indicating that entrepreneurial behavior is insensitive to the business environment for individuals with a bachelor's degree or higher. Overall, improvement in the business environment plays a more pronounced role in facilitating the creation of start-ups for those with less education or in households with worse economic conditions.

For a better understanding of the possible heterogeneity across different regions, we add two regressions that include interaction terms between DBA and regional characteristics variables. The first variable represents the broad geographic location of each province in China, eastern, central, or western. The second variable indicates the 18 provinces that are more involved in the Belt and Road Initiative due to their geographic advantages. In column (7), we find that improvement of the business environment has a greater impact on residents in the eastern region. Compared with the central and western regions, the eastern region has a more convenient geographical location and greater market demand; therefore, residents' entrepreneurial propensity will be stronger when the business environment is improved. In column (8), we examined the impact of the Belt and Road Initiative and find that the business environment has a stronger role in promoting entrepreneurship among residents in the provinces along the Belt and Road. We argue that the Belt and Road policy may significantly expand the market in the provinces along the route, thereby enhancing the promotion effect of the improvement of the business environment on entrepreneurship.

4.4. Endogeneity

Our estimation is possibly biased due to endogeneity of our key variable, the business environment. By having introduced a rich set of control variables in our benchmark regression models, our estimation may be less affected by omitted variables bias. However, it is possible that there exists reverse causality between the provincial-level business environment indicators and individual entrepreneurial decision making. For example, individuals might self-select to move into areas with a better business environment to pursue a higher chance of entrepreneurial success, making the effect of the business environment overestimated. Therefore, we tackle this

[4] According to the relevant regulations of China, rural families can apply to be considered poor households if their per capita income is lower than a certain level. They need to fill in the Poverty Manual form, and they are called poor households after evaluation and review by the township government.

Table 5
Impact of different dimensions of the business environment on entrepreneurship.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Variable	Entrepreneurship						
	Probit						
Public service	0.0017*						
	(0.0392)						
Human resources		0.0007*					
		(0.0147)					
Market environment			0.0062**				
			(0.0001)				
Innovation environment				0.0008**			
				(0.0036)			
Financial services					0.0002***		
					(0.0002)		
Legal environment						0.0022**	
						(0.0064)	
Government environment							0.0008*
							(0.0222)
Controls	Y	Y	Y	Y	Y	Y	Y
Region FE	Y	Y	Y	Y	Y	Y	Y
N	75,088	75,088	75,088	75,088	75,088	75,088	75,088

Note: The probit model is used. The marginal effects rather than regression coefficients are presented for the convenience of explanation. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

endogeneity issue by using the instrumental variable approach.

In the existing literature (e.g., Acemoglu, Johnson, & Robinson, 2001; Easterly & Levine, 2003; Hall & Jones, 1999; Mauro, 1995), researchers have used the index of ethnolinguistic fractionalization, distance from the equator, colonizer mortality, and whether it is a landlocked country as instrumental variables. Although the selection of instrumental variables varies, they are basically taken from two perspectives, geographical and historical, and both emphasize the Western influence as an exogenous source for understanding institutional differences in developing countries. Following the instrumental variable selection ideas of these papers, we adopt the number of students studying abroad in each province in China from 1921 to 1925 as an instrumental variable for the business environment. This instrumental variable was selected for the following reasons. (1) The differences in the business environment can be traced back to the historical accumulation formed by the different historical experiences of the market economy and Western influences. This kind of influence is called "historical accumulation" because it is persistent and deeply internalized in a region's cultural and social customs through the subtle power of interpersonal and intergenerational communication. Although such historical accumulation has been suppressed by the planned economic system for a certain period, it reemerged and is replaying its social role and influencing the implementation of local systems to guide regional economic development once the market-oriented economic reform began. Therefore, we use the degree to which the West has influenced various regions in China since the 19th century as an instrument for the current business environment in various areas in China. (2) From 1921 to 1925, the distribution of the number of students studying abroad in each province in China was not highly correlated with the number of entrepreneurs at that time, nor did it directly affect the probability of individual entrepreneurship in each province. Furthermore, most of the international students' courses focused on citizenship, law, the Western political system, and natural sciences. This kind of education helps cultivate a modern market economy's civic and legal awareness, serving as a historical accumulation that continues to influence the region's deep-seated institutional environment of market economic activities. According to the two-stage IV-probit estimation results, shown in column (1) in Table 7, the F value is 6251.19, rejecting the weak instrumental variable hypothesis at the 1% significance level. The chi-squared value of the Wald exogenous test is significant at the 1% level, indicating that the instrumental variables meet the exogenous requirements. More importantly, the coefficient of business environment is significantly positive at the 1% level, indicating that the business environment is significantly positively correlated with entrepreneurship after using the instrumental variables to alleviate potential endogeneity, which is consistent with the previous research findings.

