Determinants and Consequence of Entrepreneurships, Evidence from China, the UK and Russia

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Abstract

This thesis presents three empirical studies on entrepreneurship. Specifically, the first study investigates liquidity constraints and entrepreneurship in China. The second study examines why hybrid entrepreneurs exist and their effect on full-time self-employment entry in the UK. The third study investigates whether Russian entrepreneurs are optimistic. All studies use micro-level survey data.

Using the 2010, 2012, 2014, and 2016 waves of the China Family Panel Studies, I evaluate the extent to which dynamic transition into entrepreneurship made by individuals is affected by liquidity constraints in China. In addition to analyzing the effect of wealth on entrepreneurial entry, I also use the housing value appreciation acquired by the individual as a proxy for wealth. Additionally, I explore whether wealth plays a more important role on self-employment choices in less financially developed provinces and rural area compared with high financially developed provinces and urban areas respectively. My results are robust to taking the endogeneity of wealth into account.

Using the Harmonized British Household Panel Survey (BHPS) and Understanding Society datasets from the period between 1991 to 2018, I examine hybrid entrepreneurship in the UK for both males and females. After removing the heterogeneity of the individuals in our sample, I find that, for both males and females wishing to set up their own business, financial pressure and the desire for a career change, drive them from employment into hybrid entrepreneurship. Protecting against any risk of uncertainty associated with the primary job is an additional driver for male paid employees. Furthermore, for both males and females, only those hybrid entrepreneurs who wish to establish their own business during their hybrid phase, are more likely to transition into full-time self-employment than workers in full time

employment. Additionally, the good performance of the secondary self-employed job will motivate hybrid entrepreneurs to transition into full-time self-employment. However, this phenomenon is only applicable to those female hybrid entrepreneurs who wish to set up their own business in the hybrid phase. Lastly, I do not find that the age of hybrid entrepreneurs plays an important role in driving them into full-time self-employment.

Using the Russian Longitudinal Monitoring Survey round 5 to 27 over the period between 2000 to 2018, I investigate the association between entrepreneurship and optimism. I find that entrepreneurs are more likely to be optimistic than employed workers. Moreover, those who become entrepreneurs are more likely to become more optimistic than those who remain in employment. I do not find a significant association between entrepreneurship and overoptimism.

Declaration

I hereby declare that this thesis is my own original work except where stated otherwise by reference in the text. It has not been submitted, in whole or in part, for any other degree or qualification at this or any other university. Further, I have acknowledged and correctly referenced the work of others.

Acknowledgements

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List of Abbreviation

BHPS	British Household Panel Survey
BMI	Body Mass Index
CFPS	China Family Panel Survey
GDP	Gross Domestic Product
LINDA	Longitudinal Individual Data Base
LSO	Lum-sum Distribution
NIER	National Institute of Economic Research
OECD	Organisation for Economic Co-operation and Development
PSED	Panel Study of Entrepreneurial Dynamics
PSID	Panel Study of Income Dynamics
RLMS	Russian Longitudinal Monitoring Survey
SARE	System for Rapid Opening of Enterprises
SEE	Shapero's model of the Entrepreneurial Event
SOE	State Owned Enterprises
U.S.	United States
UK	United Kingdom
VAT	Value Added Tax

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Chapter One: Introduction

Since entrepreneurship is vital to a country's development, understanding its determinants and consequence is particularly important. This thesis presents three empirical studies on entrepreneurship. Specifically, the first study investigates liquidity constraints and entrepreneurship in China. The second study examines why hybrid entrepreneurs exist and their effect on full-time self-employment entry in the UK. The third study investigates whether Russian entrepreneurs are optimistic. All studies use micro-level survey data.

Large initial investment requirement prevents many people from becoming entrepreneurs. This phenomenon is referred to as liquidity constraints. Extant literature finds that liquidity constraints are one of the major concerns affecting entrepreneurship (Hurst and Lusardi, 2004). While numerous studies research the effect of liquidity constraints on entrepreneurship in developed countries (Black et al., 1996; Laferrere, 2001), few studies have been conducted on the developing countries (Djankov et al., 2006). In the largest developing country – China, a few studies find liquidity constraints to play an important role in jeopardizing entrepreneurship (Djankov et al., 2006; Yu, 2008). However, the small sample used by these studies makes them neither representative nor convincing. Since some evidences has shown that the recent boom in entrepreneurship in China is likely to be financed by entrepreneur's own wealth (Demurger and Xu, 2011), more comprehensive research based on more representative datasets is needed. My first empirical chapter fills this gap in the literature.

Paid employees who transition into entrepreneurship via a hybrid path are called hybrid entrepreneurs. Hybrid entrepreneurs are a type of moonlighters who are engaged with their own business (secondary job) while still working at their main paid job (Folta et al., 2010).

Since hybrid entrepreneurship enables individuals to maintain their monthly income while testing their business idea, it is widely used by nascent entrepreneurs all over the world (Burke et al., 2010). Furthermore, extant literature finds that hybrid entrepreneurs are not only more likely to transition into full-time self-employment, but also outperform those entrepreneurs who enter directly in their subsequent full-time business (Folta et al., 2010; Raffiee and Feng, 2014). It is therefore important to understand why paid employees choose to become hybrid entrepreneurs and whether hybrid entrepreneurs indeed are more likely to transition into full-time entrepreneurship than others. Although hybrid entrepreneurs are widely spread, the scale of this group of people is different across countries. While many European countries witness a large proportion of hybrid entrepreneurs, the second largest economy in Europe, the UK has a relatively small proportion of hybrid entrepreneurs.[1] Moreover, only a few studies focus on hybrid entrepreneurship in the UK (Schulz et al., 2017). More research is therefore needed to investigate hybrid entrepreneurship in the UK. To fill this gap in the literature, in my second empirical chapter, I investigate why paid employees choose to become hybrid entrepreneurs and whether hybrid entrepreneurs indeed are more likely to transition into full-time entrepreneurs than others in the UK.

Focusing on the consequence of entrepreneurship, an interesting characteristic of entrepreneurs has drawn my attention. Extant studies find that entrepreneurs are more optimistic than employed people (Ekeblom, 2014; Koudstall etal., 2015). After investigating this finding further, it was found that the optimism of entrepreneurs is an important determinant of entrepreneurs' performance. In fact, extant literature finds that moderate

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[1] 47.3% (Folta et al., 2010) and 68% (Strohmeyer and Tonoyan, 2007) entrepreneurs are hybrid entrepreneurs in Sweden and the Netherland while in the UK, there are only 18.5% hybrid entrepreneurs (author's calculation based on wave 1-18 of the BHPS and wave 1-9 of Understanding Society).

optimism can enhance entrepreneurs' performance while overoptimism can jeopardize it (Crane and Crane, 2007; Hmieleski and Baron, 2009). Since the overall performance of an economy is made up by the combined performance of all enterprises within that economy, figuring out whether entrepreneurs are optimistic in general can help us to better understand the current economic situation in that economy. However, while numerous relevant studies are conducted on developed countries (Ekeblom, 2014; Koudstall etal., 2015), rare studies focus on developing countries. Among all developing countries, Russia is special. Since the implosion of the Soviet Union in 1991, the economy of Russia fell apart and had experienced a tough time during the following decade. The economy of Russia gradually back to normal after Putin became the president of Russia in 2000. However, the economy of Russia does not show a decent growth thereafter. In my third empirical chapter, I therefore examine whether Russian entrepreneurs are more optimistic than the employed. Figuring out this issue may help us to learn the current economic situation in Russia from a new perspective. [2]

The remainder of this thesis is organised as follow. Section 1.1 of this chapter present the outline of each study. Section 1.2 discusses the contribution of this thesis to the extant literature. Three empirical studies are presented in Chapter Two, Chapter Three and Chapter Four, respectively. This thesis makes a conclusion in Chapter Five.

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[2] Extant reasons used to explain the current situation of Russian economy include irrational industrial structure, vast capital flight, a severely corrupt government and a large proportion of the economy being controlled by the Russia Mafia (Dzarasov, 2013).

1.1 Thesis outline

Since extant literatures use the positive association between household wealth and entrepreneurship as a proof of the existence of liquidity constraints (Taylor, 2001; Laferrere, 2001), to examine whether liquidity constraints exist in China, in Chapter Two, I investigate whether such association exists. The data used in this study is the China Family Panel Survey (CFPS) over the period between 2010 and 2016. The CFPS is conducted every two years, therefore, four waves of data (2010, 2012, 2014 and 2016) are used in this study. Specifically, in this study, individual wealth is measured by net asset owned by individual. Furthermore, since net assets suffers from endogeneity when researching the relationship between this variable and entrepreneurship, similar to extant literatures (Wang, 2012; Schmalz et al., 2017), I also use windfall gains as a proxy for individual wealth. Windfall gains in this study are measured by the amount of housing value appreciation acquired by individuals. Specifically, housing value appreciation in this study is calculated as the interaction between the increase of housing price per square meter over the relevant two years and the size of the house owned by the individual.

I construct a baseline model and the dependent variable is a dummy equal to one if the individual has become an entrepreneur in a given year, and 0 otherwise. The independent variable is individual wealth. Random effect probit and linear probability models are used in estimation. The result shows that both measures of individual wealth are positively and significantly associated with entrepreneurial entry. Furthermore, considering that the Chinese territory is heterogenous in terms of financial development, I further examine whether entrepreneurial entry is more sensitive to individual wealth in those areas with low financial development. Therefore, I interact the wealth variable with a financial indicator

dummy which equals to one if the province where the individual lives is characterized by high financial development provinces, and 0 otherwise. Considering that rural areas are typically far less developed than urban areas in China, I also interact the wealth variable with a region dummy which equal to one if the individual is living an urban area, and 0 otherwise. The result shows that the relationship between individual wealth and entrepreneurial entry is stronger in provinces characterized by low financial development and in rural area. I conclude that the liquidity constraints are binding in China.

In Chapter Three, I empirically investigate the determinants of hybrid entrepreneurship entry in the UK. I further verify whether hybrid entrepreneurs are more likely to transition into full-time self-employment than paid employees. Additionally, I examine whether good performance of the secondary self-employed job of hybrid entrepreneurs can inspire them transition into full-time self-employed. All above three issues are researched separately for males and females in the UK. Two databases have been used in this study: wave 1 to 18 of the British Household Panel Survey (BHPS) over the period 1991-2008, and waves 1 to 9 of its successor, Understanding Society, over the period 2009-2018. Similar to Folta et al. (2010), hybrid entrepreneurs are defined as those individuals who have a primary employed job while holding a secondary self-employed job. I examine five determinants of hybrid entrepreneurship – supplementing income, hedging against the uncertain risk of the main job, non-pecuniary benefits and transition into full-time self-employment (Folta et al., 2010).

I construct two baseline models in this study. The first baseline model is used to examine the determinants of hybrid entrepreneurship entry. The dependent variable is a dummy equal to one if individuals become a hybrid entrepreneur, and 0 otherwise. The key independent variable includes education level dummies, whether the primary job is permanent and/or full-

time; primary job-related variables - working hours in a normal week, job satisfaction, net payment per month; non-salary income, subjective financial situation, whether the respondent own a house, and household income (Folta et al., 2010). Random effect probit and fixed effect linear probability model are used in estimation. The result shows that for both males and females, desiring to set up their own business, financial pressure and the desire for a different job, drive them from paid employment into hybrid entrepreneurship. Hedging against the uncertain risk of the main job is an additional driver for male paid workers. This finding shows that paid employees indeed use hybrid entrepreneurship as a way to access full-time self-employment. The second model is used to verify whether hybrid entrepreneurship can facilitate the full-time self-employment entry. It is also used to verify whether the good performance of the secondary self-employed job of hybrid entrepreneurs can inspire people to transition into full-time self-employed. The dependent variable is self-employment entry. The independent variable is hybrid entrepreneurship or/and secondary self-employed job performance. The result shows that, for both male and females, hybrid entrepreneurs are indeed more likely to transition into full-time self-employment. I also find that good performance of the secondary self-employed job can inspire hybrid entrepreneurs to transition into full-time self-employed but only for females. Subsequently, I interact the dummy of hybrid entrepreneurship with a dummy for whether the respondent intends to set up his/her own business. I also interact the dummy of the secondary self-employed job performance with this new dummy. The result shows that positive association between hybrid entrepreneurship/secondary self-employed job performance and self-employment entry only appears for those who intend to set up their own business.

