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Economic Research-Ekonomska Istraživanja

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/rero20

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To cite this article: Zhongwu Li, Fengzhi Lu & Xueliang Feng (2023) Why women's entrepreneurial activities are low in China? The psychological perspective of self-esteem, Economic Research-Ekonomska Istraživanja, 36:1, 1906-1932, DOI: 10.1080/1331677X.2022.2094439

To link to this article: https://doi.org/10.1080/1331677X.2022.2094439

Published online: 11 Jul 2022.

ECONOMIC RESEARCH-EKONOMSKA ISTRAŽIVANJA
2023, VOL. 36, NO. 1, 1906–1932
https://doi.org/10.1080/1331677X.2022.2094439

Why women's entrepreneurial activities are low in China? The psychological perspective of self-esteem

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ABSTRACT

How to increase women's entrepreneurial activities and expand the proportion of female entrepreneurs among entire entrepreneurs has been the long-term focus of scholars. For the first time, this article uses the China Family Panel Studies (CFPS) and the National Survey on Women's Social Status of China (NSWSS) to study why women's entrepreneurial activities are relatively low in China from the psychological perspective of self-esteem. After controlling for related variables, the regression results show that self-esteem has a positive effect on women's entrepreneurial activities. It indicates that the relatively low entrepreneurial activities of women are partially attributed to their low level of self-esteem. In addition, compared with cognitive ability and 'The Big Five' non-cognitive ability, self-esteem plays a greater role in explaining women's entrepreneurial activities. While using propensity score matching and instrument variable methods to deal with the self-selection bias and endogenous problem of self-esteem, the results corroborate the conclusion. Further analysis indicates that social capital and risk-taking attitudes are two important mechanisms for self-esteem to influence women's entrepreneurial activities. The attempt to incorporate the unique psychological trait of self-esteem into female entrepreneurship sheds light on the interdisciplinary research, and provides a new path for improving women's entrepreneurial activities.

ARTICLE HISTORY
Received 18 August 2021
Accepted 21 June 2022

KEYWORDS
Self-esteem; women's entrepreneurial activities; China Family Panel Studies (CFPS); National Survey on Women's Social Status of China (NSWSS)

JEL CODES
B54; C36; J01; J16

1. Introduction

Unleashing the potential of female entrepreneurs and helping them to flourish will bring tangible economic benefits to the Chinese and global economy. It not only relieves the employment pressure of work force, but also provides consumers with more choices in products and services. However, data from a survey on Shenzhen, which is one of the most economically dynamic cities in China, show that the male-to-female ratio of entrepreneurs in the start-up capital is 2.5:1 in 2018[1]. Additionally,

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men tend to enter manufacturing, construction, and real estate sectors, while women choose service sector, e.g., wholesale, retail, accommodation, and catering services. Another survey released by HSBC Private Bank also shows that female entrepreneurs in mainland China and Hong Kong must invest more money to start a business, and are more likely to be rejected for financing[2]. This highlights a huge gender gap in the way potential investors treat male and female entrepreneurs in the country.

Why the proportion of female entrepreneurs in China is far lower than that of male entrepreneurs, and female entrepreneurs are mainly concentrated in the sectors with smaller scale, less technology and lower barrier to entry? Most studies believe that it is not due to the lack of individual capabilities, but the long-term existence of invisible external barriers that greatly inhibit female entrepreneurial activities (Cooke & Xiao, 2021; Liu, 2013). In traditional cultural norms, the inherent social function of Chinese women is to carry on the family line, support husband and raise children in the family. If they cross the boundary, it is often seen as a sign of violation of assigned social role. Due to such gender stereotypes, women are faced with more external disadvantages in business financing and operations. This makes it extremely difficult for women to start a business, not to mention expand their business. As for how to improve this situation, existing studies mainly suggest eliminating gender prejudices, and providing fair competition opportunities, and giving reasonable policy support for female entrepreneurs in some areas (Cooke & Xiao, 2021; Wang et al., 2019). The current practice of Chinese internet-based entrepreneurship provides evidence for this view. In a relatively fair environment, 46% transactions on the biggest e-commerce platform, Taobao, are completed by female entrepreneurs[3]. This ratio is unimaginable in the traditionally male-dominated business sectors.

Although the situation has improved in few sectors, the underrepresentation of female entrepreneurs in many important sectors is still there. Therefore, while paying attention to the external factors, some scholars suggest that the internal psychological factors should also be considered. Among them, self-efficacy, especially entrepreneurial self-efficacy is very often examined in explaining female entrepreneurial intention (Barbosa et al., 2007; Zhao et al., 2005). It is defined as the strength of a person's conviction that she is capable of performing various tasks effectively and of taking on various roles connected with entrepreneurship (Bandura, 1997; McGee et al., 2009). A systematic analysis highlights that lower self-efficacy in many domain-specific ventures hinders the propensity of women to pursue an entrepreneurship career (Noguera et al., 2013). Other studies have reached similar conclusions in recent years (Koellinger et al., 2013; Müller-Wieland et al., 2019).

Approaching the issue from an even broader perspective, we may also consider the role of self-esteem in the entrepreneurial process. Although both self-efficacy and self-esteem are core components of self-evaluation, there are several important distinctions in the two concepts (Laguna, 2013). First, self-efficacy refers to judgments about personal capabilities in performing some tasks (Bandura, 1997), whereas self-esteem refers to an overall evaluation of personal worth that people make and maintain with regard to themselves (Judge & Bono, 2001). Second, they differ in terms of their time perspectives. Self-esteem focuses on current assessment of one's self, whereas self-efficacy focuses on a future assessment of one's performance level

(Krpan et al., 2021). Third, self-esteem mostly develops between the age of 13 and 23, then, the relatively rank-order stability will be there in adult period (O'Malley & Bachman, 1983; Robins & Trzesniewski, 2005). Research reveals that people maintain a similar relative level of self-esteem despite experiencing the inevitable successes and failures of life, consistent with a trait view of self-esteem (Kernis, 2005; Trzesniewski et al., 2003), whereas self-efficacy will vary along with setbacks and failures in task performances (Smith et al., 2006). The fact that they are not the same concept can be reflected by the following example. A female urban management officer might have confidence about her ability in fining even suspending unlicensed street vendors (high self-efficacy), but might also have negative feelings of self-worth for having successfully done this to many financially needy families (low self-esteem).

Research shows that high self-esteem is clearly associated with greater persistence, and importantly, more judicious persistence in the face of adversity (Hogg & Cooper, 2003). People high in self-esteem adopt approach goals and are more ready to orient toward positive objects and opportunities in the environment (Heimpel et al., 2006). For the reasons above, the level of self-esteem may also be expected to be an important determinant of entrepreneurial action. However, there are very few published studies presenting the role of self-esteem in the context of entrepreneurship, even if self-esteem is one of the most frequently studied variables in different life domains, e.g., well-being, career status and salary (Diener & Diener, 2009; Orth & Robins, 2014). A study by Laguna (2013) shows that self-esteem turns out to be quite important at the stage of actual firm creation. The finding opens a way for further investigations of the role of self-esteem at more advanced stages of the entrepreneurial process (Baron, 2007).