The historical number of overseas students may be related to current market access, thus affecting individual entrepreneurship through channels other than DBA.[5] Therefore, more evidence should be provided to ensure that the exclusion restriction is satisfied for the instrumental variable. To this end, we further added several variables as controls in the IV regressions. These control variables may affect the historical number of foreign students and market access at the same time, including whether it is a coastal city (*Coastal dummy*), the length of the coastline (*Length of coastline*), and the average distance from cities in the province to the coastline (*Straight-line distance to the coast*). Columns (1) to (5) in panel A in Table 7 show that after adding these control variables, the effect of the business environment on entrepreneurship is still statistically significant, and the magnitudes of the estimated coefficients of DBA remain almost unchanged. These results are consistent with our benchmark empirical findings.

We also report the first-stage estimation results of IV regressions in panel B in Table 7. The F-statistics in all the columns are

[5] Thanks to the anonymous reviewers for their valuable suggestions.

Table 6
Heterogeneous impact of the business environment on entrepreneurship.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variable	Entrepreneurship							
	Probit							
DBA	0.0028***	0.0039***	0.0013	0.0035***	0.0034***	0.0035***	0.0025***	0.0030***
	(0.0000)	(0.0000)	(0.0600)	(0.0000)	(0.0000)	(0.0000)	(0.0001)	(0.0000)
PH	−0.0957***							
	(0.0000)							
*PH*DBA*	0.0084***							
	(0.0000)							
Primary		−0.0445***						
		(0.0000)						
*Primary *DBA*		−0.0017						
		(0.0564)						
Junior			−0.0069					
			(0.1663)					
*Junior*DBA*			0.0033***					
			(0.0000)					
High				0.0348***				
				(0.0000)				
*High*DBA*				−0.0019*				
				(0.0345)				
University					−0.0433***			
					(0.0000)			
*University*DBA*					−0.0007			
					(0.4516)			
Master						−0.0724**		
						(0.0039)		
*Master*DBA*						−0.0054		
						(0.0715)		
East							−0.0136	
							(0.0569)	
*East*DBA*							0.0027*	
							(0.0212)	
B&R								0.0125
								(0.0789)
*B&R *DBA*								0.0030**
								(0.0051)
Controls	Y	Y	Y	Y	Y	Y	Y	Y
Region FE	Y	Y	Y	Y	Y	Y	N	N
Observations	75,088	75,088	75,088	75,088	75,088	75,088	75,088	75,088

Note: The probit model is used. The marginal effects rather than regression coefficients are presented for the convenience of explanation. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. *PH* represents a poor household identified by the government, and education level is denoted by *Primary* for primary school and below, *Junior* for junior high school, *high* for high school or vocational high school, *University* for university, and *Master* for graduate level.

sufficiently large (around 6000) to reject the weak instrumental variable hypothesis. The Wald test statistics are also large and significant at the 1% level, indicating that the instrumental variables are exogenous. With this additional evidence, we can argue that the historical number of foreign students satisfies the exclusion restriction and is a qualified instrumental variable.

4.5. Robustness tests

Table 8 shows a series of robustness tests we conducted. First, we exclude observations in which individuals' workplace has changed in the past five years to prevent reverse causality problems. It can be seen from column (1) in Table 8 that after excluding 3527 observations with changes in personal workplaces, the results still meet the expectations of this paper. The results show that the marginal impact of the business environment is 0.0038, which is significant at the 1% level, indicating that the business environment significantly improves the probability of individuals choosing to start a business.