In Chapter Four, I empirically examine whether Russian entrepreneurs are more likely to be optimistic and overoptimistic than the employed. I also verify whether becoming

entrepreneurs is more likely to enhance the optimism level than staying employed. Round 9 to 27 of the Russian Longitudinal Monitoring Survey covering the period between 2000 to 2018 are used in this study. Similar to previous studies (Koudstall et al., 2015; Bengtsson and Ekeblom, 2014), optimism is measured by a question in RLMS which asks individuals their perspective to their future life in next 12 months – better or worse than now. There is another question in RLMS asking individuals their perspective towards their financial situation in last 12 months. Therefore, overoptimism can be calculated by comparing the answers of these two questions.

I construct three baseline models. The first is used to examine whether entrepreneurs are more likely to be optimistic than the employed. The dependent variable is a dummy equal to one if individuals are optimistic, and 0 otherwise. The independent variable is a dummy equal to one if individuals are entrepreneurs and zero if they are employed. Random effect probit and fixed effect linear probability model are used to estimate this baseline model. The result shows that entrepreneurs are more likely to be optimistic than the employed. The second baseline model is used to examine whether becoming entrepreneurs is more likely to enhance optimism than staying employed. The dependent variable is a dummy equal to one if individuals become more optimistic over two continuous waves. The independent variable is a dummy equal to one if respondents enter entrepreneurship, and zero if they stay employed. The same estimation models as above are used. I find that becoming entrepreneurs is indeed more likely to enhance optimism than staying employed. The third baseline model is used to examine whether entrepreneurs are more likely to be overoptimistic than the employed. The dependent variable is a dummy equal to one if individuals are overoptimistic. The independent variable is a dummy equal to one if individuals are entrepreneurs for two consecutive waves and zero if they are employed for two consecutive waves. Only the random

effect probit model's result shows that entrepreneurs are more likely to be overoptimistic than the employed. This effect disappears when the fixed effects linear model is used. Overall, these finding shows that in Russia, entrepreneurs are more likely to be optimistic than the employed and becoming an entrepreneur is more likely to enhance optimism than staying employed.

1.2 Contribution

This thesis contributes to extant literature in following aspects:

In Chapter Two, compared with previous studies in the Chinese context which research the impact of liquidity constraints on entrepreneurship (Djankov et al., 2006; Yu, 2008), my paper focuses on how the decision of becoming an entrepreneur is affected by liquidity constraints. Researching this dynamic process can help to better understand how nascent entrepreneurs are constrained by liquidity constraints. Given the importance of entrepreneurship in economic development, this study represents a meaningful and policy-relevant contribution.

In Chapter Three, I contribute to the literature by providing the first systematic research on hybrid entrepreneurship in the UK. Specifically, I examine all potential driving factors of becoming hybrid entrepreneurs, especially the role of desiring to start one's business on the decision to enter hybrid entrepreneurship Furthermore, I examine whether hybrid entrepreneurship can facilitate the transition into full-time self-employment. Additionally, I also examine whether the performance of the secondary self-employed job can inspire hybrid entrepreneurs to transition into full-time self-employment. These issues will be important for policy makers considering that entrepreneurial businesses are typically the engine of growth in an economy.

In Chapter Four, I contribute to the literature by providing the first research on the relationship between entrepreneurship and the likelihood of showing optimism and overoptimism in Russia. Specifically, I examine whether, compared with paid employees, entrepreneurs are more likely to be optimistic/overoptimistic. I further examine whether becoming entrepreneurs is associated with a higher likelihood of enhancing one's optimism. This is important because extant literature has showed that optimism can enhance

performance while overoptimism can jeopardize it (Crane and Crane, 2007; Hmieleski and

Baron, 2009).

Chapter Two: Liquidity Constraints and Entrepreneurship: Evidence from China

2.1 Introduction

Entrepreneurship is the engine of a country's development. It enhances employment,[3] contributes to GDP growth,[4] and increases innovation as well as improving welfare.[5] It is therefore a priority to enhance entrepreneurship, especially in developing countries.

Yet, liquidity constraints are recognised as one of the major concerns affecting entrepreneurship in developed countries. Liquidity constraints indicate that it is difficult for households to acquire the necessary liquidity from financial institutions. In order to test for the presence of liquidity constraints, the literature has typically estimated regressions explaining entrepreneurship as a function of wealth and other control variables. If there is a positive relationship between household wealth and entrepreneurship, then liquidity constraints can be regarded as existing.[6]

In the U.S., Evans and Jovanovic (1989) and Evans and Leighton (1989) show that individuals with greater household wealth are more likely to become self-employed. In the UK, Black et al. (1996) and Taylor (2001) recognise that an increase in housing value is beneficial for entrepreneurial entry. In Sweden, Lindh and Ohlsson (1996) use lottery winnings as a proxy for wealth and find that people who won the lottery were more likely to transit into entrepreneurship. In France, Laferrère (2001) finds that Intergenerational transfers of family

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[3] Hart and Oulton (2001) and Thurik (2003) find that entrepreneurial activity can contribute to employment generation and unemployment reduction in the UK.

[4] Audretsch and Keilbach (2004) find that the dynamic change of the number of entrepreneurs in eight selected OECD countries can explain 20% to 40% of their GDP growth.

[5] Desai (2011) supports the view that entrepreneurship is beneficial for motivating innovation and improving social welfare.

[6] This would in fact suggest that people use their own wealth to set up their business rather than relying the liquidity acquired from financial institutions. (Hurst and Lusardi, 2004)

capital (both financial and human capital) play an important role on the entrepreneurial decisions of sons.

In recent years, the empirical research on liquidity constraints and entrepreneurship has been extended to developing countries. Paulson and Townsend (2004) find that the wealth of households has a significant and concave effect on entrepreneurial entry in Thailand. Mesnard and Ravallon (2005) find that repatriated savings had a positive effect on entrepreneurial entry of migrants when they went back to Tunisia.

However, relevant studies on the largest developing country, China, are very limited. Moreover, these studies are not representative because they only focus on a small group of people or a specific area in China. For example, Djankov et al. (2006) conduct a survey of entrepreneurs in both China and Russia and find that liquidity constraints are the major impediment to both the formation and growth of firms.[7] Demurger and Xu (2011) find that repatriated savings of migrants played an important role on self-employment decision when these migrants went back to their hometown in China.[8]

As shown in Figure 2.1 and 2.2 in the Appendix, since the start of this decade, the numbers of individual businesses and private enterprises have experienced a dramatic increase in China.

Nevertheless, as shown in Figure 2.3, one of the major indicators used to measure the liquidity of financial institutions, the loan to deposit ratio also showed an upward trend in China (from 0.667 in 2010 to 0.717 in 2014) Since the higher this ratio, the lower the liquidity of financial

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[7] For both China and Russia, only 950 people (450 entrepreneurs and 500 non-entrepreneurs) were surveyed in this study.
[8] Only 384 migrants in the Wuwei County of China were surveyed in this study.

institutions, this suggests that the liquidity of financial institutions of China decreased constantly during this period.[9]

By contrast, during the same period, the net assets per capita of Chinese individuals has witnessed a constant increase from 133,000 yuan (around £13,300) in 2011 to 144,000 yuan (around £14,400) in 2015. (Global Wealth Report, 2011; China Family Wealth Report, 2015) The above evidence shows that, the recent boom in entrepreneurship in China may have been financed mostly through individual's wealth rather by financial institutions, which would suggest that liquidity constraints play an important role. Our work is aimed at investigating whether this is indeed the case.

The rest of this paper is organized as follows. In the second section, we review some previous studies that focus on the relationship between liquidity constraints and entrepreneurship in both developed and developing countries. Subsequently, in the third section, we highlight the gap filled by this paper. We present our hypotheses in the fourth section. Then, in the fifth section, the models used to test the hypotheses are illustrated. In the sixth section, the database used in this paper is introduced. Subsequently, the empirical results will be explained in the seventh section. Lastly, in the eighth section, we conclude and discuss some policy implications.

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[9] Van den End (2016) treat the LTD (loan to deposit) ratio as a core indicator for liquidity mismatch risk and apply this ratio to address liquidity risk in 11 European countries. Moore (2009) also use the LTD ratio to measure the liquidity of commercial banks in Latin America and the Caribbean and study the effect of financial crises on the liquidity of these banks.

2.2 Literature review

2.2.1 Household wealth

2.2.1.1 Research on developed countries

2.2.1.1.1 Research on the U.S.

The most widely recognised model about entrepreneurship is constructed by Evans and Jovanovic (1989). This static behavioural model shows that entrepreneurship is negatively affected by liquidity constraints. Specifically, at the beginning of the period, the individual needs to choose whether to become a wage worker or a self-employed entrepreneur. The wage earned by workers can be expressed as:

$$w = \mu \chi_1^{r_1} \chi_2^{r_2} \xi \qquad (1)$$

Where, μ is a constant. x_1 and x_2 represent previous employment experiences and the education level of the worker respectively. ξ is the disturbance item. Correspondingly, the income acquired by entrepreneurs is:

$$y = \theta k^a \varepsilon \qquad (2)$$

where, θ represents the entrepreneurial ability of the entrepreneur, k is the capital invested into the enterprise, and ε is the disturbance item. The total income earned by the entrepreneur is therefore:

$$y + r(z - k) \qquad (3)$$

Where, r is the gross interest rate and z is the initial wealth owned by the individual. Therefore, if z is less than k, the individual needs to borrow to make optimal investment into the enterprise. However, the authors assume there is a liquidity constraint with the maximum capital an individual can borrow being proportional to his/her wealth. The authors assume

the proportional factor is λ and the amount of capital invested into the enterprise should locate within the following interval:

$$0 \leq k \leq \lambda z \qquad (4)$$

The authors further assume that the liquidity constraint factor should be greater than 1:

$$\lambda \geq 1 \qquad (5)$$

Finally, from the model, the individual will choose to become an entrepreneur if the income of the entrepreneur is greater than the wage of the worker. The entrepreneur should therefore satisfy:

$$max \ [\theta k^a + r(z - k)] \geq \mu \chi_1^{r_1} \chi_2^{r_2} \xi + rz \qquad (6)$$

For those who choose to become entrepreneurs, the authors further check the condition that they do not suffer from liquidity constraints. This takes the following form:

Solving $\qquad max \ [\theta k^a + r(z - k)] \qquad (7)$

F.O.C $\qquad \theta a k^{a-1} - r = 0 \qquad (8)$

Therefore, the optimal investment by the entrepreneur is equal to:

$$k = (\frac{\theta a}{r})^{1/(1-a)} \qquad (9)$$

If the optimal investment is less than λz, the entrepreneurs are liquidity unconstrained.

So $\qquad \theta \leq (\lambda z)^{1/(1-a)} \frac{r}{a}$ (liquidity unconstraint) (10)

Otherwise, the entrepreneurs are liquidity constrained.