China has been deeply influenced by the Confucian cultural norms for thousands of years, among which a series of codes of conduct concerning gender have profoundly shaped women's long-term personality traits. Under the influence of traditional culture, a type of subconsciousness that women are generally secondary to their counterpart men is nurtured in women's mind (Ahl, 2006; Qing, 2020). Consequently, many women do not realize their value, let alone develop their potential, and thus, such a low level of self-esteem may be crucial to understand the gender differences in personal developments in China. However, it remains to be seen whether the psychological trait of self-esteem can explain the changes in female entrepreneurial activities. Based on this, we use two nationally representative datasets to examine their relationship, and find that self-esteem significantly improves women's entrepreneurial activities. Especially, compared with cognitive ability and 'The Big Five' non-cognitive ability, self-esteem explains women's entrepreneurial activities to a larger extent. The findings provide important policy implications for both China and other developing countries and regions where women are historically at a disadvantage. Overall, as one of very few studies that explain female entrepreneurship from the perspective of self-esteem, this article adds new insights to the field of female entrepreneurship.

The remainder of this article is arranged as follows: Section 2 is literature review and hypothesis, Section 3 is data, variables, and descriptive statistics, Section 4 is the econometric model and empirical analysis, and Section 5 is discussion and conclusion.

2. Literature Review and Hypothesis

2.1. Literature on female entrepreneurship

There are many factors that influence a person to pursue entrepreneurship, which can be a combination of family background, working experience, membership of self-help groups, personal attributes, traits, and disposition (Hurst & Pugsley, 2011; Liang et al., 2018; Lindquist et al., 2015; Minimol, 2020; Pekkala Kerr & Kerr, 2020). The previous research has shown that a huge gap exists in entrepreneurship intentions and actions across gender (Guzman & Kacperczyk, 2019). As to possible reasons, scholars have proposed various explanations, including gender differences in social roles and stereotypes, social networks, role models, work-family conflict, entrepreneurship education, women empowerment, family support, social and human capital, financial resources, risk attitudes, self-efficacy, etc. (Guzman & Kacperczyk, 2019; Johansen, 2013; Koellinger et al., 2013; Mishra & Zachary, 2015; Thébaud, 2015). So far, it has been generally agreed that the three types of resources of human, social, and financial capital are key to entrepreneurs, given their positive association with performance and management of a business venture (Brush et al., 2002; Millán et al., 2014). That is, in addition to such formal capital as policy support and financing, the informal capital, e.g., family emotional support and social network also has a large impact on entrepreneurship (Cardella et al., 2020; Osorio et al., 2017). However, numerous studies show that female entrepreneurs face greater barriers than their counterpart male entrepreneurs in obtaining the important capital above, including entrepreneurship education, training opportunities, support from families and institutions, and acquisition of financial resources (Kapinga & Montero, 2017; Panda, 2018; Raghuvanshi et al., 2017).

Recently, however, cultural and psychological factors have been increasingly emphasized in female entrepreneurship literature (Eden & Gupta, 2017). According to social role theory, men and women are assigned to different roles in both family and society, and their corresponding behaviours and actions are presumably different accordingly (Eagly & Wood, 2012). Women are described as less masculine and with low-risk proclivities, as well more inclined to achieve social benefits and value (Datta & Gailey, 2012), an image which does not fit in entrepreneurs, who should be aggressive and risk-loving ones (Bird & Brush, 2002; Dileo & García Pereiro, 2019). Additionally, the male-centred stereotypes on entrepreneurship will lead women to consider themselves as lacking in entrepreneurial skills and knowledge (Kirkwood, 2009; Wilson et al., 2007), and unable to respond to possible challenges facing a start-up (Yordanova & Tarrazon, 2010). Such psychological traits as low self-efficacy, self-confidence, and risk appetite could ultimately influence the types of careers acceptable for women, further setting obstacles to female entrepreneurship (Dawson & Henley, 2015; Kalafatoglu & Mendoza, 2017). Following the latest socioeconomic development, there emerge some other factors in explaining female entrepreneurship and its changing trend (for detailed review, see Marlow, 2020; Welter & Baker, 2020; Wieland et al., 2019).

2.2. Influence mechanism of self-esteem on female entrepreneurship

In psychology, self-esteem is used to describe a person's overall sense of self-worth, such as the degree of acceptance of one's appearance, emotions and behaviours (Sharma & Agarwala, 2015). As a component of the self-concept, it is often thought as a broad representation of the self that includes both evaluative and affective aspects (Blascovich & Tomaka, 1991). The studies suggest that the root cause of many problems is that people despise themselves and consider themselves unworthy and unlovable (Wickman & Campbell, 2003). In this regard, psychologists always treat self-esteem as an independent psychological trait instead of a component of 'The Big Five' personality traits. It is shown that self-esteem has a significant impact on individual well-being, career status and salary, marriage, academic performance, and even criminal behaviour (Diener & Diener, 2009; Ulrich Orth & Robins, 2014). In our case, self-esteem might be a particular important factor in influencing female entrepreneurship.

To understand how self-esteem affects women's entrepreneurial activities, we propose the following two transmission channels: increased social capital and risk-taking attitudes. The two factors have been extensively studied to explain observed gender differences in several different domains in the labour market (Blau & Kahn, 2000; Croson & Gneezy, 2009).

In terms of social capital channel, Tirole and his collaborators point out that those who believe they are highly independent and competent can gain support and goodwill from others at a lower cost (Bénabou & Tirole, 2002). More recently, Marshall et al. (2013) confirm that self-esteem reliably predicts increasing levels of social support quality and social support network size over time in a 4-year longitudinal study. The possible explanation is that individuals high in self-esteem show more relationship enhancing behaviours, while individuals low in self-esteem show more relationship destructive behaviours (Greenacre et al., 2014; Murray et al., 2002). In a meta-analysis of more than two decades of research, Harris and Orth (2020) reveal that self-esteem has a significant effect on interpersonal relationships, given it affects the perception you have of your partners and the way you act with your partners. Overall, self-esteem may increase one's social capital. Meanwhile, the literature indicates that social capital can help individuals better identify entrepreneurial opportunities and obtain entrepreneurial resources by providing information and resource support, and disperse the risks of entrepreneurial activities (Munshi & Rosenzweig, 2006; Welsh et al., 2021). And thus, it plays an important role in individual entrepreneurial activities and performance, especially in those places where formal economic and financial channels are not perfect (Cope et al., 2007; Westlund & Bolton, 2003). However, gender differences in social capital are quite large. The role of women in China has long been seen as that of a wife and a mother. Their traditional responsibility is more on household chores and taking care of husbands and children, instead of managing business affairs outside household. So, women lack basic commercial networks and social capital (Langowitz & Minniti, 2007). As is shown in Dawson and Henley (2015) that the low ratio of female entrepreneurs is associated with a greater fear of failure and perception of poor support from social networks. As a result, the entrepreneurship entry choices of women differ.

In terms of risk attitudes channel, many studies show that individuals low in self-esteem tend to get less positive affirmations; so, they are more inclined to avoid risks in the face of challenges, while individuals high in self-esteem tend to accept risks and actively resolve them (Landau & Greenberg, 2006; Zhang et al., 2018). People high in self-esteem are also more ready to undertake risky activities, while people low in self-esteem tend to avoid tasks connected with risk (Campbell & Lavallee, 1993). A study by Chuang et al. (2013) even suggests that those high in self-esteem are more likely to be at risk and that they are less likely to choose safe and low-risk options. Overall, self-esteem may improve women's risk-taking preferences. Meanwhile, entrepreneurs' risk attitudes are theoretically regarded as a key factor affecting their entrepreneurial activities (Hurst & Pugsley, 2011; Knight, 1921). Most empirical studies have found that individuals willing to take risks are more likely to become entrepreneurs (Caliendo et al., 2014; Levine & Rubinstein, 2017; Sohn, 2017). Feeling confident about oneself is a pre-condition to the decision to pursue a new opportunity. If men and women systematically assess the risks and rewards of various opportunities differently, their pursuits will reflect this bias. Large numbers of studies show that there exist huge gender differences in risk-taking attitudes, that is, women are more risk-averse than men (Charness & Gneezy, 2012; Croson & Gneezy, 2009). And, this has been proposed as an important factor limiting women's entry into entrepreneurship (Dawson & Henley, 2015). Even in lab settings, Chinese women are more risk and competition averse than their counterpart men in investment decisions. This causes women relatively lower wages and lower rate of entrepreneurship (Bönte & Piegeler, 2013; van der Zwan et al., 2012). As the study conducted by Dawson and Henley (2015) shows that the gap between men and women in starting an entrepreneurial career is due to lower risk attitudes expressed by women. As a result, entrepreneurship choices differ among women.