Second, we adopted various methods to integrate the municipal business environment index at the provincial level: (1) calculate the provincial business environment index with the proportion of urban GDP in total GDP at the province level as the weight (*DBA1*); (2) adopt the geometric mean of the urban business environment index (*DBA2*); and (3) adopt the arithmetic mean of the urban business environment index (*DBA3*). The results show that the promotion effect of the business environment on entrepreneurship is still robust after constructing the provincial business environment index in different ways.

Table 7
IV regressions with additional controls.

	(1)	(2)	(3)	(4)	(5)
Panel A: Two-Stage Least Squares					
Variable	*Entrepreneurship*				
DBA	0.0397***	0.0396***	0.0400***	0.0397***	0.0398***
	(0.0006)	(0.0006)	(0.0005)	(0.0006)	(0.0006)
Coastal dummy		1.0601			1.4653
		(0.3921)			(0.2380)
Length of coastline			0.0046***		0.0046***
			(0.0000)		(0.0000)
Straight-line distance to the coast				0.0214***	0.0225***
				(0.0008)	(0.0004)
Controls	Y	Y	Y	Y	Y
Region FE	Y	Y	Y	Y	Y
Panel B: First Stage for DBA					
Variable	*DBA*				
Number of students studying abroad in each province from 1921 to 1925	0.0032***	0.0029***	0.0032***	0.0032***	0.0030***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Coastal dummy		0.0298***			0.0289**
		(0.0008)			(0.0012)
Length of coastline			0.0007***		0.0007***
			(0.0000)		(0.0000)
Straight-line distance to the coast				0.0034***	0.0036***
				(0.0008)	(0.0003)
F value	6251.19	6035.70	6035.61	6251.19	5834.50
Wald test	69.50***	70.31***	65.62***	61.69***	58.21***
Observations	75,088	75,088	75,088	75,088	75,088

Note: The probit model is used. The marginal effects rather than regression coefficients are presented for the convenience of explanation. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 8
Robustness test: reduced samples and replaced explanatory variables.

	(1)	(2)	(3)	(4)
Variable	Entrepreneurship			
	Probit			
	Reduced sample	Full sample	Full sample	Full sample
DBA	0.0038***			
	(0.0000)			
DBA1		0.0028***		
		(0.0000)		
DBA2			0.0014***	
			(0.0000)	
DBA3				0.0016***
				(0.0002)
Controls	Y	Y	Y	Y
Region FE	Y	Y	Y	Y
Observations	71,561	75,088	75,088	75,088

Note: The probit model is used. The marginal effects rather than regression coefficients are presented for the convenience of explanation. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

5. Further analysis

5.1. Business environment and structure of employment

As has been demonstrated in the previous sections, we have empirically identified that improvement of the business environment promotes individual entrepreneurship. However, it is thus far still unclear how the structure of employment changes in response to the improved business environment. For example, how does the business environment affect the overall employment rate? Which part of the population tends to start a business? Has the entrepreneurial group itself undergone structural adjustment due to the improvement of the business environment? The answers to these questions are key for better understanding the important role of the business environment in restructuring the economy and employment. The results in column (1) in Table 9 demonstrate that the marginal impact

Table 9
Impact of the business environment on total employment and the structure of employment.

	(1)	(2)	(3)	(4)
Variable	Total employment	Short-term employment	Long-term employment	Medium- and high-level entrepreneurship
	Probit	Mlogit	Mlogit	Mlogit
DBA	0.0140**	−0.0069***	0.0075***	0.0014***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Controls	Y	Y	Y	Y
Region FE	Y	Y	Y	Y
Observations	75,088	33,307	33,307	33,307