Then, the authors assume that entrepreneurial ability, θ, is correlated to the entrepreneur's initial wealth and satisfies the log-linear relationship:

$$ln\theta = \delta_0 + \delta_1 \ln z + \eta \qquad \eta \sim N(0, \delta_n^2) \qquad (11)$$

The authors then apply maximum likelihood estimation methods to estimate the structural parameters of this static model making use the 1976 and 1978 waves of the National Longitudinal Survey of Young Men (NLS). The results show that the parameter λ is positive and significant with a value of 1.44, which means that, theoretically, the amount of money which can be borrowed by individuals is less than half of their initial wealth. Furthermore, the authors use this model to calculate the fraction of entrepreneurs who suffer from liquidity constraints. Their result shows that, within the 3.81% of the population who choose to become entrepreneurs, 98.4% (3.75%) cannot make optimal investment for their business, clearly proving the existence of liquidity constraints. However, although this structural model is well-defined, it is static rather than dynamic and estimated on a relatively small sample (1443 white men).

Consistent with the conclusion of Evans and Jovanovic (1989), Evans and Leighton (1989) also find that liquidity constraints are binding in U.S. They reach this conclusion using the National Longitudinal Survey of Young Men from 1966 to 1981 and the Current Population Surveys from 1968 to 1987. The authors construct a probit model in which the dependent variable is a dummy equal to 1 if the individual becomes self-employed in year t+1 (whist he/she was a wage worker in year t). Explanatory variables include the job tenure, income, family assets, and several demographic factors. The result shows that the coefficient associated with the assets variable is positive and significant, which means individuals with greater family assets

are more likely to transit into self-employment from wage workers, ceteris paribus. This, once again, suggests the presence of liquidity constraints.

After slightly modifying the model constructed by Evans and Jovanovic (1989) and adding the additional assumption that the risk aversion of individuals is negative related to their wealth, Cressy (2000) finds that wealthy people are more likely to become self-employed even if there are no liquidity constraints. The author explains this considering that as the wealth of individuals increase, they become less risk averse and more willing to make risky decisions such as establishing their own enterprise. However, the author does not use data to empirically test their conclusions which simply come from their theoretical model.

Kan and Tsai (2006) empirically examine the validity of Cressy (2000)'s argument and shows that liquidity constraints still hold even if the decreasing risk aversion of the individual is considered. To this end, they use the 1994-1997 waves of the Panel Study of Income Dynamics to study the impact of the wealth of individuals on their probability of becoming self-employed. The authors construct a probit model in which the dependent variable is a dummy equal to one if the individual is a salary worker in year t-1 but becomes self-employed in year t. Explanatory variables contain the risk aversion level, wealth and other control variables. The results show that, even if the risk aversion variable is added into the right-hand side (RHS) of the probit regression, the effect of individual wealth on entrepreneurial entry is still positive and significant at the 1% significance level. Moreover, the effect of the risk aversion is negative and significant, which suggests that more risk averse individuals are less likely to set up their business.

Dunn and Holz-Eakin (2000) recognises that having self-employed parents is more important than wealth in determining individuals' decision to become entrepreneurs. The authors use

the National Longitudinal Surveys from 1966 to 1982 to test their hypotheses. A logit model is constructed in which the dependent variable is a dummy equal to one if individuals are wage or salary workers in year t but become self-employment in year t+1. Explanatory variables include individual assets, parental total assets and non-business assets, several dummies indicating whether either or both parents are self-employed and demographic information of individuals. The results show that although both coefficient on individual assets and parental assets are positively significant, they are quantitatively modest, which proves that the liquidity constraints theory does not hold. By contrast, the parental self-employment experience shows a strong effect on the entrepreneurial entry of individuals even controlling for both individual and parental assets. Lastly, to make sure it is the business skill rather than the taste of doing business which gets transferred by the parents to their offspring, the authors add into their logit model several interactions terms obtained by multiplying business success factors with the dummy for whether parents are self-employed.[10] The result shows that all interactions are positive and significant, which means it is the business skill transferred by the parents which motivates offspring to become entrepreneurs.

Using data from the 1989 and 1994 waves of the PSID (Panel Study of Income Dynamics), Hurst and Lusardi (2004) argue that there is no obvious relationship between liquidity constraints and entrepreneurship, as they find a positive relationship between wealth and the probability of becoming entrepreneur only at the top 5% of the wealth distribution. Specifically, a pooled probit model is constructed with two specifications (first-order and fifth-order polynomial) in which the dependent variable is a dummy equal to one if either the head

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[10] The business success factors include the net income of the enterprise, the number of staff recruited and the number of hours spent by the parents on their enterprise.

or spouse in a household is non-entrepreneur in year t but become self-employed in year t+1. Independent variables include household wealth, income and several demographic factors of the individual. The author first focus on the whole sample. The results show that, there is no obvious relationship between wealth and entrepreneurship within 95% of the wealth distribution in their sample. Subsequently, the authors divide the sample into three sub-groups (industries) based on the requirement of initial capital investment (i.e. high-starting capital industries, low-starting capital industries and professional industries) and study the relationship between wealth and entrepreneurship in each group. The results for the first two groups are similar to that of the whole sample while a clear positive relationship between wealth and entrepreneurship is found in the professional group. The authors explain their findings as follows. Firstly, low initial capital is required for starting most types of businesses in the US. Secondly, advanced financial markets enable individuals to easily acquire funds to establish their enterprises. As for the positive relationship between entrepreneurial entry and wealth found for the richest individuals, the authors explain that it is driven by the higher risk tolerance of the wealthy people and the property of "luxury goods" of the entrepreneurship. For example, people can be their own boss and improve their social status by becoming entrepreneurs. Additionally, the reason why wealthy people are more likely to set up their business in professional industries is that these people generally worked in that professional industry previously and accumulated large amount of human capital and wealth, making it smooth for them to transit from employees to employers or partners of that business.

Repeating the research of Hurst and Lusardi (2004) focusing on workers who are above 50,[11] Zissimopoulos et al. (2009) find that entrepreneurship is restricted by liquidity constraints.

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[11] The authors find that the self-employment rate and wealth are higher for middle age and older population.

The first seven waves (1992 to 2004) of the Health and Retirement Study are used in their study. Similar to the method used by Hurst and Lusardi (2004), the authors construct a probit model in which the dependent variable is a dummy equal to one if the individual is a salary employee in year t and becomes self-employed in year t+2. Explanatory variables contain total net wealth, demographic factors of the individual and occupation type dummies. Moreover, two types of specifications similar to those in Hurst and Lusardi (2004) are also used.[12] The result shows that the wealth variables are positively significant in both specification over the whole wealth distribution. Additionally, the authors divide the sample into two separate groups based on the initial capital requirement needed by the enterprise. The results show that wealth is more important for people who decide to enter high initial capital requirement industries. Lastly, the authors use a different proxy for wealth to control for its potential endogeneity– the lump-sum distribution option (LSO) which allowed the employee to cash out their pension. The result shows that individuals who own the option of LSO are more likely to become entrepreneurs, further strengthening the conclusion that liquidity constraints are binding.

Fairlie and Krashinsky (2012) also argue that, due to different incentives faced by the unemployed and the employed, a reasonable way to research the relationship between liquidity constraints and entrepreneurship is to divide the whole sample into two sub-groups (i.e. job losers and non-job losers). To compare their results with those in Hurst and Lusardi (2004), the authors use the same database, i.e. the PSID in 1984 and 1989. Specifically, the authors estimate a logit model for job losers and non-job losers separately, in which the dependent variable is a dummy equal to one if the head of a household is non-entrepreneur

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[12] The first specification uses six quintile wealth dummies, and the second specification uses five polynomial wealth variables as the key explanatory variables.

in year t but becomes self-employed in year t+1. Independent variables include the amount of wealth or wealth dummies representing different intervals of the wealth distribution and several demographic factors of the individual. The results show that self-employment entry is restricted by liquidity constraints for both groups, and especially for the former group. Subsequently, the authors use three types of variables to proxy wealth (i.e. total assets, housing value and net housing equity). All three proxies for wealth show a positive and significant effect on entrepreneurial entry. The above evidence overrides the conclusion that liquidity constraints do not exist in the U.S., which was obtained by Hurst and Lusardi (2004). However, Fairlie and Krashinsky's (2012) study does not control for risk aversion and parental self-employed experience of the individual, making the result less convincing.

2.2.1.1.2 Research on the UK

Using national VAT registration data from 1974 to 1990 and private company registration data from 1966 to 1990, Black et al. (1996) find that the increase in housing equity has a positive effect on the number of new VAT registrations, i.e. start-ups. Specifically, the authors construct a Vector Autoregressive model in which dependent variables are the number of new VAT registrations per year, the real gross interest rate, the growth of real GDP, the number of unemployed people, and the total real value of unreleased equity in housing. The result shows that, generally, a 10% increase in the housing equity value contributes to around 5% to 6% increase in the number of registrations of start-ups per year. This suggests that liquidity constraints exist in the UK.

Using data taken from the British Household Panel Survey (from 1991 to 2001), Taylor (2004) uses housing value as a proxy for household wealth and shows that the increase of housing

value enhances the probability of self-employment entry. Specifically, the author constructs a probit model in which the dependent variable is a dummy equal to one if the individual is non-entrepreneur at time t but become self-employed at time t+1. Independent variables include the housing value and several demographic factors characterising the individual. The results show that, generally, the probability of becoming self-employed will be doubled from 2% to 4% if the value of the house increases from £50,000 to £500,000, which proves that liquidity constraints bind in the UK. However, the model constructed in this paper does not control for the risk aversion of the individuals, making the result less convincing.

Disney and Gathergood (2008) repeats the study of Taylor (2004) by using the 1995 to 2000 waves of the British Household Panel Survey. Specifically, a probit model with two specifications is constructed (linear and fifth-order polynomial in net worth). The dependent variable is a dummy equal to one if the head of the household is non-entrepreneur in year t and becomes entrepreneur in year t+1. Independent variables include the net worth, a dummy for whether the father of the household head was self-employed in the last five years, and several other demographic factors. The results show that, similar to the finding of Hurst and Lusardi (2004), the positive relationship between the wealth and probability of becoming self-employed only shows at the top wealth distribution, which proves that the liquidity constraints theory is weak in the UK.[13]

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[13] However, the authors do not explain this finding.

2.2.1.1.3 Research on other developed countries

Johansson (2000) finds that the liquidity constraints do affect the probability of becoming self-employment in Finland. They reach this conclusion using the Longitudinal Employment Statistics which contains all individuals living in Finland over the period 1987-1995. Entrepreneurs are defined by whether the individual was granted an entrepreneur pension by the government in each year. Specifically, the author constructs a probit model with three types of specifications, linear, non-linear and logged. The dependent variable is a dummy equal to one if the individual becomes self-employed in year t+1 from employed in year t. Explanatory variables include wealth, years spent on education, age dummies and other control variables. The results show that, the coefficient on the wealth variable is positive and significant over the whole wealth distribution in all specifications, which clearly shows the existence of liquidity constraints in Finland. However, this study does not consider the risk aversion of the individuals and whether their parents are self-employed or not, making the result less persuasive.

Laferrère (2001) recognises that the intergenerational transfer of family capital (both physical and human capital) may play an important role on entrepreneurial decisions of the son. She uses the 1991-92 French Household Survey of Financial Assets, which contains the oversampled self-employed households and detailed information of family background, assets, education level, and inheritance transferred from the parents to the children. Considering the endogeneity of wealth, the author uses dummies for whether the son owns the house and whether he receives financial help from his parents to proxy for the wealth level. She builds a logit model, where the dependent variable is a dummy equal to one if the son is self-employed in the survey year. Explanatory variables contain the two proxies for the

wealth level, demographic characteristics of the son and self-employed experience of his father and father-in-law. The result shows that the coefficients associated with the variables measuring whether the son owns the house and receives financial help from his parents are positive and significant at the 5% level, which proves that the liquidity constraints are binding. Additionally, whether the father and father-in-law are self-employed are found to be important determinants for the son's entrepreneurship. However, in this paper, the author does not distinguish whether it is the taste of willing to work for himself or the entrepreneurial ability transferred by the father to make the son become entrepreneur. She concludes that it is the taste, which is arbitrary.