Figure 1 displays the transmission channels. On one hand, women's self-esteem plays a big role in enhancing their social capital and risk-taking attitudes. On the other hand, more social capital and stronger risk-taking preferences, in turn, can improve female entrepreneurship activities. Although both social capital and risk attitudes may be possible transmission channels, we think that the two channels are insufficient to explain all the differences between women's self-esteem and their entrepreneurial activities. There may be other channels at play at the same time, so, this article is still an exploratory study.

Based on this, we propose the following hypotheses:

H1: Self-esteem has a positive impact on women's entrepreneurial activities.

H2: Social capital and risk-taking attitudes are two important channels through which self-esteem affects women's entrepreneurial activities.

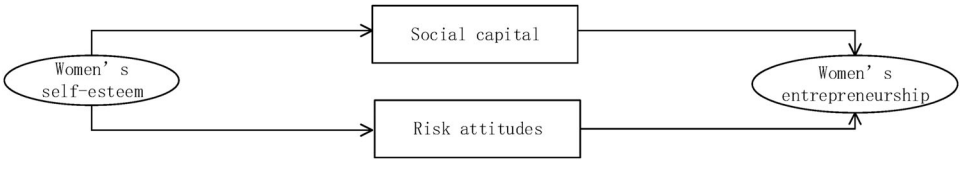

Figure 1. Transmission channel.
Source: It is made by the authors.

3. Data, Variables and Descriptive Statistics

3.1. Data

To make the empirical results more robust and reliable, we use two nationally representative micro datasets: the China Family Panel Studies (CFPS) and the National Survey on Women's Social Status of China (NSWSS). The CFPS is a biennial national survey that complements the U.S. Income Dynamics Tracking Survey (PSID). It closely tracks social, economic, demographic, educational, and health changes in contemporary China and covers such important topics as economic activities, educational outcomes, family dynamics and relationships, and physical and mental health. Although the CFPS tracking survey is updated to 2018, only the 2014 round of CFPS collects the necessary information for our empirical analysis, that is, female entrepreneurship, noncognitive ability and gender role attitudes in the community. Therefore, this article mainly uses the CFPS 2014 to study the impact of women's self-esteem on their entrepreneurial activities. Although the time effectiveness of the CFPS 2014 is not ideal, the important topic examined in this article remains an unstudied academic field in China. No previous relevant research has applied a rigorous empirical test to this topic; hence, the related findings in this article will form the basis of further research in the future. The CFPS 2014 uses a stratified and multi-stage sampling method to collect data reflecting social, economic, demographic, educational and health changes in China. It covers 14,798 households in 162 counties and 635 villages in 25 provinces. To alleviate the endogeneity of explanatory variable, especially the estimation bias caused by reverse causality, this article merges the CFPS 2012 adult dataset with the CFPS 2014 adult and family datasets. As a tracking survey, every individual is assigned with a unique identifier in the CFPS, so, we can use the identifier to merge the CFPS 2014 and CFPS 2012 adult dataset. In this way, the information on an individual in both 2012 and 2014 waves of survey is available.

Meanwhile, this article also uses the National Survey on Women's Social Status of China (NSWSS) to test the results in the robustness check[4], especially, to identify the causal effect of self-esteem on female entrepreneurship through an instrument variable method. The NSWSS, launched by the All-China Women's Federation (ACWF), aims to comprehensively assess gender equality and women's development. Three rounds of surveys have been carried out since 1990, respectively in 1990, 2000 and 2010, among more than 30,000 respondents aged 18 and above nationwide. The data used in this article are from the latest NSWSS 2010. It uses a stratified, multi-stage, unequal probability sampling method to collect information on nine aspects of women's personal and family well-being: health, education, economics, politics, social security, marriage and family, lifestyle, legal rights and gender role attitudes.

3.2. Variables

3.2.1. Explained, explanatory and instrument variables

Explained variable: female entrepreneurial activities (*Entrepreneur*). In the CFPS 2014, it is evaluated by the question of 'What is your main type of work?' If the respondent replies with 'private enterprise, self-employed business or other self-employed

business,' it has the value of 1; otherwise, 0 while being employed by others. In the NSWSS 2010, entrepreneurial activities are measured by the question of 'How do you get your current/last job?' It is equal to 1 if the respondent replies with 'starting his or her own business,' otherwise 0.

Explanatory variable: women's self-esteem (*Esteem*). Self-esteem is constructed based on the Rosenberg Self-esteem Scale (RSES). As the most common and reliable measure of self-esteem, RSES is widely used in psychological and economic research (Bowles et al., 2001; Heckman et al., 2006). Considering the availability of data in the CFPS and NSWSS, this article uses a shorter version of RSES to measure women's self-esteem. Existing research has shown that the RSES consisting of 10 items can be further shortened without any impact on measures of self-esteem (Gray-Little et al., 1997; Orth & Robins, 2014). In the CFPS 2012, self-esteem is assessed using the following four statements of self-approval and disapproval: (A) I feel as good as everyone else, (B) I feel like I am a failure, (C) I am hopeful of the future, (D) I feel like I can't go on living. In the NSWSS, self-esteem is constructed through the following three self-approval or disapproval statements: (A) I am confident in my abilities, (B) I often think of myself as a failure, (C) I am very independent and seldom dependent on others. As shown in Table 1, statements (A) and (B) correspond to the same items in the RSES, while (C) and (D) are also highly correlated with items in the RSES. Respondents are asked to choose from four options: 'strongly agree,' 'agree,' 'disagree' and 'strongly disagree.' We positively rate self-approving statements like (A) and (C), with strongly 'disagree assigned' 1, 'disagree' 2, 'agree' 3, and 'strongly agree' 4. The statements that are inclined to self-disapproving, such as (B) and (D), are rated in a reverse manner. Then, according to the designing process of RSES, the scores obtained from the three or four items are added to construct an ordinal self-esteem variable. A higher score indicates a stronger sense of self-esteem.

Instrument variable: the experience of working as a class leader in junior high school (*Mcadre*). It is evaluated by the question of 'Have you ever worked as a class leader in junior high school?' It is equal to 1 if the respondent ever worked as a class

Table 1. Items related to self-esteem in the CFPS, NSWSS and RSES.

Items in the CFPS	Items in the NSWSS	Items in the RSES
(A) I feel as good as everyone else	(A) I am confident in my abilities	1. I can do it as well as most others
(B) I feel like I am a failure	(B) I often think of myself as a failure	2. Overall, I tend to think of myself as a failure
(C) I am hopeful about the future	(C) I am very independent and seldom depend on others	–
(D) I feel like I can't go on living	–	–
		3. Occasionally, I feel myself useless
		4. Overall, I am satisfied with myself
		5. Occasionally, I don't think I am good at all
		6. I don't think I have anything to be proud of
		7. I think I have many good qualities
		8. I feel that I am at least as valuable as anyone else
		9. I feel positive about myself
		10. I wish I had more respect for myself

Source: It is made by the authors.

leader, 0 otherwise. In instrument variable regression, to better satisfy the exclusion restriction condition of *Mcadre*, we also control the experience of leadership in work places in equation (*Leadership*).