Note: The regression results of the impact of the business environment on the overall level and structure of employment are shown in the table. Column (1) shows the estimated results of the impact of the business environment on the overall level of employment. The explained variable is whether the resident has a job. Columns (2), (3), and (4) show the result of the impact of the business environment on the overall structure of employment. This paper divides employees into four groups: medium- and short-term employment, long-term employment, low-level entrepreneurship, and medium- and high-level entrepreneurship. Within the employment group, columns (2), (3), and (4), low-level entrepreneurship is set as the control group. The estimated coefficients in columns (2), (3), and (4) refer to the change in the probability of residents choosing short-term employment, long-term employment, and medium- and high-level entrepreneurship compared to choosing low-level entrepreneurship when the business environment improves. The marginal effects rather than regression coefficients are presented for the convenience of explanation. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. The numbers in parentheses are standard deviations. Marginal effects and standard deviations are rounded to four decimal places.

of the business environment on employment is 0.0140, which is significant at the 5% level, indicating that the business environment significantly improves the probability of employment. This paper finds that improving the business environment increases total employment and affects the level of entrepreneurship.

To explain the changes in structure of employment among employed people, we uses the Mlogit method of analysis. We divide the employees into four groups: medium and short-term employment, long-term employment, low-level entrepreneurship, and medium- and high-level entrepreneurship. According to the 2017 CHFS questionnaire, the question "What is the duration of the contract for this job?" divides the short-term and long-term employment as follows. Those who choose a short-term or temporary contract (one year or less) are defined as short-term employment; others are long-term employment. According to the 2017 CHFS questionnaire, the question "How many employees are employed in the project except you and your family members? Include temporary workers currently employed." divides the entrepreneurial population as follows. Entrepreneurs who employ 0 workers are defined as low-level entrepreneurs; those who employ 1–10 workers are classified as medium-level entrepreneurs. Entrepreneurs who employ more than 10 workers are high-level entrepreneurs.

Columns (2), (3), and (4) in Table 9 present the estimated results, with low-end entrepreneurship as the control group. In column (2), the estimate shows that improvement of the business environment reduces the probability of choosing short-term employment by 0.0069 compared to low-level entrepreneurship, which is significant at the 1% level. In column (3), the estimate shows that improvement of the business environment increases the probability of choosing long-term employment by 0.0075 compared to low-

Table 10
Business environment and entrepreneurial structure: based on three methods of categorization.

	(1)	(2)	(3)	(4)	(5)
Variable	High-level entrepreneurship	Low-level entrepreneurship	Online entrepreneurship	Offline entrepreneurship	Active entrepreneurship
	Mlogit	Mlogit	Mlogit	Mlogit	Logit
DBA	0.0033*	−0.0046*	−0.0025*	0.0039**	0.0034**
	(0.0497)	(0.0110)	(0.0417)	(0.0097)	(0.0462)
Controls	Y	Y	Y	Y	Y
Region FE	Y	Y	Y	Y	Y
Observations	18,636	18,636	18,454	18,454	19,708

Note: The regression results of the impact of the business environment on the structure of entrepreneurs are shown in the table. Columns (1) and (2) are divided by the number of employees employed by entrepreneurs; columns (3) and (4) are divided by entrepreneurs' choice of online or offline entrepreneurship; column (5) is divided by the entrepreneur's motivation to start a business. Within the entrepreneurial group, in columns (1) and (2), the middle-level entrepreneurship samples are taken as the control group. The estimated coefficients in columns (1) and (2) refer to the change in the probability of residents choosing high-level and low-level entrepreneurship compared to choosing middle-level entrepreneurship when the business environment improves. Within the entrepreneurial group, in columns (3) and (4). the entrepreneurship sample is set as the control group. The estimated coefficients in columns (3) and (4) refer to the change in the probability of residents choosing online and offline entrepreneurship compared to choosing both offline and online entrepreneurship when the business environment improves. Within the entrepreneurial group, in column (5), the passive entrepreneurship samples are taken as the control group. The estimated coefficient in column (5) refers to the change in the probability of residents choosing active entrepreneurship compared to choosing passive entrepreneurship when the business environment improves. The marginal effects rather than regression coefficients are presented for the convenience of explanation. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. The numbers in parentheses are standard deviations. Marginal effects and standard deviations are rounded to four decimal places.

level entrepreneurship, which is significant at the 1% level. In column (4), the estimate shows that improvement of the business environment increases the probability of choosing medium- and high-level entrepreneurship by 0.0014 compared to low-level entrepreneurship, which is significant at the 1% level. When the business environment improves, low-level entrepreneurship is likely to turn to long-term employment or medium- and high-level entrepreneurship.