Similarly, liquidity constraints prove to have a negative effect on entrepreneurship in Sweden. Nykvist (2008) uses data from a longitudinal register-based dataset between 1999 and 2002 in Sweden called LINDA. The author constructs a probit model with two specifications (first-order polynomial and sixth-order polynomial) by setting the dependent variable as a dummy equal to one if the individual becomes an entrepreneur in year t+1 from a non-entrepreneur status in year t. Explanatory variables contain household wealth, previous entrepreneurial experience and several demographic factors. The results show that household wealth has a positive effect on the decision of becoming entrepreneur over the whole wealth distribution. However, the author does not control for the job status of the parents and the risk aversion of individuals, making the result potentially biased or even spurious.

2.2.1.2 Research on developing countries
2.2.1.2.1 Research on China

Djankov et al. (2006) conduct a pilot survey in China in 2004-2005 and Russia in 2003-2004 respectively and find that entrepreneurship is affected by liquidity constraints in both countries.[14] When asked the main sources of financing to set up their enterprise, most entrepreneurs from both countries complained about the difficulty to acquire the external financial support from the bank and said that personal savings were the main source used to start their own business. Furthermore, when asked about the main factors that impede their enterprise to expand, most entrepreneurs from both countries recognised that insufficient funds were the major reason. The above evidence shows that liquidity constraints exist in China. However, since the sample size is quite small (950 people in each country) in terms of the total number of entrepreneurs within China, the result obtained by the authors may not be representative.

Yu (2008) finds that credit constraints affect the probability of being entrepreneurs in the rural areas of China. The database used in their paper is the Rural Financial Survey implemented by the DRC (Development Research Centre) of China in 2005, consisting of 1962 rural households across 180 villages in 29 provinces. The author builds a probit model in which the dependent variable is a dummy equal to one if the head of household is an entrepreneur. Explanatory variables include assets, the area of land owned by the household and several demographic factors. The results show that both the assets and land exhibit postive and significant coefficients. The above evidence clearlys shows that the credit constraints are

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[14] They survey 400 entrepreneurs and 550 non-entrepreneurs in seven of the biggest cities including the capital city in each country respectively. Specifically, they survey 100 entrepreneurs in the capital city (Moscow and Beijing) and 50 in each of the other six cities of each country. A similar method is conducted to survey the non-entrepreneurs.

binding for Chinese rural households. However, in this study, both assets and land areas owned by the household are mesaured at the same time as entrepreuship, which could contribute to the endogeneity problem and make the result biased.

Demurger and Xu (2011) find that repatriated savings of migrants have a positive effect on their entrepreneurial entry when they go back to Wuwei. They reach this conclusion using data from a rural household survey implemented in Wuwei County from September to November 2008. After screening, the sample only contains 384 workers viable for the research. The authors firstly conduct a comparative analysis and recognise that return migrants are more likely to become entrepreneurs than those without migration experience. Subsequently, they build a probit model in which the dependent variable is a dummy equal to one if the return migrant is an entrepreneur in the survey year, and 0 otherwise. Explanatory variables contain demographic factors, household characteristics such as family size, the number of children, the frequency of job changes, and repatriated savings. The results show that both the frequency of the job change and the repatriated savings of migrants play a prominent role on their subsequent entrepreneurial entry when they go back to their hometown. To some extent, this study proves the existence of liquidity constraints in rural area of China. However, the sample size is very small (239 households including 969 individuals) and focuses on a specific county, making the result of the paper not very representative.

Using the China Family Panel Survey (CFPS) from 2008 to 2010, Li and Wu (2014) find that household wealth has a postive effect on the probability of being an entrepreneur in China .The authors construct three linear probabilty models for the whole sample, house owners and non-house owners respectively. In all three models, the dependent variable is a dummy

equal to one if the head of the household is an entrepreneur in the survey year. Explanatory variables include household wealth and other corresponding control variables for different samples. The results shows that in all three equations, the coefficient associated with wealth is postive and significant at the 1% level, which suggests that liquidity constraints are present. However, since this study uses the wealth owned by the household in the same survey year in which entrepreneurship is measured, , the results are likely to be subject to an endogeneity bias. Secondly, many important control variables such as risk aversion and the job status of the parents of the individual are not considered by this study.

Hu and Chen (2018) use the China's Urban Household Survey (UHS) surveyed in 2009 to examine what types of homeowners are more likely to be entrepreneur. Specifically, the author research how house ownership, mortgage loans and housing prices affect entrepreneurship in China. They build a probit model, in which the dependent variable is whether the individual is entrepreneur or not in the survey year. The independent variables include the housing price, house ownership, the interaction between the house ownership and housing price, the interaction between the house ownership and the mortgage loan, as well as other control variables. The result of the probit model shows that housing price and house ownership have negative direct effects on the entrepreneurship. However, the coefficient on the interaction between house ownership and housing price is positive and significant while that of the interaction between the house ownership and mortgage loan is negative and significant. The authors explain that although the house ownership and the increase of housing price have a negative direct effect on entrepreneurship, but when housing prices increase, house owner are more likely to become entrepreneurs since they can acquire the loans from the bank through providing their house as collateral. The authors refers to this situation as "collateral effect". For those individuals who still need to repay the mortgage loan

from the bank, they are less likely to be entrepreneur because they are under pressure to repay the mortgage loan and will not dare to give up their current job. Moreover, the higher the mortgage loan needing to be repaid, the less likely individuals are to be entrepreneur. The authors refer to this situation as the "lock-in effect". This paper also supports the presence of liquidity constraints in China.

2.2.1.2.2 Research on other developing countries

Paulson and Townsend (2004) recognise that entrepreneurship is negatively affected by liquidity constraints in Thailand. The authors use data from a socioeconomic survey conducted by themselves from March to May 1997. This survey collects information from 2880 households living in rural and semi-urban regions of Thailand, with about 21% of them having set up their own business.[15] The authors examine the relationship between the wealth prior to starting the business and entrepreneurship.[16] A probit model is constructed, in which the dependent variable is a dummy equal to one if the current business run by the household was set up in last five years, and 0 otherwise. Explanatory variables include age, age squared, education, wealth level six years ago and a dummy indicating whether the head of the household was a member of various financial institutions. The results show that the wealth has a significant and concave effect on entrepreneurial entry. Clearly, liquidity constraints are binding in Thailand. However, the model constructed in this paper does not consider risk

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[15] The survey collects information on wealth, occupational history, the use of financial intermediaries, demographics, education and entrepreneurial activities of the households.
[16] The authors examine whether those who were wealthier six years before are more likely to have become entrepreneurs in the last five years.

aversion attitudes of the individual, making the conclusion less persuasive due to a possible omitted variable bias.

Similar to the findings of Demurger and Xu (2011), Mesnard and Ravallon (2005) also recognise that repatriated saving matters for the entrepreneurial entry of return-migrants in Tunisia. The data used in their study comes from a survey conducted by the Tunisians Settled Abroad Office in 1989, containing detailed information on the returning migrants who worked abroad at least once during the period between 1974 and 1986. The authors construct a logit model in which the dependent variable is a dummy equal to one if returning migrants are entrepreneurs in the survey year, and 0 otherwise. Explanatory variables contain the repatriated savings of the return migrant, demographic information and the birthplace of the migrant. The results show that repatriated savings drive the decision of return migrants to become entrepreneurs when they go back to Tunisia. The coefficient associated with the savings is still significant in the IV regressions where savings are instrumented using a dummy for whether the individual migrated to other countries before 1974.[17] This paper concludes therefore that liquidity constraints are binding in Tunisia as well.

2.2.1.3 Summary of household wealth research

Overall, most previous research finds that household wealth is positively associated with self-employment entry in both developed and developing countries. However, some studies argue that the positive relationship between household wealth and entrepreneurial entry may be spurious due to the endogeneity of wealth.[18] These studies argue that since many

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[17] European countries closed their borders after 1974, contributing to the fact that many Tunisian workers migrated to Libya where wages were lower than in European countries.
[18] Examples of these are Hurst and Lusardi (2004) and Fairlie and Krashinsky (2012).

unobservable factors such as entrepreneurial ability can affect both wealth and entrepreneurship, the positive relationship between wealth and entrepreneurship may be affected by omitted variable bias. However, it is difficult or impossible to control for all unobservable variables. The most common approach used by previous studies to solve the endogeneity problem of wealth is to use the windfall gains of the household as either a proxy or an instrument for wealth.[19] Since windfall gains are unexpected changes in wealth, they can be treated as exogenous. We next review the literature researching the relationship between the windfall gains received by households and self-employment entry in both developed and developing countries.

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[19] The most common windfall gains used by previous studies are housing value appreciations, lottery winnings and inheritances.

2.2.2 Windfall gains
2.2.2.1 Research on developed countries
2.2.2.1.1 Research on the U.S.

In the paper we discussed above, Hurst and Lusardi (2004) also apply two types of windfall gains (i.e. inheritance received in the past and future and change of housing price) as instruments to deal with the potential endogeneity of wealth.[20] They find that both past and future inheritance received by the household motivates entrepreneurial entry. The authors argue that if the inheritance only proxies for liquidity, then only past inheritance received should contribute to individual self-employment.[21] Therefore, this result puts into question the existence of liquidity constraints. Furthermore, the effect of the housing value appreciation on self-employed entry is also insignificant. However, the sample used by the authors only contains 7500 observations in which only a limited number (304) of transitions from non-entrepreneurs to self-employed are included, making the conclusions reached by the authors less convincing.

Fairlie and Krashinsky (2012) use another database called the CPS (Current Population Surveys) from 1993 to 2004 and measure wealth using housing value appreciation.[22] They estimate a logit model in which the dependent variable is a dummy equal to one if the individual is not self-employed in time t but become self-employed in time t+1. Explanatory variables include "wealth" and several demographic factors. They find that "wealth" exhibits a positive and significant coefficient. Specifically, a 10% appreciation in housing value in one

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[20] The author check whether the inheritance received between 1991 and 1994 is related to the self-employment entry between 1989 and 1990 and compare the result with that using the past inheritances.
[21] Because it is difficult for the household to borrow against the future resources.
[22] The housing value appreciation is the residual of a regression in which the dependent variable is the 4-year MSA-level (Metropolitan Statistical Area) housing value appreciation and the control variables include several demographic factors and regional characteristics such as state GDP per capita, unemployment rate and labour force participation.

year will contribute to a 0.43% increase in the probability of the individual becoming self-employed in next year. This effect is relatively large given the limited base transition rate from non-entrepreneurship into entrepreneurship (2.53%).

2.2.2.1.2 Research on the UK

Blanchflower and Oswald (1998) investigate whether the probability of being self-employed depends on whether the individual has ever received an inheritance or gift. They use four (1981) and five (1991) sweep data from National Child Development Study. A probit model is constructed. The dependent variable is a dummy equal to one if the individual is self-employed in a survey year. Explanatory variables contain inheritance and gifts received by the individual, father's job, and several demographic factors. The results show that receiving inheritances and gifts does raise the probability of being self-employed. Specifically, individuals who receive an inheritance of £5000 or above are twice as likely to become self-employed than those who receive nothing. This suggests that the liquidity constraints are binding in UK.