3.2.2. Control variables

Based on previous empirical studies, some possible confounding factors are controlled. Among them, female characteristic variables include the Communist party of China membership (*CPM*), religious belief (*Religion*), years of education (*Education*), age (*Age*), Age square (Age^2), marriage status (*Marriage*), health status (*Health*), work experience (*Workexperience*), cognitive ability (*Cognitive*). Considering the influence of non-cognitive abilities on female entrepreneurial activities, we further control 'The Big Five' non-cognitive ability. Given the availability of variables in the CFPS, neuroticism in 'The Big Five' is measured by four statements of 'I feel depressed,' 'I feel low,' 'I feel afraid,' and 'I feel sad.' Agreeableness is measured by two statements of 'I think people are unkind to me,' 'I don't think people like me.' The conscientiousness is assessed by the statement of 'I have trouble concentrating when I am doing things.' Each of the above statements corresponds to the following four choices: 'most of the time,' 'often,' 'sometimes,' 'almost no,' corresponding to the values of 1, 2, 3, and 4. Then, a noncognitive ability variable (*Noncognitive*) reflecting a woman's personality traits is constructed by summing up the scores obtained from each statement. The larger the value is, the stronger a woman's noncognitive ability is.

Family background variables include the average level of parents' education (*P_Education*), parents' Communist party of China membership (*P_CPM*), parents' white-collar occupation (*P_Occupation*), number of family members (*Familsize*), net household assets including land assets, fixed assets, and financial assets (*Familyasset*), the social status of respondent's family in the community (*Familystatus*). Community environment variables include the average level of gender role attitudes in the community (*Rolec*), where one's gender role attitudes are assessed through the following two questions: (A) Do you think men should focus on career and women should focus on family? (B) Do you agree that marrying well for women is better than financial independence? The respondent has the following five options to choose from: 'strongly disagree,' 'disagree,' 'neutral,' 'agree' and 'strongly agree.' We assign a value of 1 to strongly disagree, 5 to strongly agree, and 2, 3, and 4 to other three items respectively. Then, we sum up scores of the above two items to construct a gender role attitudes variable. Besides, we include the average level of trust among neighbours in the community (*N_Trustc*), and the average level of interpersonal relationships in the community (*N_Relationc*).

3.2.3. Mediating variables

In the mechanism analysis, two important variables are worth noting. One is women's social capital (*Socialexpend*). It is based on the question of 'In the past 12 months, what was the total expense spent on your relatives and friends because of their marriage, college entrance examination, children's birth, death, New Year's greetings, etc.?' It reflects the strength of social networks owned by individuals and families; thus, it can largely measure the level of women's social capital. Considering

the possibility of extreme values, we add 1 to the total expense, then take the logarithm form. The other one is women's risk attitudes (*Riskattitude*), which are evaluated by both objective and subjective indicators. The objective indicator is measured by the question of 'Whether you hold the following financial assets: stock assets, futures contracts, and options contracts.' If holding one of them, she is regarded as a risk-loving individual. Given some people do not participate in financial markets due to technical barriers or lack of financial knowledge, the objective indicator cannot appropriately capture their risk attitudes. So, we use a subjective indicator to compliment the objective one to measure women's risk attitudes. It is evaluated by the question of 'How much risk are you willing to take in an investment?' If the respondent answers that 'I am willing to take a moderate risk even high risk,' she is classified to the risk-loving group. Finally, *Riskattitude* = 1, if the respondent is regarded as a risk-pursuing person by either the subjective or objective standard, otherwise = 0.

The definitions of all variables and their source of dataset are listed in Table 2.

3.3. Descriptive statistics

While examining female entrepreneurial behaviours, we delete samples that are either still in school or already retired; meanwhile, we delete young people under the age of 15 and the elderly over 65 years old. Considering that entrepreneurial activities mainly take place in urban China, people in rural areas still largely rely on traditional agriculture, so, we restrict the sample to urban women for a better analysis. Finally, we get 5,304 valid observations of women's entrepreneurial activities for empirical analysis. Table 3 lists the descriptive statistics of all variables used in this article. It shows that the average age of women is 43.8 years old, and women involved in entrepreneurship account for 13.2% of the sample.

Table 4 displays the mean comparison of key variables under the cases of entrepreneurial women and non-entrepreneurial women. There are significant differences between entrepreneurial women and non-entrepreneurial women in many aspects. The mean value of self-esteem is 12.688 among entrepreneurial women and 12.449 among non-entrepreneurial women. So, compared with non-entrepreneurial women, entrepreneurial women have a higher degree of self-esteem, and this difference is statistically significant at 5% level. Hence, women's self-esteem is positively correlated with their entrepreneurial activities. Additionally, both cognitive and noncognitive abilities of entrepreneurial women are higher than those of non-entrepreneurial women. The average age of entrepreneurial women is about 1.881 years younger than that of non-entrepreneurial women. Regarding family background, the average family size and household assets of entrepreneurial women is significantly higher than that of non-entrepreneurial women.

4. Econometric Model and Empirical Analysis

4.1. Econometric model

Following the idea of Heineck and Anger (2010), this article matches the explanatory variable (self-esteem) in the CFPS 2012 with the explained variable (female

Table 2. Definitions of variables.

Variable	Definition	Dataset
Entrepreneur	What is your main type of work? (if private enterprise, self-employed business or other self-employed business, Entrepreneur = 1, otherwise = 0)	CFPS 2014
Entrepreneur	How do you get your current/last job? (if starting her own business, Entrepreneur = 1, otherwise = 0)	NSWSS 2010
Esteem	Women's self-esteem (a larger value indicates a higher level of self-esteem)	CFPS 2012, NSWSS 2010
CPM	If you are a member of the Communist party of China (yes = 1, otherwise = 0)	CFPS 2014, NSWSS 2010
Religion	If you are a religious believer (yes = 1, otherwise = 0)	CFPS 2014, NSWSS 2010
Education	Years of education	CFPS 2014, NSWSS 2010
Age	Age in years	CFPS 2014, NSWSS 2010
Age^2	Age square in years	CFPS 2014, NSWSS 2010
Marriage	If you are married (yes = 1, otherwise = 0)	CFPS 2014, NSWSS 2010
Health	Health status (a greater value indicates better health)	CFPS 2014, NSWSS 2010
Work experience	If you ever worked (yes = 1, otherwise = 0)	CFPS 2014, NSWSS 2010
Cognitive	Cognitive ability (its value is equal to the average score of the word and number tests, and a larger value indicates a higher level of cognitive ability)	CFPS 2014
Noncognitive	'The Big Five' non-cognitive ability (a larger value indicates a higher level of noncognitive ability, detailed definitions are seen in this article)	CFPS 2012
P_Education	The average level of parental education (1-5, where 1 indicates illiterate and half illiterate level, 2 primary school level, 3 junior middle school level, 4 senior middle school level, 5 bachelor degree and above)	CFPS 2014, NSWSS 2010
P_CPM	If one of your parents is a member of the Communist party of China (yes = 1, otherwise = 0)	CFPS 2014
P_Occupation	If one of your parents has a white-collar occupation (yes = 1, otherwise = 0)	CFPS 2014, NSWSS 2010
Familysize	Number of family members who are usually eating together	CFPS 2014
Familyasset	Net household assets including land assets, fixed assets, and financial assets	CFPS 2014
Familystatus	The social status of respondent's family in the community (a larger value indicates a higher status of respondent's family in the community)	CFPS 2014
N_Trustc	The average level of trust among neighbours in the community (a larger value indicates that there is a high level of trust between neighbours)	CFPS 2014
N_Relationc	The average level of interpersonal relationship in the community (a larger value indicates a better interpersonal relationship between neighbours)	CFPS 2014
Rolec	The average level of gender role attitudes in the community (a larger value indicates that the community emphasizes traditional gender role attitudes, detailed definitions are seen in this article)	CFPS 2014, NSWSS 2010
Socialexpend	Women's social capital (the total expense on consumption of maintaining one's social contacts with other people in the past 12 months, detailed definitions are seen in this article)	CFPS 2014
Riskattitude	Women's risk attitudes (if regarded as a risk-pursuing person in either subjective or objective standards, Riskattitude = 1, otherwise = 0, detailed definitions are seen in this article)	CFPS 2014
Mcadre	Have you ever worked as a class leader in junior high school? (if ever worked as a class leader, Mcadre = 1, otherwise = 0)	NSWSS 2010
Leadership	Have you ever been a leader in work places? (if ever being a leader in work places, Leadership = 1, otherwise = 0)	NSWSS 2010