For entrepreneurs, what choices will they make if the business environment improves? The results in Table 10 fully answer this question. By dividing the entrepreneurial group in three ways, we explore the changes in individual entrepreneurial structures caused by improvement of the business environment, for a more comprehensive perspective. First, we divide entrepreneurship into low-end, middle-level, and high-level entrepreneurship. The results in columns (1) and (2) in Table 10 are based on middle-end entrepreneurship as the control group. In column (1), we find that when the business environment is enhanced, the probability of entrepreneurs choosing high-level entrepreneurship increases by 0.0033 compared with middle-level entrepreneurship, which is significant at the 10% level. In column (2) the result indicates that when the business environment is enhanced, the probability of entrepreneurs choosing low-level entrepreneurship reduces by 0.0046 compared with middle-level entrepreneurship, which is significant at the 10% level. Therefore, improvement of the business environment has the effect of structural optimization, which will promote the entrepreneurial population to shift from low-end entrepreneurship to middle-end and high-end entrepreneurship. Thus, Hypothesis H6 has been confirmed.

Second, the 2017 CHFS questionnaire divides entrepreneurs according to entrepreneurship by sorting the answers to the following question: "What is the business form of the project at present?" Online Entrepreneurship is group 1; offline entrepreneurship is group 2; and both online and offline are group 3. The results in columns (3) and (4) in Table 10 are based on using the category of both online and offline entrepreneurship as the control group. As shown in columns (3) and (4), we find that improving the business environment will reduce the probability of individuals choosing online entrepreneurship and increase the probability of individuals choosing offline entrepreneurship. This may be because, compared with online entrepreneurship, offline entrepreneurship is more sensitive to the business environment. Therefore, individuals are more likely to choose offline entrepreneurship when the business environment improves.

Finally, the 2017 CHFS questionnaire asked respondents the following question: "What are the main reasons you are engaged in industry and commerce?" This question is used to divide active entrepreneurship and passive entrepreneurship. If individuals started their entrepreneurship because they "cannot find other job opportunities," their entrepreneurship activities are classified as passive entrepreneurship, and the others are classified as active entrepreneurship. The results in column (5) in Table 10 show that the probability of individuals choosing to start their businesses will increase significantly when the business environment improves. Overall, the business environment significantly promotes the probability of individual entrepreneurship and optimizes the entrepreneurial structure of the people who have started businesses. Specifically, an improved business environment motivates entrepreneurs to shift from low-level, online, and passive entrepreneurship to high-level, offline, and active entrepreneurship.

5.2. *Business environment and the individual entrepreneurship process*

Schumpeter (1934) believed that the essential motivation of entrepreneurs is the joy of creation and success, and the dream of creating their kingdom. Because of these characteristics, Schumpeter compared entrepreneurs to medieval knights, and he believed that entrepreneurship is a broad concept that cannot be explained only by rationality. Drover et al. (2017) argue that entrepreneurs are individuals who have potential entrepreneurial intention and engage in related entrepreneurial activities. Therefore, entrepreneurial intention is particularly critical for an individual to choose entrepreneurship. According to the question "whether your family plans to carry out industrial and commercial production and operation projects in the future," in the 2017 CHFS, it is necessary to distinguish whether residents have entrepreneurial motivation. Those who answered "Yes" were defined as having entrepreneurial intention, while others had no entrepreneurial intention. The results in column (1) in Table 11 show that the marginal impact of the business environment on entrepreneurial intention is 0.0046, which is significant at the 1% level, indicating that the business environment

Table 11
Business environment and entrepreneurial process.