Taylor (2001) finds that receiving windfall gains such as inheritances and lottery winnings is positively related to the individuals' transition from non-entrepreneurship into entrepreneurship. The sample used in their paper is constructed using data from Waves 4, 5 and 6 of the British Household Panel Survey between 1994 and 1996. Specifically, the author constructs a multivariate probit model, where the dependent variable is a dummy equal to one if the individual is a non-entrepreneur in wave 4 but become self-employed in wave 6. Explanatory variables contain the type of windfall gain received, the amount of the windfall gain and several demographic factors such as education and age of the individual in wave 5.

The results show that the probability of becoming self-employed is positively and concavely related to the amount of the windfall payment received. Moreover, inheritance received drives entrepreneurial entry, while job bonuses received impedes the entry. The author explains that receiving lump-sum capital gains such as inheritances encourage individuals to enter self-employment, whilst receiving a job-bonus that rewards performance makes individuals less likely to transit into self-employment. Overall, the findings in this paper are consistent with the liquidity constraint hypothesis.

Georgellis et al. (2005) extend Taylors' (2001) study by using the BHPS (British Household Panel Study) in more recent periods and find similar results. The authors construct their sample by pooling the 1995, 1997, 1998 and 1999 waves together. Subsequently, a pooled probit model is estimated. The dependent variable is a dummy equal to one if the individual is non-entrepreneur in year t-1 but become self-employed in year t+1. The explanatory variables include both demographic and financial factors characterising the respondent. Moreover, the models are estimated both on the full sample and on subsamples of people who transit into self-employment from being employed, unemployed, and out of the labour market. It is found that the amount of windfall gains has a positive and concave effect on the probability of entrepreneurial entry and that unemployed individuals are more likely to become self-employed than employed workers. The result in this paper are consistent with those by Taylor (2001).

Disney and Gathergood (2008) use inheritance and unanticipated changes in housing prices as instrumental variables for wealth. Using data from the 2000 and 2001 waves of the British Household Panel Survey, they find that consistent with Hurst and Lusardi (2004), both past inheritances and future inheritances received by the household drive entrepreneurial entry,

which casts doubt on the validity of using inheritance as an instrumental variable for household wealth. However, shocks to housing prices drive entry into entrepreneurship. To further examine whether liquidity constraints are released by a positive housing price shock, the authors check whether households who become self-employed are more likely to conduct refinancing activities on their house when they face positive house price shocks. They find no evidence of this as self-employed households behave the same as non-entrepreneurs when they obtain the gains from positive shocks to housing prices, which suggests the presence of liquidity constraints is not obvious in the UK.

2.2.2.1.3 Research on other developed countries

Lindh and Ohlsson (1996) is the first paper to use lottery winnings as a proxy for wealth. Using data from the 1981 wave of the Swedish Level of Living Survey, they find that receiving windfall gains indeed plays an important role on the probability of being self-employed. Specifically, the authors construct a probit model in which the dependent variable is a dummy equal to one if the individual is self-employed in 1981. The independent variables include a dummy for whether the individual has won a lottery prize, personal and spouse's inheritance in quadratic form, the parents' job and several demographic factors of the individual. The results show that receiving a lottery prize has a positive effect on the probability of being self-employed, while there is an inverted U relationship between the amount of personal inheritance received and the probability of being entrepreneur. Additionally, individuals with self-employed parents are more likely to be entrepreneur. The evidence therefore suggests that   liquidity constraints are binding in Sweden.

Nykvist (2008), which was discussed above, also uses housing capital gains as an instrumental variable for household wealth and finds that liquidity constraints negatively affect entrepreneurial entry in Sweden. Specifically, his results show that there is a strong positive relationship between housing value appreciation and the probability of entrepreneurial entry. Since the type of start-ups set up by entrepreneurs can represent their risk aversion, the author further checks whether wealthy people are more likely to set up risky types of enterprises. They find that wealthy people still prefer to start less risky types of enterprises, proving that the positive relationship between the wealth and entrepreneurial entry is not due to the decreasing risk aversion. These additional tests strengthen the initial finding that liquidity constraints are binding in Sweden.

Schmalz et al. (2017) recognize that the appreciation of housing values contributes to entrepreneurial entry by using 11 continuous waves of the French Labour Force Statistics data from 1992 to 2002. Specifically, there are three types of dwellers in France: homeowners with outright ownership of the house, homeowners with partial ownership of the house due to an outstanding mortgage and renters. Based on the French law, when the housing price goes up, only the first type of homeowners can use their house as collateral to acquire a loan from the bank. Therefore, the authors wonder whether, compared with the latter two types of dwellers, the first type of homeowners are more likely to become entrepreneurs when housing prices increase. Specifically, the following linear probability model is estimated:

$$E_{i,j,t+1} = \alpha + \beta * Owner_{i,t} * \Delta p^{t-6 \to t-1}_j + \theta * Owner_{i,t} + \gamma * Z_{i,t} * \Delta p^{t-6 \to t-1}_j + \delta_l + \delta_{jt} + \varepsilon_{i,j,t} \tag{12}$$

In this equation, the dependent variable is a dummy variable equal to 1 if the dweller I living in the region j is an employee in year t but become entrepreneur in year t+1. $Owner_{i,t}$ is a dummy equal to 1 if the dweller has outright ownership of the house in year t. $\Delta p^{t-6 \rightarrow t-1}{}_j$ is the cumulative growth of the housing price in region j between time t-6 and t-1. $Z_{i,t}$ represent control variables. The result shows that β is positive a significant in equation (12), which means that, in those regions experiencing higher housing price appreciation, dwellers are more likely to set up their own business than the renters. This confirms that liquidity constraints exist in France.

2.2.2.2 Research on China

In 1994, the urban property reform in China allowed state employees to purchase the house they rented from their employers at discounted price, while private employees who worked for private enterprises rather than SOE were not allowed to do so. Wang (2012) finds that, when the housing price increases, state employees are more likely than private employees to become entrepreneurs. The author uses the China Household Nutrition Survey from 1989 to 2004 and China Statistical Yearbooks which record the housing price in different towns, cities and provinces from 1993 to 2004. He constructs a fixed effect logit model as follows:

$$y_{ijt} = g(\alpha_1 State\_Resident89_i \times Post_t + \alpha_2 State\_Resident89_i \times Post_t \times \Delta q_{jt} + \alpha_3 \times Post_t \times \Delta q_{jt} + \alpha_4 \times Post_t + \alpha_5 x_{ijt} + \gamma_i + \varepsilon_{ijt}) \tag{13}$$

In equation (13), y_{ijt} is a dummy equal to one if the head of the household i in year t in province j is self-employed. $State\_Resident89_i$ is a dummy equal to one if the household

lived in a state-owned housing in 1989, and at least one member of the couple was a state

employee in 1989 or in the next two waves (1991 and 1993). $Post_t$ is a dummy equal to one

in the three periods after the property reform, i.e. 1997, 2000, and 2004. Δq_{jt} represents the

change in housing prices in province j and time t. x_{ijt} represents the age of the individual. γ_i

represents individual fixed effects. The results shows that α_2 is postive and significant , which

suggests that liquidity constraints are binding for Chinese entrepreneurs. However, the

author uses the contemporary change of housing prices, which may have limited effect on

the probability of being entrepreneur in the same period , weakening the validity of the

conclusion that liquidity constraints exist in China.

2.2.2.3 Summary of windfall gain research

Evidences from previous studies shows that individuals who received windfall gains are more

likely to become entrepreneurs. Moreover, different types of windfall gains such as

inheritance, lottery winnings and housing value appreciation all show a positive effect on

entrepreneurial entry. Similar to Wang (2012) and Schmalz et al. (2017), we use the housing

value appreciation acquired by households as a proxy for their wealth in this paper.

2.2.3 Summary of literature review

Previous studies show that liquidity constrains do exist and impede the entrepreneurship in

both developed and developing countries. Specifically, in terms of the studies conducted in

the developed countries, both the household wealth and windfall gains are found to be

positively associated with the entrepreneurial entry. However, few of these studies consider

the diversity of the financial development within the different areas of a country and research the households living in different areas separately. It makes the results acquired by these studies less accurate since liquidity constraints are typically less severe in more financial developed areas.

In terms of the studies conducted in the largest developing country – China, both the household wealth and windfall gains are found to be positively associated with being entrepreneurs. Compared with the research focusing on the contemporary association between the wealth and being entrepreneurs, studies examining the association between the wealth and entrepreneurial entry will be more interesting since it is dynamic association rather than static one. However, few studies in this basis has been conducted in China. Furthermore, extant studies conducted in China do not consider the diversity of financial development in different areas of China as well, making the results acquired by these studies less accurate.

2.3 Contributions

Compared with previous studies in the Chinese context which research the impact of liquidity constraints on the stock of entrepreneurs (i.e. the number of existing entrepreneurs),[23] our paper focuses on how the decision of becoming an entrepreneur is affected by liquidity constraints. Given the importance of entrepreneurship in economic development, our study is worth conducting since it can identify the extent to which liquidity constraints hinder entrepreneurial entry in China.

This paper will make four specific contributions to the literature:

(1) It will first examine the extent to which wealthy people are more likely to become entrepreneurs in China. Understanding the link between wealth and entry into entrepreneurship will enable us to assess the extent to which liquidity constraints bind in China.

(2) To solve the problem of endogeneity of the wealth variable, in addition to analysing the effect of wealth on individual self-employment decisions, this paper will also use windfall gains received by the head of households as a proxy for their wealth to re-examine its effect on entrepreneurial entry.

(3) Considering that the Chinese territory is heterogenous in terms of financial development, our study will further examine whether entrepreneurial entry is more sensitive to wealth/windfall gains in those provinces characterized by low financial development. This will help us to understand the different effects of liquidity constraints in different provinces of China.

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[23] Examples of these are Djankov et al. (2006), Yu (2008), Demurger and Xu (2011) and Li and Wu (2014).

(4) Considering that rural areas are typically far less developed than urban areas in China, our study will also examine whether entrepreneurial entry is more sensitive to wealth/windfall gains in rural areas. This will help us to understand the different effects of liquidity constraints on the rural and urban areas of China.

2.4 Hypotheses

Most previous studies show that wealthy people are more likely to become self-employed in both developed countries and developing countries including China.[24] In the Chinese context, given the poor financial development characterising the country, individuals are more likely to finance entry into entrepreneurship using their own wealth rather than liquidity provided by financial institutions Therefore, our first hypothesis reads:

Hypothesis 1: In China, due to the presence of liquidity constraints, wealthier people are more likely to become self-employed, ceteris paribus.

Subsequently, we also find evidences from previous studies that individuals who receive windfall gains are more likely to become entrepreneurs in both developed countries and China.[25] We will focus on housing value appreciation as a proxy for windfall gains, as this is a common phenomenon in China. Based on data from the China Statistical Yearbooks, we can in fact see that the national average housing price per square meter increased constantly from 5034 yuan (around £503) in 2010 to 6595 yuan (around £659) in 2014. (31% increase) It is reasonable to assume that the recent boom of entrepreneurship in China is attributed to the fact that latent entrepreneurs use their house as collateral to acquire loans to set up their business. Our second hypothesis is therefore the following:

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[24] Such as ZIssimopoulos et al. (2009) and Fairlie and Krashinsky (2012) on U.S.; Taylor (2004) and Disney and Gathergood (2008) in UK; Yu (2008) and Li and Wu (2014) in China.
[25] See, for example, Fairlie and Krashinsky (2012) on the U.S.; Georgellis et al. (2005) and Disney and Gathergood (2008) on the UK; Wang (2012) on China.

Hypothesis 2: In China, due to the presence of liquidity constraints, people who have received windfall gains are more likely to become self-employed, ceteris paribus.

Furthermore, liquidity constraints are likely to be more binding in provinces characterised by lower financial development. We therefore hypothesise that:

Hypothesis 3: In China, the relationship between wealth/windfall gains and the probability of entrepreneurial entry is stronger (weaker) in those provinces characterized by lower (higher) financial development, ceteris paribus.