Source: It is made by the authors.

Table 3. Descriptive statistics of variables.

	N	Mean	Std	Min	Max
Entrepreneur	5,304	0.132	0.338	0	1
Esteem	5,060	12.480	2.068	4	16
CPM	5,048	0.049	0.216	0	1
Religion	5,101	0.122	0.327	0	1
Education	5,062	8.580	4.747	0	22
Age	5,304	43.838	12.487	18	65
Age^2	5,304	2077.711	1087.238	324	4225
Marriage	5,304	0.867	0.340	0	1
Health	5,049	5.702	1.083	1	7
Workexperience	5,288	0.659	0.474	0	1
Cognitive	5,050	13.879	7.837	0	29
Noncognitive	5,059	24.876	3.068	7	28
P_Education	4,751	2.112	0.992	1	5
P_CPM	5,304	0.180	0.385	0	1
P_Occupation	5,304	0.175	0.380	0	1
Familysize	5,304	4.062	1.801	1	17
Familyasset	5,263	6.658	5.276	0	15.895
Familystatus	5,042	3.024	0.936	1	5
N_Trustc	5,013	0.549	0.139	0	1
N_Relationc	5,044	7.016	0.699	0	8.623
Rolec	5,019	7.411	0.672	2	10
Socialexpend	4,454	7.825	1.182	0	11.513
Riskattitude	5,304	0.226	0.418	0	1
Mcadre	5,861	0.145	0.352	0	1
Leadership	5,080	0.332	0.471	0	1

Source: It is made by the authors.

Table 4. Mean comparison of key variables.

	Entrepreneurial women			Non-Entrepreneurial women			
Variables	N	Mean	Std	N	Mean	Std	T test
Esteem	670	12.688	1.970	4,390	12.449	2.081	0.240**
CPM	671	0.019	0.138	4,377	0.053	0.225	−0.034***
Religion	675	0.151	0.358	4,426	0.117	0.322	0.034**
Education	661	8.539	4.047	4,401	8.586	4.844	−0.048
Age	700	42.206	10.660	4,604	44.087	12.725	−1.881***
Marriage	700	0.934	0.248	4,604	0.857	0.350	0.077***
Health	671	5.717	1.027	4,378	5.700	1.091	0.017
Workexperience	698	0.713	0.452	4,590	0.650	0.477	0.063**
Cognitive	671	14.364	6.735	4,379	13.805	7.990	0.559*
Noncognitive	672	24.951	2.879	4,387	24.864	3.096	0.087
P_Education	630	2.143	0.938	4,121	2.107	1.001	0.036
P_CPM	700	0.177	0.382	4,604	0.181	0.385	−0.004
P_Occupation	700	0.167	0.373	4,604	0.176	0.381	−0.009
Familysize	700	4.241	1.698	4,604	4.035	1.815	0.206**
Familyasset	693	7.123	5.313	4,570	6.587	5.267	0.536**
Familystatus	670	3.055	0.841	4,372	3.019	0.949	0.036
N_Trustc	670	0.546	0.143	4,343	0.550	0.139	−0.004
N_Relationc	671	6.972	0.670	4,373	7.022	0.703	−0.050*
Rolec	671	7.371	0.675	4,348	7.417	0.671	−0.046*

Note: *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.
Source: It is made by the authors.

entrepreneurship) and other control variables in the CFPS 2014. Given self-esteem is obtained before female entrepreneurial activities, it can help to alleviate the reverse causality problem. The above operation can take full advantage of the CFPS as longitudinal survey. To test the effect of self-esteem on female entrepreneurship, we establish the following econometric model:

$$Entrepreneur = \beta * Esteem + \gamma_1 * X_i + \gamma_2 * X_f + \gamma_3 * X_p + \varepsilon \quad (1)$$

Among them, *Entrepreneur* is female entrepreneurial activities and *Esteem* is women's self-esteem. β is the parameter to be estimated in this article. X_i, X_f, and X_p are three levels of confounding factors: personal characteristics, family background and community environment. Considering that *Entrepreneur* is a 0-1 binary variable, the probit model is employed below to estimate the coefficients of variables.

4.2. Benchmark regression results

The probit regression is conducted with self-esteem as the explanatory variable and female entrepreneurial activities as the explained variable. While making a better comparison, Table 5 also lists the results of ordinary least squares (OLS) benchmark regression. It shows that the influence of self-esteem on female entrepreneurial activities is significantly positive at the 1% level. In addition, Column (3) of Table 5 reveals that the marginal effects of *Cognitive* and *Noncognitive* are much smaller than that of *Esteem* in absolute value. So, self-esteem plays a greater role in female entrepreneurial activities than cognitive ability and 'The Big Five' noncognitive ability. In conclusion, although many possible confounding factors are considered, self-esteem can always positively influence female entrepreneurial activities. Hence, hypothesis 1 is confirmed.

4.3. Heterogeneity analysis

To further confirm the universal existence of external traditional gender role norms and their important role in the relationship between women's self-esteem and their entrepreneurial activities, we divide the sample according to the degree of traditionalisation of community where women live. The classification is mainly based on the variable of gender role attitudes in the community (*Rolec*). When it is less than the value of its 50% quantile, it is classified as a less traditional community; when it is greater than the value of its 50% quantile, it is classified as a more traditional community. Then, we use the OLS and probit models to re-examine the impact of self-esteem on female entrepreneurship. The results in Table 6 show that the coefficients of *Esteem* in Columns (2) and (4) are all significantly positive, but *Esteem* in Columns (1) and (3) are not significant. This suggests that the effect of self-esteem on female entrepreneurship is particularly significant in a community that emphasizes traditional gender role norms.

The traditional gender norms around will shape women's inherent belief to a certain extent, making it easier for them to accept that 'women are not suitable for entrepreneurial activities that require too much determination, complexity and risk.' While influenced by such traditional gender norms as 'men's work centres around outside, women's work centres around the home,' these women often lack confidence and self-esteem to challenge various gendered institutions and rules that make them disadvantaged. Table 7 shows that traditional gender norm constraints in the community reduce women's self-esteem, whether relevant variables are controlled or not. Consequently, these women follow the existing social norms, and dare not question

Table 5. Regression results based on the CFPS.