	(1)	(2)	(3)
Variable	Entrepreneurial intention	Entrepreneur turnover	Entrepreneurial identity
	Probit	OLS	Probit
DBA	0.0046***	0.0033***	0.0070***
	(0.0000)	(0.0000)	(0.0000)
Controls	Y	Y	Y
Region FE	Y	Y	Y
Observations	75,088	75,088	75,088

Note: The regression results of the impact of the business environment on the whole process of entrepreneurship are shown in the table. The impact of the business environment on the entrepreneurial process is comprehensively examined from the aspects of entrepreneurial intention, entrepreneur turnover, and entrepreneurial identity. For the convenience of explanation, marginal effects are presented in columns (1) and (3), and the estimated coefficients are presented in column (2). *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. The numbers in parentheses are standard deviations. Marginal effects and standard deviations are rounded to four decimal places.

Table 12
Mechanisms.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variable	Entrepreneurial opportunities	Entrepreneurship	Operating cost	Entrepreneurship	Bank loan interest rate	Entrepreneurship	Contract enforcement	Entrepreneurship
	OLS	Probit	OLS	Probit	OLS	Probit	OLS	Probit
DBA	0.0129***	0.0028***	−0.0018**	0.0031***	−0.0472***	0.0036***	0.0003	0.0031***
	(0.0000)	(0.0000)	(0.0016)	(0.0000)	(0.0000)	(0.0000)	(0.2148)	(0.0000)
Entrepreneurial opportunities		0.0387***						
		(0.0003)						
Operating cost				−0.0139***				
				(0.0000)				
Bank loan interest rate						−0.0029***		
						(0.0000)		
Contract enforcement								0.1115***
								(0.0000)
Controls	N	Y	Y	Y	Y	Y	Y	Y
Region FE	Y	Y	Y	Y	Y	Y	Y	Y
Observations	31	75,088	75,088	75,088	75,088	75,088	75,088	75,088

Note: The regression results for the potential mechanisms of the impact of the business environment on entrepreneurship are shown in the table. For the convenience of explanation, marginal effects are presented in columns (2), (4), (6), and (8), and the estimated coefficients are presented in columns (1), (3), (5), and (7). *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. The numbers in parentheses are standard deviations. Marginal effects and standard deviations are rounded to four decimal places.

significantly improves the probability of entrepreneurial intention.

This paper classifies the individuals who previously engaged in entrepreneurial activities but have since quit as "entrepreneurial substitutes." As shown in column (2) in Table 11, improvement of the business environment will increase the probability of entrepreneurs being replaced by new ones. This result is very interesting. Schumpeter believed that the main body of innovation is entrepreneurs, but innovation also implies destruction, that is, creative destruction. The process of innovation and development is also the process of constant change of entrepreneurs, a kind of self-innovation and self-development within the economy. It has also been proved in the previous section that improvement of the business environment will significantly improve the probability of individual entrepreneurship, indicating that entrepreneurial groups are constantly changing and developing, which lends a microfoundation from China for the idea of "creative destruction."

Cultures and identities differ from region to region. People in certain regions prefer stable occupations, while others favor occupations full of adventure. In this paper, we utilized the question "[B2001aa] What is the main reason your household is engaged in business and industry?" to gauge entrepreneurial identity. Residents who chose responses such as "I earn more money in business," "I want to pursue my ideal hobby/be my own boss," or "I desire more flexibility and freedom" were classified as endorsing entrepreneurship, while those who chose other responses were considered non-endorsers of entrepreneurship. The results are presented in column (3) in Table 11, showing that regions with a better business environment tend to have higher identity of entrepreneurship.

5.3. Potential mechanisms

In Table 12, we present results on the potential mechanisms of the business environment affecting entrepreneurship. The first potential impact channel is entrepreneurial opportunities (*Entrepreneurial opportunities*). Shane and Venkataraman (2000) argue that entrepreneurship is the whole process in which individuals find entrepreneurial opportunities, coordinate and integrate resources, and effectively manage teams to achieve entrepreneurial goals. Entrepreneurial opportunities also play an essential role in individual choice. Areas with faster regional economic development often imply greater consumer demand and more entrepreneurial opportunities. Therefore, this paper takes the speed of regional economic growth as the proxy variable for entrepreneurial opportunities. As seen in column (1), we find that improving the business environment will increase the chances for individual entrepreneurship. Furthermore, combined with column (2), it can be seen that improvement of the business environment can further promote residents' entrepreneurship by increasing the opportunities for entrepreneurship in the province.