Finally, as the financial market in rural area is typically less advanced than that in urban area in China, our final hypothesis reads:

Hypothesis 4: In China, the relationship between wealth/windfall gains and the probability of entrepreneurial entry is stronger in rural areas than in urban areas, ceteris paribus.

2.5 Baseline specification
2.5.1 Baseline model

To test the first two hypotheses, we make use of the following baseline equation based on

Hurst and Lusardi (2004) and Guiso et al. (2009):

$$\Pr\left(Entrepreneur_{\text{ij},t+1} = 1\right) = \beta_0 + \beta_1 Wealth_{it}/Windgain_{it} + \boldsymbol{\beta_x}\boldsymbol{X_{it}} + v_i + v_j + v_t + \varepsilon_{ijt} \tag{14}$$

where the dependent variable is a dummy equal to one if the individual i is non-entrepreneur

in time t but become entrepreneur in time t+1.

Our key explanatory variable is:

$Wealth_{it}$, which represent the net assets owned by individual i at time t and is defined as the

sum of housing equity, other real estate, vehicles, savings, stocks, funds, bonds, retirement

accounts and others, net of debt.

As in Wang (2012) and Schmalz et al. (2017), $Windgain_{it}$ is the amount of housing value

appreciation acquired by individual i at time t.

In line with the hypotheses (H1) and (H2), we expect β_1 in equation (14) to be positive and

significant.

X_{it} are other control variables.[26]

v_i is the individual heterogeneity effect.

v_j is the regional effect.

v_t is the time effect.

ε_{ijt} is the stochastic error.

Subsequently, to test hypotheses (H4) and (H5), we modify equation (14) as follow:

$$\Pr\left(Entrepreneur_{ij,t+1} = 1\right) = \beta_0 + \beta_1 Wealth_{it}/Windgain_{it} * Urban_i/Highdevelop_i + \beta_2 Wealth_{it}/Windgain_{it} * (1 - Urban_i/Highdevelop_i) + \boldsymbol{\beta_x X_{it}} + v_i + v_j + v_t + \varepsilon_{ijt}$$

$$(15)$$

In equation (15):

$Urban_i$ is a dummy equal to one if the individual *i* lives in the urban area, and 0 otherwise.

$Highdevelop_i$ is a dummy equal to one if the province in which the individual *i* lives is classified as a high financial development province, and 0 otherwise.

All other variables are the same as those in equation (14).

In line with hypotheses (H3) and (H4), we expect β_2 to be greater than β_1 and both coefficients to be statistically significant in equation (15).

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[26] The detail of control variables is illustrated in the Appendix – Control variables.

2.5.2 Estimation method

Firstly, considering the dependent variable in our baseline models is binary, similar to the estimation method used by previous literature researching the relationship between wealth and self-employment entry, [27]we will use pooled-probit and OLS model to estimate equations (14) and (15). Subsequently, to control for unobserved heterogeneity, equations (14) and (15) will be estimated by using random-effect probit and random-effects linear model.[28]

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[27] Pooled-probit model is used by Evans and Jovanovic (1989), Lindh and Ohlsson (1996), Blanchflower and Oswald (1998), Hurst and Lusardi (2004), Taylor (2001), Taylor (2004), Paulson and Townsend (2004), Georgellis et al. (2005), Kan and Tsai (2006), Disney and Gathergood (2008), Nykvist (2008), Yu (2008), Zissimopoulos et al. (2009) and Demurger and Xu (2011). Linear probability model was used by Hurst and Lusardi (2004), Li and Wu (2014) and Schmalz et al. (2017).

[28] Because the sample of individuals that we use in this paper is randomly drawn from a large population, it is appropriate to use random-effects model (Baltagi, 1995).

2.6 Data
2.6.1 CFPS

we use the Chinese Family Panel Studies (CFPS) in our study. This database is currently the largest and most comprehensive social panel survey in China. The CFPS collects data from a variety of levels pertaining to the community, family roster, family, adult family member and child family members. It contains information on socioeconomic conditions, demography, education, health, and family's assets and loans. In 2010, the national baseline survey was conducted in 25 provinces, designed to target 16,000 households.[29] The households surveyed in 2010 were anchored and became the permanent tracking objects. Subsequently, another three follow-up surveys were conducted in 2012 2014 and 2016 respectively.

This study uses the family roster, as well as the family and adult family members' data in the 2010, 2012, 2014 and 2016 waves of the CFPS.[30] From the family roster data, we figure out the head and spouse of each household and the education level of their parents, as well as the number of children they have. From the family data, we can acquire the wealth and family size information for each household. From the adult family members' data, we can get information on their income, gender, age, education, marital status and health. Since the location (Urban/Rural and province) of the household is repeated in the three sub-data sources, we take these data from the family data. Considering the key issue researched in this paper is the labour choice of individuals, we limit our sample to those aged 20 to 60 and exclude people who has exited the labour market, (i.e. unemployed). All outliners are deleted from our samples.

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[29] The actual number of households surveyed in the 2010, 2012, 2014 and 2016 waves of the CFPS are 14,798, 13,315, 13,946 and 14,033 respectively.
[30] The 2016 wave of CFPS is only used to check whether the individuals in the 2014 wave of the CFPS became entrepreneur in the 2016 wave.

2.6.2 Housing value appreciation

In terms of the windfall gains used in this paper, we focus on housing value appreciation and use it as a proxy for wealth (Wang, 2012; Schmalz et al., 2017). To calculate the housing value appreciation for each individual, rather than relying on the housing value reported by the individuals themselves, [31]we use the following approach:

$$Housing\ value\ appreciation_{i,t+1}$$
$$= (Average\ housing\ price\ per\ square\ meter\ of\ the\ capital\ city_{t+1}$$
$$- Average\ housing\ price\ per\ square\ meter\ of\ the\ capital\ city_t)$$
$$* size\ of\ the\ house_{i,t}$$

$$(16)$$

where $Housing\ value\ appreciation_{i,t+1}$ represents the change of the average housing price per square meter of the capital city of the province where individual *i* lives in from time *t* to time *t*+1 multiplied by the size of the house owned by individual *i* at time *t*.

Since the information related to the location of households in the CFPS is limited to the provincial level, we do not know the actual city where each individual lives. Under this circumstance, this paper uses the change of average housing price per square meter of the capital city of the province where a given individual lives in order to proxy the change of average housing price per square meter of the actual city in which that individual lives. Information on the size of the house owned by each individual can be found in CFPS.

There are two main reasons why I use housing value appreciations as the proxy of the wealth to verify the potential causal relationship between liquidity constraints and entrepreneurial entry in China:

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[31] The Self-reported housing value is likely to suffer from endogeneity bias, individuals who prepare to become self-employed will overstate their housing value in order to enhance their likelihood to acquire a greater loan from the bank.

Firstly, based on the database used in Chapter 2 – CFPS (China Family Panel Studies), there is indeed no appropriate instrument variable for the wealth can be applied.

Secondly, numerous previous studies have applied the housing value appreciation as the proxy of the wealth to research the potential causal relationship between liquidity constraints and entrepreneurial entry in other countries. For example, Fairlie and Krashinsky (2012) use housing value appreciation as the proxy of the wealth and find that liquidity constraints is binding for the entrepreneurial entry in the U.S. Schmalz et al. (2017) use housing value appreciation as the proxy of the wealth and find that liquidity constraints exist in France since in the regions experiencing higher housing price appreciation, dwellers are more likely to set up their own business.

Furthermore, the reason why I use the housing value appreciation of the capital city of each province to represent the capital gain acquired by all individuals living in that province is that CFPS only provide the provincial location of each household. It means I cannot acquire the city level location of each household in CFPS. It is purely the limitation of the database – CFPS. To some extent, using provincial level housing value appreciation rather than city-level one will make my result deviate to the true value a little bit. However, it is beneficial to use housing value appreciation as the proxy of wealth since housing value appreciation is more exogenous than the wealth. Therefore, for verifying whether there is a causal relationship between the liquidity constraints and entrepreneurial entry in China, I take both results acquired by applying the wealth as the key variable directly and applying the housing value appreciation as the proxy of wealth into consideration.

Table 2.1 shows the average housing price per square meter of four independent municipalities (Beijing, Tianjin, Shanghai, Chongqing) and 21 provincial capitals in different

time point. This paper uses the change of housing value from January 2010 to December 2011 to construct the proxy for the wealth of individuals in the 2010 wave of CFPS. Similarly, we use the change of housing value from January 2012 to December 2013 to construct the proxy for the wealth of a given individual in the 2012 wave of CFPS, and the change in the housing value from January 2014 to December 2015 to proxy for the wealth of an individual in the 2014 wave of the CFPS.

2.6.3 Financial development indicator

In order to differentiate the high financial developed provinces from the less financial developed ones, we need to measure financial development in different provinces. This paper uses the NERI index, which measures the marketization of China's provinces, gauging the depth and breadth of the market-oriented reform of the provinces, autonomous regions and municipalities directly under the central government of China. This index considers five aspects of a province: 1) the relationship between the local government and local market, 2) the development of the Nonstate Economy, 3) the development of the product markets, 4) the development of the factor markets and 5) the development of the intermediate institutions of the market, as well as the legal environment. Specifically, the development of the factor markets considers three aspects: 1) the marketization and competition of the local financial industry, 2) the marketization of the distribution of the credit funds and 3) the introduction of foreign capital and labour mobility. Therefore, this index is a good indicator of financial development in different provinces. [32] Table 2.2 shows the NERI index for 25

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[32] More information related to NERI index can be found in Fan and Wang (2011).

municipalities or provinces from 2010 to 2014. The top five municipalities or provinces are defined as high financial developed provinces in each year.

2.6.4 Pooled and panel samples

This paper constructs three different samples to satisfy the need for running different types of regressions. First, following the majority of previous studies, we first run pooled regressions. A pooled sample is built using the 2010, 2012, 2014 and 2016 waves of the CFPS.[33] Specifically, in each of the 2010, 2012 and 2014 years, we select those individuals who are aged 20 to 60 and recruited by other employers, (i.e. they should not be self-employed). Our pooled sample is made up by these individuals pooled together. In each of the 2010 to 2014 waves, a new entrepreneur is defined as someone who is an employee in both year t but become self-employed in year t+2. Non-entrepreneurs are those who are employee in both year t and year t+2. Net asset information is available for all individuals in the sample. Table 2.3 presents summary statistics of the demographic and family information of the new entrepreneur and non-entrepreneurs in each wave from 2010 to 2014. Table 2.4 presents the same contents as table 2.3 but whose housing value appreciation information is available in each wave from 2010 to 2014.[34]

In order to control for unobserved heterogeneity, this paper constructs a modified panel sample to run the panel regression. To the best of our knowledge, this paper is the first to apply panel data technique to study the relationship between liquidity constraints and

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[33] The 2016 wave of CFPS is only used for checking whether the individuals in 2014 wave of CFPS become self-employed or not in 2016.

[34] Since some households who provide the size of their house do not provide the value of their house in the CFPS, it makes the sample size of housing value appreciation is a little bit larger than that of net asset.

entrepreneurship. Specifically, in the 2010 wave of the CFPS, we select the individuals who are aged 20 to 60 and employed by other employers. In the 2012 and 2014 waves of the CFPS, we select both self-employed individuals and employees who are aged 20 to 60 but exclude the self-employed individuals who were not respondents in the previous wave, in other words, we exclude the new respondents in 2012 and 2014. 35 In both 2010 and 2014, new entrepreneurs are defined as those who are employees in year t but become self-employed in year t+2. The rest individuals are those who are employees or self-employed in both year t and year t+2 or those who are self-employed in year t but become employees in year t+2. Table 2.9 presents the summary details of the demographic and family information of the entrepreneur and non-entrepreneur in each wave from 2010 to 2014. Table 2.10 present the same content as table 2.9 but for those respondents for whom housing value appreciation information is available in each wave from 2010 to 2014.