	(1) OLS	(2) Probit	(3) Marginal effect
Esteem	0.007***	0.036***	0.007***
	(0.003)	(0.014)	(0.003)
CPM	−0.065***	−0.464***	−0.094***
	(0.017)	(0.146)	(0.030)
Religion	0.044**	0.200**	0.040**
	(0.018)	(0.079)	(0.016)
Education	−0.005***	−0.025***	−0.005***
	(0.002)	(0.009)	(0.002)
Age	0.017***	0.091***	0.018***
	(0.003)	(0.018)	(0.004)
Age^2	−0.000***	−0.001***	−0.000***
	(0.000)	(0.000)	(0.000)
Marriage	0.051***	0.292***	0.059***
	(0.014)	(0.098)	(0.020)
Health	−0.009*	−0.043*	−0.009*
	(0.005)	(0.025)	(0.005)
Workexperience	0.008	0.050	0.010
	(0.012)	(0.061)	(0.012)
Cognitive	0.002*	0.009*	0.002*
	(0.001)	(0.005)	(0.001)
Noncognitive	−0.000	−0.001	−0.000
	(0.002)	(0.009)	(0.002)
P_Education	0.005	0.025	0.005
	(0.007)	(0.034)	(0.007)
P_CPM	0.000	0.003	0.001
	(0.014)	(0.069)	(0.014)
P_Occupation	−0.015	−0.072	−0.015
	(0.015)	(0.075)	(0.015)
Familysize	0.002	0.010	0.002
	(0.003)	(0.016)	(0.003)
Familyassets	0.002**	0.011**	0.002**
	(0.001)	(0.005)	(0.001)
Familystatus	0.010*	0.049*	0.010*
	(0.005)	(0.027)	(0.006)
N_Trustc	−0.020	−0.087	−0.018
	(0.041)	(0.192)	(0.039)
N_Relationc	−0.028**	−0.130***	−0.026***
	(0.012)	(0.050)	(0.010)
Rolec	−0.022**	−0.107**	−0.022**
	(0.009)	(0.043)	(0.009)
Provincial effect	Yes	Yes	Yes
Adj./Pseudo. R^2	0.038	0.064	
N	4,196	4,196	4,196

Note: robust standard error in parentheses, and *, ** and *** indicate significance at the 10%, 5% and 1% levels respectively.
Source: It is made by the authors.

Table 6. Subsample regression according to the traditionalisation of the community.

Subsample	(1) Less traditional community (OLS)	(2) More traditional community (OLS)	(3) Less traditional community (Probit)	(4) More traditional community (Probit)
Esteem	0.004	0.010***	0.017	0.052***
	(0.004)	(0.004)	(0.019)	(0.021)
Covariates	Yes	Yes	Yes	Yes
Provincial effect	Yes	Yes	Yes	Yes
Adj./Pseudo R^2	0.044	0.042	0.084	0.083
N	2,189	2,007	2,189	2,007

Note: the explained variable is *Entrepreneur*; covariates are same with those in Table 5.

Table 7. The influence of traditional environment on women's self-esteem.

	(1) Self-esteem	(2) Self-esteem
Rolec	−0.334***	−0.147***
	(0.045)	(0.048)
Covariates	No	Yes
Provincial effect	Yes	Yes
Adj. R^2	0.041	0.193
N	4,842	4,196

Note: the covariates are same with those in Table 5.

Table 8. Influencing channels between self-esteem and female entrepreneurial activities.

	(1)	(2)	(3)	(4)
	Mechanism: social capital		Mechanism: risk-taking attitudes	
	Socialexpend (OLS)	Entrepreneur (Probit)	Riskattitude (Probit)	Entrepreneur (Probit)
Esteem	0.027***	0.040***	0.026**	0.036**
	(0.009)	(0.015)	(0.013)	(0.014)
Socialexpend		0.093***		
		(0.027)		
Riskattitude				0.167***
				(0.064)
Covariates	Yes	Yes	Yes	Yes
Provincial effect	Yes	Yes	Yes	Yes
Adj./Pseudo. R^2	0.168	0.071	0.192	0.066
N	3,563	3,563	4,196	4,196

Note: the covariates are same with those in Table 5.
Source: It is made by the authors.

the constraints attached by the traditional gender division of labour. Besides, as discussed above that low self-esteem caused by traditional gender norms may result in less social capital and risk-averse attitudes, which will further prevent female entrepreneurship. Therefore, for those women constrained by external gender norms, their low self-esteem can explain the probability of failing to start a business to a greater extent.

4.4. Mechanism analysis

To empirically test whether women's self-esteem will improve their entrepreneurial activities through the channels of increased social capital and risk-taking attitudes, first, we regress women's social capital (*Socialexpend*) and risk-taking attitudes (*Riskattitude*) on their self-esteem (*Esteem*) respectively. Second, we regress women's entrepreneurial activities (*Entrepreneur*) on their self-esteem (*Esteem*), their social capital (*Socialexpend*) and risk-taking attitudes (*Riskattitude*).

Table 8 displays the regression results. The coefficients of self-esteem in Columns (1) and (3) are significantly positive. It indicates that self-esteem can expand women's social capital and provide them with various conveniences in capital, information, and technology. Self-esteem also helps to enhance women's risk tolerance and spirit of adventure, which are the necessary psychological quality for entrepreneurs so that they dare to make decisions and take risks in entrepreneurship. Meanwhile, the coefficients of *Socialexpend* and *Riskattitude* in Columns (2) and (4) are also significantly positive[5]. This suggests that both women's social capital and risk-taking attitudes can increase their chances of starting a business.

Overall, it reveals that women high in self-esteem tend to have a wider range of social capital and higher risk-taking capacity, which in turn significantly improve the probability of entrepreneurial women starting their own businesses. For example, when entrepreneurs encounter capital turnover problems at the start-up stage, private financing from relatives and friends can relieve the urgent need of entrepreneurs. Consequently, it greatly improves the possibility of starting a business. In this part, we show that social capital and risk attitudes are two important influencing channels between women's self-esteem and their entrepreneurial activities. Hence, hypothesis 2 proposed is confirmed.

4.5. Robustness check: self-selection bias and PSM

The results above tell that self-esteem improves women's entrepreneurial activities. However, it relies on the random assignment of self-esteem, that is, self-esteem is independent of the random error term in the model when the related confounding factors are controlled. However, self-esteem in the model is often not randomly assigned, and its formation is the result of the comprehensive action of many factors. Therefore, the above findings may be affected by self-selection bias. In order to obtain a more accurate self-esteem effect, we apply propensity score matching method (PSM) to correct the possible self-selection bias.

Under the PSM framework, two steps are usually required to estimate the effect of policy treatment. First, the probit model is used to calculate a propensity score or the probability of being assigned to a treatment group. It is the probability of a woman having a high level of self-esteem in this article. To better estimate the probability, we generate a 0-1 dummy variable according to the 50% quantile of *Esteem*. In this case, 1 indicates that a woman has a high degree of self-esteem. Referring to Steiner et al. (2010), in the probit model, the matching variables should affect a woman's self-esteem and her entrepreneurial activity, but cannot be reversely affected by her self-esteem. Hence, the matching variables must be predetermined. In addition, the balance between the treatment group and the control group should be ensured as much as possible after matching. Based on this, we use the following matching variables to get the propensity score of the first stage through repeated attempts: *CPM*, *Religion*, *Education*, *Age*, *Age*2, *Marriage*, *P_Education*, *Rolec*, the Eastern China dummy (*East*) and the Western China dummy (*West*). Then, based on the propensity score calculated in the first step, the treatment effect of self-esteem on women's entrepreneurial activities is obtained by using some matching methods.