The second potential mechanism is the operating cost, which is expressed as the proportion of the operating cost, including the costs various procedures, in the total operating revenue (*Operating cost*). In China, enterprises need to go through various procedures to operate normally, which consumes time and money. The simplification of procedures can greatly stimulate residents' desire to start a business (Langer, Feeney, & Lee, 2019). As shown in column (3) in Table 12, improvement of the business environment can significantly reduce the operating costs of enterprises. Column (4) shows that the business environment can promote residents to choose entrepreneurship by reducing the operating costs of enterprises.

The third potential mechanism is the financing cost, which is expressed by the interest rate of residents' loans to banks in 2017 (*Bank loan interest rate*). For individuals with entrepreneurial motivation, starting and operating enterprises usually require high startup capital, and they need to cover operating costs (Nanda & Rhodes-Kropf, 2013). In other words, entrepreneurs typically need to obtain a sufficient amount of external credit at a reasonable price to start and operate their entrepreneurial activities. However, in most cases, personal savings alone are inadequate to support entrepreneurial behavior, so it is necessary to seek external sources of finance (Stevenson, Kuratko, & Eutsler, 2019). As shown in column (5) in Table 12, in provinces with a better business environment, the financing costs are lower for residents. Combined with column (6), we find that the business environment can promote entrepreneurship by reducing financing costs.

The fourth potential mechanism is contract enforcement (*Contract enforcement*), which is represented by the proportion of accounts receivable in arrears to the total business income of the residents of the province. Differences in contract enforcement and law enforcement can have a significant impact on residents' career choices (Antunes et al., 2008; Sharma et al., 2022). For a startup project, various contracts need to be signed in both the initial and operational phases, so it is especially important for startups that the contracts are executed smoothly. As shown in column (7) in Table 12, the better the business environment is, the smoother the performance of contracts will be. Combined with column (8), the business environment can promote entrepreneurship by improving contract execution. Thus, Hypotheses H2 to H5 has been confirmed.

6. Conclusion and discussion

In recent years, the State Council of China has attached great importance to optimizing the business environment. On November 25, 2021, pilot projects of business environment innovation were launched in six cities—Beijing, Shanghai, Chongqing, Hangzhou, Guangzhou, and Shenzhen. This policy, as an essential measure to improve the business environment, is of great significance to optimize the structure of the economy, enhance market vitality, and improve efficiency. This paper has comprehensively explored the impact of business environment improvement on urban individuals. It focused on the two major themes, the business environment and individual entrepreneurship. Using data from the 2017 CUBEI and the 2017 CHFS microdata, we conducted empirical research on the critical impact of the business environment on individual entrepreneurship. The results show that improving the business environment can promote entrepreneurship, improve the overall level of employment, and optimize the structure of employment. In particular, for poor and less educated individuals, the business environment has a more prominent role in promoting entrepreneurship.

The above findings have the following policy implications. First, improving access to finance is conducive to entrepreneurship.

Inadequate startup funds remain a significant obstacle for many aspiring entrepreneurs, especially those who are poor, unemployed, or low-income people. Thus, improving the entrepreneurship loan policy can be an effective way to encourage and promote the entrepreneurship of low-income people and lift the poor out of poverty. Furthermore, critical policy support should be given to new entrepreneurs who have not exceeded a specific period since starting their own business, to promote the turnover of entrepreneurs. Additionally, entrepreneurship education and skills development should be enhanced. According to the 2017 survey report on innovation and entrepreneurship of Chinese college students released by a globalization think tank, 97.9% of students regarded innovation and entrepreneurship education as helpful. This paper has also proved that a clear understanding of entrepreneurship tends to strengthen the capacity and desire of more individuals to start their own businesses. Therefore, the Chinese government should combine entrepreneurship education with practice to promote entrepreneurship. Only in this way can we ensure the continuous renewal and development of entrepreneurs and stimulate the market's vitality.

Data availability

Data will be made available on request.

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