As a robustness test, a raw panel sample is also built in this paper. Only unemployed individuals are deleted from the sample, as they are not relevant to our research question. The purpose for building this sample is to see whether the effect of net assets or housing value appreciation on self-employment entry still hold in this larger sample. 36 Table 2.15 presents the summary details of the demographic and family information of the new entrepreneurs and non-entrepreneurs in each wave from 2010 to 2014. Table 2.16 presents

[35] The reason why we delete the new self-employed individuals in wave 2012 and 2014 is that this group of individuals will cause bias to our estimation result. They have relatively higher net asset but the value of the dependent variable for them is zero.

[36] The dependent variable (Entrepreneur) is equal one if the individual is non-entrepreneur in wave N (time t) but become entrepreneur in wave N+1 (time t+2). For other types of transitions, the dependent variable will be treated as zero. These are the following, type 1: keep entrepreneur in wave N and wave N+1; type 2: entrepreneur in wave N, non-entrepreneur in wave N+1; type 3: non-entrepreneur in both wave N and wave N+1. Both types 1 and type 2 transitions will contribute to the bias of the effect of net assets on self-employment entry because the entrepreneurs are more likely to have higher net assets or own a bigger house but the transition result is zero rather than one.

the same content as table 2.15 but for whom housing value appreciation information is available in each wave from 2010 to 2014.

2.6.5 Concavity analysis

The reason why I conduct the "concavity" analysis in Chapter 2 is that Lindh and Ohlsson (1996) find there is an inverted U relationship between the amount of personal inheritance received and probability of being entrepreneur in Sweden. Therefore, I wonder whether there is also an inverted U relationship between the wealth and entrepreneurial entry in China. I apply the following three steps to conduct the concavity analysis.

Step 1: I research whether there is an overall concave relationship between the wealth and entrepreneurial entry in China. By regressing the entrepreneurial entry on net asset and its quadratic form as well as the control variables, I acquire the corresponding result showed in column 1 of table 2.7. Since the coefficient of quadratic form of the net asset is negatively significant and the coefficient of the net asset is positively significant, I recognize that there is a concave relationship between the wealth and entrepreneurial entry in China overall. Subsequently, I draw the corresponding inverted U shape graph by only using the coefficient of the net asset and its quadratic form on graph 2.1.

Step 2: I research whether there is a concave relationship between the wealth and entrepreneurial entry in either rural area or urban area or both areas of China. I regress the entrepreneurial entry on the interaction item between net asset and rural dummy, the interaction item between the rural dummy and the quadratic form of net asset, the interaction item between net asset and urban dummy, the interaction item between the

urban dummy and the quadratic form of net asset and the control variables. I acquire the corresponding result showed in column 2 of table 2.7. I recognize that there is a concave relationship between the wealth and entrepreneurial entry in both rural and urban areas of China. Subsequently, I draw the corresponding inverted U shape graph by only using the coefficient of the interaction items on graph 2.2.

Step 3: I research whether there is a concave relationship between the wealth and entrepreneurial entry in either high financial developed provinces or low financial developed provinces or both financial developed provinces of China. I regress the entrepreneurial entry on the interaction item between net asset and high financial developed provinces dummy, the interaction item between the high financial developed provinces dummy and the quadratic form of net asset, the interaction item between net asset and low financial developed provinces dummy, the interaction item between the low financial developed provinces dummy and the quadratic form of net asset and other control variables. I acquire the corresponding result showed in column 3 of table 2.7. I recognize that there is no concave relationship between the wealth and entrepreneurial entry in both high and low financial developed provinces of China. Subsequently, I draw the corresponding graph by only using the coefficient of the interaction items on graph 2.3.

Since I also use the housing value appreciation as the proxy of the wealth in Chapter 2, I repeat the step 1 to 3 for housing value appreciation as well. The corresponding regression results are showed in table 2.8, 2.14 and 2.20 respectively. However, since there is no concave relationship between housing value appreciation and entrepreneurial entry in China, I do not draw the corresponding graphs.

Furthermore, since I construct three samples in Chapter 2, for each sample, step 1 to step 3 are conducted for both the net asset and the housing value appreciations.

In terms of the question to what extent the "concavity "that is found is primarily due to outliers and not a confirmation of a non-linear relationship, frankly speaking, to a small extent, the concave relationship between the net asset and entrepreneurial entry is due to outliers since all outliners which beyond top 99% or below bottom 1% of key numerical variables have been deleted from the samples used in Chapter 2. However, as graph 2.1 to 2.9 show that, the turning point of the concave curve all located on the right-hand side of 95% wealth distribution. It means that for the majority of the wealth distributions, there is a positively concave relationship between the wealth and entrepreneurial entry.

2.7. Empirical results
2.7.1 Empirical result from the pooled sample

Table 2.5 shows the result of pooled regressions of equation (14) and (15) in which net assets are used as a proxy for wealth. The pooled probit model shows that the net assets owned by the individual indeed plays an important role on their entrepreneurial entry. Overall, if the net asset of an individual is increased by 1 million yuan (around £115,000),[37] the probability of becoming an entrepreneur will be 2 percentage point higher. Considering that the base transition rate from non-entrepreneur to entrepreneur in the pooled sample is around 3.7%, this effect is not trivial since it enhances the probability of becoming entrepreneur by more than 50%. Furthermore, from the second column of table 2.5 we can see that the effect of the wealth on entrepreneurial entry is more obvious and significant in rural area than in urban

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[37] The mean of net assets in the pooled sample is 0.27 million yuan (around £31,000).

area. Given an additional 1 million yuan, individuals in rural area will be 3.2 percentage point more likely to become entrepreneur compared with 1.7 percentage point in urban areas. Moreover, the third column of table 2.5 shows that net assets have no effect on entrepreneurial entry in highly financial developed provinces but has a large and significant effect on entrepreneurial entry in less financially developed provinces. Specifically, given an additional 1 million yuan, individuals in less developed provinces will be 3.5 percentage points more likely to become entrepreneurs. Additionally, the pooled probit results also show that younger males, people with more educated father, respondents with more children and a higher BMI are all more likely of becoming entrepreneurs. By contrast, the higher income of other family members is negatively related with the entrepreneurial entry of the individual. Similar results can be found in pooled OLS model in table 2.5. Overall, hypothesis 1, 3 and 4 are satisfied in the pooled sample.

Table 2.6 shows the result of pooled regressions of equation (14) and (15) in which housing value appreciations are used as a proxy for wealth. It shows that housing value appreciation is also positively associated to entrepreneurial entry. Specifically, if the housing value is increased by 1 million yuan,[38] the probability of entrepreneurial entry of the individual who owns the house will be 2.2 percentage points higher. Once again, this effect is greater in rural areas and less financially developed provinces, where the corresponding figures are respectively 2.7 and 4.0 percentage points. The coefficient associated with housing value appreciation is not statistically significant in urban and more financially developed provinces. Additionally, table 2.6 shows that having a higher income is positively associated with the chance of becoming entrepreneurs, whist living in a rural area is negatively associated with

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[38] The mean housing value appreciation in pooled sample is 0.15 million yuan (around £17,240)

the same probability. Similar results can be found in the pooled OLS model in table 2.6. Overall, hypothesis 2, 3 and 4 are satisfied in the pooled sample.

This paper also conducts concavity check for the relationship between net asset or housing value appreciation and entrepreneurial entry. Table 2.7 shows that in general, there is concave relationship between net assets and entrepreneurial entry in the pooled sample. Yet, from Figure 2.4 which illustrates the relationship between net asset and entrepreneurial entry, we can see that, the turning point for net asset in this concave function is 1.45 million yuan. This number corresponds to the 98 percentile of the distribution of net asset in the pooled sample. We can therefore conclude that, for the majority (98%) of individuals, net asset are positively associated with self-employment entry. From the second column of table 2.7 and Figure 2.5 we can see that, there is also a concave relationship between net assets and entrepreneurial entry in both urban and rural areas. Moreover, the association between net asset and entrepreneurial entry is stronger in rural areas. By contrast, from the third column of table 2.7 and Figure 2.6, we can see that there is no concave relationship between net asset and the probability of becoming entrepreneurs in both the highly and less financially developed provinces. Yet, a strong positive linear relationship is observed between net asset and entrepreneurial entry in less financial developed provinces.

From table 2.8, we can see that, there is no concave relationship between housing value appreciation and entrepreneurial entry in both urban and rural areas, and highly and less financially developed provinces. However, we do find a positive linear relationship between housing value appreciations and self-employment entry in rural area and less financially developed provinces. A possible reason that there is no concave relationship between the housing value appreciation and the probability of becoming entrepreneur is that the housing

value appreciation measures the change of the wealth and individuals may not have concave attitude towards this change at short period of time, i.e. there is no turning point towards the change of wealth when making choice about how to use this change.

2.7.2 Empirical results from the modified panel sample

Controlling the unobserved heterogeneity of individuals, this paper also estimates random effect probit/linear models for the modified panel sample. Table 2.11 shows the result of random effect probit model of equation (14) and (15) in which net assets are used as a proxy for wealth. From table 2.11 we can see that, net asset are significantly and positively related to entrepreneurial entry both in general, and in specific areas such as rural and urban areas, as well as in less financially developed provinces. However, compared with pooled regressions, the effect of net assets on self-employment entry attenuates slightly. Specifically, a 1 million yuan increase in the net assets of individuals is associated with a 1.6 percentage point higher probability of becoming entrepreneur.[39] The corresponding figures in rural and urban areas are respectively 2.7 and 1.3 percentage points. Furthermore, the probability of becoming entrepreneur is 2.8 percentage point higher for those individuals living in less financially developed provinces if their assets are increased by 1 million yuan. Since the base transition rate from non-entrepreneur to entrepreneur in the modified panel sample is around 3.6%, these effects remain non-trivial, especially in rural areas and in less financially developed provinces. From table 2.11, we also find that male and young adults are more likely to become self-employed. Having more children, earning a higher income and having a higher BMI are beneficial for entrepreneurial entry, while a higher income earned by other family

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[39] The mean net asset in modified panel sample is 0.27 million yuan as well.

members is detrimental for self-employment entry. As showed in table 2.11, the result obtained from the estimation of random-effects linear model are very similar to those obtained from random-effect probit model. Overall, hypothesis 1, 3 and 4 are satisfied in the modified panel sample.

Table 2.12 shows the result of random effect probit model of equation (14) and (15) in which housing value appreciations are used as a proxy for wealth. Similar to the results obtained within the pooled sample in table 2.6, housing value appreciation has a positive effect on entrepreneurial entry both in the full sample, in the rural areas, and in the less financially developed provinces. Specifically, in the full sample, if the housing value increases by 1 million yuan, then the probability of becoming entrepreneur of the individual who own the house will be 2.2 percentage points higher.[40] This effect is more pronounced if the individual lives in a rural area (2.6 percentage point) and/or in a less financial developed provinces (3.9 percentage points). However, there is no effect of housing value appreciation on self-employment entry in urban and highly financially developed provinces. The coefficient associated with the control variables similar to those reported in table 2.11. As showed in table 2.12, the result obtained from the estimation of random-effect linear models are very similar to those obtained using random-effect probit models. Overall, hypothesis 2, 3 and 4 are satisfied in the modified panel sample.