To ensure the robustness of treatment effect, three matching methods are used to estimate self-esteem effect: nearest neighbour matching (NNM), radius matching (RM), and kernel matching (KM). To better obtain the treatment effect, we only select the observable values that meet the overlapping hypothesis of PSM, and deletes those that are not matched. Based on the CFPS survey, Table 9 lists the treatment effect obtained by using the three matching methods. The estimated average treatment effect (ATE) and the average treatment effect on the treated (ATT) have very similar values and significance among the three methods. Women's self-esteem

Table 9. Treatment effect based on PSM.

Matching method	ATE	ATT
nearest neighbour matching (NNM)	0.025**	0.029**
	(0.013)	(0.013)
Radius matching (RM)	0.027**	0.024**
	(0.012)	(0.012)
Kernel matching (KM)	0.027**	0.024**
	(0.012)	(0.012)
Treatment/Control	1,700/1,838	1,700/1,838

Note: we use 1-to-3 nearest neighbour matching to better match the treatment and control groups, and the calliper in the NNM is 0.05, the radius in the radius matching is 0.05, and the kernel type in the kernel matching is Gaussian kernel. The value in square brackets under the coefficient is the standard error obtained by 200 bootstraps. The last row shows the observations that satisfy the assumption of the common support in the treatment and control groups.
Source: It is made by the authors.

Table 10. Summary on covariates balance test.

	Raw sample		T value	Matched sample		T value
Covariates	Treat	Control		Treat	Control	
CPM	0.077	0.041	5.47**	0.077	0.070	1.06
Religion	0.132	0.128	0.41	0.132	0.140	−0.89
Education	9.446	7.660	13.51***	9.446	9.464	−0.14
Age	43.18	46.87	−7.85***	43.18	43.25	−0.15
Age^2	2139.2	2493.4	−7.84***	2139.2	2144.6	−0.12
Marriage	0.753	0.766	−1.11	0.753	0.746	0.54
P_Education	2.202	1.970	8.44***	2.202	2.202	0.00
Rolec	7.382	7.476	−5.02***	7.382	7.392	−0.53
East	0.587	0.556	2.23**	0.587	0.598	−0.87
West	0.148	0.189	−3.96***	0.148	0.149	−0.12

Source: It is made by the authors.

Table 11. Balance test for matching.

Sample	Matching method	Quasi R^2	Likelihood ratio	P value	Mean bias	Median bias
Raw		0.024	115.22	0.000	12.9	13.5
Match	NNM	0.001	4.24	0.936	1.7	2.0
	RM	0.001	3.97	0.949	2.0	1.5
	KM	0.001	3.38	0.971	1.9	1.4

Source: It is made by the authors.

increases their entrepreneurial activities, consistent with the conclusion of the OLS and probit regression models. And thus, it ensures the robustness of the conclusion.

Furthermore, the t-test results in Table 10 show that there is no systematic difference between the treatment group and the control group for matching variables after matching. The quasi R^2 of Table 11 is reduced to approximately zero, and the likelihood ratio test cannot reject the null hypothesis at the significance level of 1%. After matching, both the mean bias and the median bias are reduced to a large extent. In conclusion, the sample after PSM is balanced, and the treatment effect of self-esteem obtained by PSM is relatively reliable.

4.6. Robustness check: instrument variable regression in the NSWSS

The PSM can effectively alleviate the estimation bias caused by self-selection effect based on observables. However, besides self-selection bias, the endogeneity problem caused by other factors also can lead to biased estimation of the coefficient of self-

esteem. For example, although we control many confounding variables in the model, there are still some unobservable factors omitted due to difficulty in finding a good proxy. The omitted factors will be included in the random disturbance term ε as an unexplained part of the regression equation. If ε is correlated with the explanatory variable *Esteem*, it may lead to bias in its estimate of coefficient. Besides, the measurement error of *Esteem* also can cause endogeneity bias. Therefore, we try to solve the endogeneity problem of self-esteem by looking for an instrument variable so that we can obtain a more accurate self-esteem effect. However, after traversing all variables, we find it difficult to get a suitable instrument variable for self-esteem in the CFPS dataset, that is, it is difficult to satisfy both the correlation and exclusion restriction conditions. Hence, we employ the NSWSS dataset to identify the causal relationship between self-esteem and female entrepreneurship.

In the NSWSS, we use the experience of working as a class leader in junior high school (*Mcadre*) as the instrument of self-esteem. Its rationality is reflected in the following two aspects. Firstly, during a child's school years, peer influences become more pronounced, and good relationships between friends are important for developing self-esteem. Social acceptance leads to increased self-confidence and high self-esteem, while peer rejection leads to self-doubt and lower self-esteem (Leary & Baumeister, 2000). The experience as a class leader implies more social acceptance and outstanding leadership, which consequently will enhance one's self-esteem in the long term. Hence, the experience as a class leader in junior high school closely relates to one's self-esteem. Secondly, the existing research shows that self-esteem mostly develops between the age of 13 and 23, then, it will be relatively rank-order stable (O'Malley & Bachman, 1983). Considering that the average age for junior high school is about 12 or 13, the enhanced self-esteem in the period will be in a relatively stable state in women's adult stage. Moreover, the experience at junior high school is far from the period of women's entrepreneurial activities, so, it is relatively exogenous in the model of female entrepreneurship.

Therefore, *Mcadre* is a reasonable instrument variable of self-esteem. However, it should be noted that the experience of working as a class leader in junior high school may reflect the unobserved abilities of a woman. If it is related to her education or leadership skills, it may have some influence on her entrepreneurial behaviours. However, we believe that it is not an important concern, given we hold years of education and the experience of leadership in work places in control in the model. Then, we use the instrument variable probit model (IV-probit) to estimate parameters of interest. The results are displayed in Table 12. The first stage regression in Column (1) shows that the experience of working as a class leader is positively correlated with the degree of women's self-esteem, with an estimated coefficient of 0.104. Therefore, the instrument variable *Mcadre* enhances women's self-esteem. Additionally, Crag-Donald Wald F value is 26.698. It is much higher than 10, indicating that *Mcadre* does not have the problem of 'weak instrument variable.' The second stage regression in Column (2) shows that there still exists a positive impact of women's self-esteem on their entrepreneurial activities. It further ensures the robustness of our conclusion. Besides, the Wald test of exogeneity rejects the null hypothesis that self-esteem is exogenous in the model, so, we should use IV-probit to handle the endogeneity problem of self-esteem.

Table 12. Results based on IV-probit in NSWSS.

	(1) First stage	(2) Second stage
Esteem		0.522**
		(0.236)
IV: Mcadre	0.104**	
	(0.051)	
Covariates	Yes	Yes
Provincial effect	Yes	Yes
Cragg-Donald Wald F	26.698	
Wald test of exogeneity		3.67*
N	4,142	4,142

Note: considering about the availability of variables in the NSWSS, covariates include *CPM*, *Religion*, *Education*, *Age*, Age^2, *Marriage*, *Health*, *Workexperience*, *P_Education*, *P_Occuaption*, and *Rolec*.
Source: It is made by the authors.

5. Discussion and Conclusion

5.1. Discussion

The economic participation of women plays a vital role in the process of women's empowerment, and economic innovation and growth (Jun et al., 2020; Lechman, 2019). For example, some studies show that women's participation in teams working on innovation-focused tasks can significantly increase the effectiveness of teams (Okoń-Horodyńska et al., 2020; Østergaard et al., 2011). Among various types of economic participation, women's entrepreneurship is especially concerning to the sustainable socioeconomic development of contemporary China. And, what determines female entrepreneurship is the key to propose some targeted female entrepreneurship-boosting policies. In this article, we show that relative to some traditional factors emphasized, the psychological trait of self-esteem plays even a greater role in determining Chinese women's entrepreneurship.

How does it come about? In the context of traditional cultural norms, a large proportion of Chinese women have a low degree of self-esteem according to the NSWSS survey. The mentality of serious inferiority and cowardice makes them afraid to break through the constraints of inherent social norms. The lack of self-confidence reduces their self-evaluation so that they consistently adhere to mainstream gender role beliefs, and alienates those who deviate from the mainstream values. Such a low level of self-esteem has a direct impact on women's career choices. Women are subconsciously perceived as unsuited for jobs that require risk-taking and strategic skills, such as entrepreneurship, especially in highly sophisticated sectors. However, due to low self-esteem, most women are afraid to challenge such stereotypes, but inclined to choose their careers according to the inherent occupational gender role models. Consequently, it leads to the situation that most women become workers instead of entrepreneurs.

While introducing the unique factor of self-esteem into entrepreneurial activities, this article opens a different way of thinking for the interdisciplinary research, and provides a new path for improving women's entrepreneurial activities. In this article, we show that the low level of female entrepreneurial activities can be partially attributed to women's low self-esteem. Accordingly, improving women's self-esteem, and encouraging them to challenge the traditional norms can boost female entrepreneurial

activities. Therefore, in addition to a fair entrepreneurial environment, the government also needs to strengthen women's self-esteem through various measures, such as by means of governmental laws and education to call on women to value their own values. Compared to a fair competition environment, strengthening women's self-esteem may bring them more lasting entrepreneurial intentions. Considering that self-esteem mainly develops during adolescent period, parents and teachers should actively cultivate girls' self-esteem at this stage by some of the following measures. First, develop a good and secure family relationship among family members, and avoid domestic violence and child abuse. It is shown that the relationship security with the primary caregiver in infancy is thought to be internalized and impact later relationship experiences with peers around (Feeney et al., 2008; Kochanska & Kim, 2013). Second, consistently support a girl to stand up for what she needs and wants, and let her make a valid choice and then honour that choice. The degree of parental warmth and support received predicts her self-esteem not only when assessed later in childhood but even when assessed many years later in adolescence and young adulthood (U. Orth, 2018). Third, encourage her to start team activities (e.g., sports, music) with other girls, because she is looking to other girls for building a strong identity, and within, as opposed to looking to boys for validation. The evidence suggests that peer relationships serve an important function for later self-esteem (Gruenenfelder-Steiger et al., 2016), particularly when considering social bonds within her cultural group (Reitz et al., 2016). Forth, praise a girl for her efforts and the development of new skills rather than her performance in adolescence, given that can build her confidence and self-acceptance. The evidence shows that self-esteem is fuelled by social feedback and exclusively experienced indirectly, through the eyes of significant others as well as generalized society (Wagner et al., 2018; Yeung & Martin, 2003). Fifth, do not let a girl too reliant on parents and teachers in her own things, instead, give her the opportunity and the tools to change her own clothes and to make her personal presentation on the stage. Research suggests that self-reliant individuals are less shy and neurotic, show higher thrill and adventure seeking and lower dissimulation than their less self-reliant peers, rate themselves higher on the physical attractiveness scale (Marušić et al., 1995).

Besides self-esteem-boosting measures, there remain some other measures to be taken to increase female entrepreneurship. First and foremost, the government and society should increasingly nurture a type of culture friendly to female entrepreneurs, especially, try to change people's stereotypes on women's roles in the family and society. Mass media need to spread the idea that women are not equal to housewives and their responsibility is not limited to household chores; instead, they are qualified to do whatever men are capable of doing. Once surrounding environments support a more egalitarian gender norm, various formal and informal capital brought to female entrepreneurs can solve the problem of capital insufficiency. This also affects women's self-evaluations and self-identity, so, they will consider themselves having entrepreneurial knowledge and skills, and able to respond to any challenges in front of a company. Second, the government should promote education, especially entrepreneurial education among female group. In addition to the positive impact on entrepreneurial self-efficacy, entrepreneurial education gives women a window to develop

entrepreneurial competences and skills to bridge the gender gap in entrepreneurial activities (Wilson et al., 2007). Empirical evidence reveals that education influences the entrepreneurship levels of Indian women even in a stereotypically masculine sector such as electronics (Mand et al., 2018; Thareja et al., 2020). Third, Family and social support is important to female entrepreneurship, especially for those women facing work-family conflict. Family members can provide economic support to a business venture, and provide moral and psychological support to women who have to reconcile family responsibilities with their entrepreneurial activities (Cardella et al., 2020; Jennings & McDougald, 2007). Besides, social support system such as affordable child care services also plays a crucial role in female entrepreneurship (Wang & Lin, 2019).

This article has found some interesting and insightful facts on female entrepreneurship in contemporary China. Nevertheless, we note that there remain some limitations in the study. One of them is the measurement of self-esteem variable. There are only three or four available statements closely matched with the items in RSES. And thus, possible measurement error in self-esteem in this article is an important limitation of our study. The consequence of measurement error will either overestimate or underestimate the effect of self-esteem on women's entrepreneurial activities. However, it is still a meaningful and important study in the field of women's entrepreneurship by using a shorter version of the RSES in China. As a pioneering attempt at integrating self-esteem into women's entrepreneurship, this article might throw new lights on the impact of psychological traits on women's struggle for greater capability. Moreover, we use the instrument variable method to solve possible endogeneity problem caused by measurement error in robustness check. While addressing the limitation thoroughly, the ongoing large-scale survey can specifically design items corresponding to those in the RSES. Then, we can accurately identify the marginal contribution of self-esteem to female entrepreneurship.

5.2. Conclusion

Based on the CFPS and NSWSS surveys, this article studies the influence of self-esteem on female entrepreneurial activities. While controlling for demographic characteristics, family background and community environmental factors, we find that self-esteem significantly improves women's entrepreneurial activities. After solving the self-selection and endogeny problems of self-esteem by using the PSM and instrument variable methods, respectively, the regression results further confirm the important role of self-esteem in explaining female entrepreneurship. It is worth mentioning that, compared with cognitive ability and 'The Big Five' non-cognitive ability, self-esteem plays a greater role in explaining female entrepreneurial activities.

Acknowledgements

The authors thank the editor and reviewers for their professional, insightful, and constructive comments to make this article much better. Additionally, Zhongwu Li thanks the discussants at the 5th China Labour Economists Forum and his colleagues at Zhejiang university of Technology for their helpful comments.

Disclosure Statement

The authors declared that they have no conflicts of interest to this work, and they have no competing financial interests.

Notes

1. 'Big data analysis shows the average age of entrepreneurs in Shenzhen is 36', Shenzhen Special Economic Zone News, November 07, 2018, Retrieved from http://sztqb.sznews.com/MB/content/201811/07/content_499540.html
2. 'Introducing She's the Business', HSBC Private Bank, September 2019, Retrieved from https://www.privatebanking.hsbc.com/women-and-wealth/introducing-she-is-the-Business/.
3. 'Alibaba's report on female entrepreneurs: women hold up half the sky, Internet plus 'she economy' era', the investment community, May 22, 2015, Retrieved from https://news.pedaily.cn/201505/20150522383043.shtml.
4. The reason why the CFPS is used as the main data and the NSWSS as the supplementary data, is that the NSWSS lacks cognitive ability and 'The Big Five' personality trait variables, while both variables are important control variables in the estimation of parameters of interest.
5. In the benchmark regression of Table 5, while concerned about bad control problem, we do not control for two mediating variables in Equation (1): women's social capital and risk-taking attitudes.

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