Furthermore, this paper checks whether there is a concave relationship between net assets or housing value appreciation and entrepreneurial entry in the modified panel sample as well. From column 1 in table 2.13 and Figure 2.7, we can see that, in the full sample, there is a clear concave relationship between net assets and self-employment entry. However, the turning

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[40] The mean housing value appreciation in modified panel sample is 0.15 million yuan.

point of the concave function is equal to 1.33 million yuan which corresponds to the 97.75th percentile of the distribution of net assets in the modified panel sample. This means the concavely positive relationship between net asset and entrepreneurial entry holds across the majority of individuals. Additionally, from column 2 in table 2.13 and Figure 2.8 we can see that, in both urban and rural areas, a concave relationship exists between net assets and self-employment entry. More specifically, the effect of net asset on self-employed entry in rural areas overrides that in urban area across most individuals in modified panel sample. Moreover, from column 3 in table 2.13 and Figure 2.9, we find that, the concave relationship between net assets and self-employment entry also exists in less financially developed provinces. But the concavely positive relationship between the net asset and entrepreneurial entry domain in there as well. Table 2.14 shows that there is no concave relationship between housing value appreciation and entrepreneurship entry, but that a positive relationship is evident between the two variables in rural areas and less financially developed provinces.

2.7.3 Empirical results from the raw panel sample

Table 2.17 shows the result of random effect probit model of equation (14) and (15) in which net assets are used as a proxy for wealth based on the raw panel sample. The random effects probit estimates show that there is once again a positive and significant relationship between net assets and self-employed entry, both in the full sample, in rural areas, and in less financially developed provinces. However, compared with the effect of the net assets on entrepreneurial in the pooled sample and the modified panel sample, the effect in the raw panel sample is smaller and less significant. Specifically, a 1 million yuan increase in net assets

is associated with a 1.1 percentage point higher probability of becoming entrepreneurs.[41] The corresponding figures in rural areas and less financially developed regions are 1.6 and 1.8 percentage points respectively. As showed in table 2.17, the result obtained from the estimation of random-effects linear model are very similar to those obtained from random-effect probit model. Overall, hypothesis 1, 3 and 4 are satisfied in the raw panel sample.

Table 2.18 shows the result of random effect probit model of equation (14) and (15) in which housing value appreciations are used as a proxy for wealth based on the raw panel sample. We can see that housing value appreciation still plays a positive and significant role on the probability of becoming entrepreneurs in the full sample, as well as in rural areas, and less financially developed provinces. However, the effects of housing value appreciation are smaller than those of net wealth. Specifically, 1 million yuan increase in the net asset of individuals will contribute to 1.6% increase of their probability of becoming entrepreneurs.[42] The same amount of increase in net asset will enhance the entrepreneurial entry rate by 2 % and 3.1 % in rural and less financial developed provinces respectively.

As showed in table 2.18, the result obtained from the estimation of random-effects linear model are very similar to those obtained from random-effect probit model. Overall, hypothesis 2, 3 and 4 are satisfied in the raw panel sample.

In terms of the concavity test between net assets and self-employed entry in the raw panel sample, from table 2.19 and Figures 2.10, 2.11 and 2.12, we can see that there is still a concave relationship between net assets and entrepreneurial entry in the full sample, as well as in rural areas, and less developed provinces. Moreover, the positive concave relationship

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[41] The mean net asset in raw panel sample is 0.28 million yuan.
[42] The mean housing value appreciation in raw panel sample is 0.15 million yuan.

between the net asset and self-employed entry almost domain the whole net asset distribution.

Table 2.20 shows that there is no concave relationship between housing value appreciation and entrepreneurial entry in the raw panel sample. However, the positive linear relationship between the two values is still present.

2.8 Discussion

Overall, similar to previous relevant studies conducted in China, this study also finds that liquidity constraints do exist in China. Specifically, previous studies all show that there is a positive association between the wealth and entrepreneurship. Djankov et al. (2006) finds that nascent entrepreneurs are difficult to acquire the external financial support from the bank and use their personal savings as the main source to start their business in China. Demurger and Xu (2011) find that repatriated savings of migrants have a positive effect on their entrepreneurial entry when they go back to Wuwei of China. Li and Wu (2014) finds that household wealth has a postive effect on the probability of being an entrepreneur in China. In my study, I find that if the net asset of an individual is increased by 1 million yuan (around ₤115,000), the probability of becoming an entrepreneur will be 2 percentage point higher.

Furthermore, considering the potential endogeneity of the wealth variable, I use housing value appreciation as the proxy for the wealth and find that if the housing value is increased by 1 million yuan, the probability of entrepreneurial entry of the individual who owns the house will be 2.2 percentage points higher. This finding is also very similar to that acquired by previous studies conducted in China. To be more concrete, Hu and Chen (2018) find that when housing prices increase, house owner are more likely to become entrepreneurs since they can acquire the loans from the bank through providing their house as collateral in China. Wang (2012) finds that, when the housing price increases, state employees are more likely than private employees to become entrepreneurs.[43]

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[43] In 1994, the urban property reform in China allowed state employees to purchase the house they rented from their employers at discounted price, while private employees who worked for private enterprises rather than SOE were not allowed to do so.

Additionally, considering that rural areas are typically far less developed than urban areas in China, I also examine whether entrepreneurial entry is more sensitive to wealth/housing value appreciations in rural areas. I find that, given an additional 1 million yuan, individuals in rural area will be 3.2 percentage point more likely to become entrepreneur compared with 1.7 percentage point in urban areas. This finding has extended the research by Yu (2008) which finds that credit constraints affect the probability of being entrepreneurs in the rural areas of China.

Subsequently, considering that the Chinese territory is heterogenous in terms of financial development, I further examine whether entrepreneurial entry is more sensitive to wealth/housing value appreciations in those provinces characterized by low financial development. I find that, given an additional 1 million yuan, individuals in less developed provinces will be 3.5 percentage points more likely to become entrepreneurs.

In this study, I also conduct concavity check for the relationship between net asset or housing value appreciation and entrepreneurial entry. Similar to Lindh and Ohlsson (1996) which find there is an inverted U relationship between the amount of personal inheritance received and probability of being entrepreneur in Sweden, I find that there is an inverted U relationship between net asset and entrepreneurial entry in China. Specifically, for the majority (>95%) of individuals, net asset are positively associated with self-employment entry. This finding is exactly contradictory to that acquired by Hurst and Lusardi (2004) which shows that, in the US, there is no obvious relationship between wealth and entrepreneurship within 95% of the wealth distribution in their sample. The reasonable reason for the difference between my finding and that of Hurst and Lusardi (2004) is that, in the US, low initial capital is required for starting most types of businesses and advanced financial markets enable individuals to easily

acquire funds to establish their enterprises, while people are difficult to acquire the external financial support from the bank in China (Djankov et al, 2006).

However, I do not investigate why liquidity constraints are binding in China. Additionally, I only investigate whether liquidity constraints associated with the entrepreneurial entry. Numerous studies have found that liquidity constraints not only affect the formation of enterprises but also influence their performance (Holtz-Eakin et al, 1994; Oliveria and Fortunato; 2006).

Further research could look at the effect of liquidity constraints on the performance of the entrepreneurship in China. Extant literature has found that liquidity constraints exert a noticeable influence on the viability of entrepreneurial enterprises (Holtz-Eakin et al, 1994). The entrepreneurs who receive a greater amount of inheritance are significantly survive longer than those who receive less (Holtz-Eakin et al, 1994). Furthermore, Oliveria and Fortunato (2006) find that the growth of smaller and younger firms is more sensitive to the cash holding, suggesting that financial constraints on firm growth is likely to be more severe for small and young firms. Therefore, future studies conducted in China could investigate whether there is a negative association between the growth and survival rate of enterprises and liquidity constraints in China.

2.9 Conclusion and policy implications

This paper examines the extent to which liquidity constraints affect entry into entrepreneurship in China. Specifically, we investigate whether the wealth owned by individuals helps them to become entrepreneurs. Considering the endogeneity of wealth, we also use windfall gains, proxied by housing value appreciation, as a proxy for their wealth.

Based on the result in our study, liquidity constraints are binding in China. We find in fact that both net assets and housing value appreciation are positively associated with entrepreneurial entry, especially in rural areas and in less financially developed provinces.

Given the importance of entrepreneurship to the development of the economy, we make the following policy recommendations: firstly, subsidies should be provided for those latent entrepreneurs who plan to set up their business but are short of money. Secondly, the financial institutions should make loans more accessible to those latent entrepreneurs.

Furthermore, since self-employment entry is more sensitive to household wealth in less financially developed provinces and in rural areas, the government should narrow the gap of financial development among the provinces and between urban and rural areas. This will be beneficial to the overall entrepreneurial entry rate in China.

However, before giving subsidies or loans to prospective entrepreneurs, financial institutions need to consider the adverse selection issue to make sure the subsidies or loans are allocated to those most needed.

Appendix 2.1– Control Variables

Variable name	Variable type	Description
$Male_i$	Dummy	equal to one if the individual *i* is a male, and 0 otherwise
Age_{it}	Continuous	the age of the individual *i* at time *t*.
$Married_{it}$	Dummy	equal to one if individual *i* is married at time *t*, and 0 otherwise.
Edu_y_{it}	Continuous	the number of years of education of individual *i* at time *t*.
$Fedu\_y_{it}$	Continuous	the number of years of education of individual *i*'s father at time *t*.
$Medu\_y_{it}$	Continuous	the number of years of education of individual *i*'s mother at time *t*.
$Sedu\_y_{it}$	Continuous	the number of years of education of individual *i*'s spouse at time *t*.
$N\_children_{it}$	Continuous	the number of children individual *i* has at time *t*.
N_adult_{it}	Continuous	the number of adults in individual *i*'s family at time *t*.
$Income\__{it}$	Continuous	the income of individual *i* at time *t*.
BMI_{it}	Continuous	the Body Mass Index of individual *i* at time *t*.
SR_health_{it}	Dummy	equal to one if the self-rated health level of individual *i* is very good or good, and 0 otherwise.
own_house_{it}	Dummy	equal to one if the individual *i* own a house with outright property right at time *t*, and 0 otherwise.
Ac_land_{it}	Dummy	equal to one if the individual *i* encounters land acquisition from the government at time *t*, and 0 otherwise.
$Income\_other_{it}$	Continuous	the total income earned by other members of the family of individual *i* at time *t*.
$Rural_{it}$	Dummy	equal to one if individual *i* lives in a rural area at time *t*, and 0 otherwise.
$Year2012_i$	Dummy	a year dummy equal to one if the year is 2012, and 0 otherwise.
$Year2014_i$	Dummy	a year dummy equal to one if the year is 2014, and 0 otherwise.
$Beijing_{it}$	Dummy	equal to one if individual *i* lives in the Beijing province at time *t*, and 0 otherwise.
$Tianjin_{it}$	Dummy	equal to one if individual *i* lives in the Tianjin province at time *t*, and 0 otherwise.

Variable name	Variable type	Description
$Hebei_{it}$	Dummy	equal to one if individual i lives in the Hebei province at time t, and 0 otherwise.
$Shanxi_{it}$	Dummy	equal to one if individual i lives in the Shanxi province at time t, and 0 otherwise.
$Liaoning_{it}$	Dummy	equal to one if individual i lives in the Liaoning province at time t, and 0 otherwise.
$Jilin_{it}$	Dummy	equal to one if individual i lives in the Jilin province at time t, and 0 otherwise.
$Heilongjiang_{it}$	Dummy	equal to one if individual i lives in the Heilongjiang province at time t, and 0 otherwise.
$Shanghai_{it}$	Dummy	equal to one if individual i lives in the Shanghai province at time t, and 0 otherwise.
$Jiangsu_{it}$	Dummy	equal to one if individual i lives in the Jiangsu province at time t, and 0 otherwise.
$Zhejiang_{it}$	Dummy	equal to one if individual i lives in the Zhejiang province at time t, and 0 otherwise.
$Anhui_{it}$	Dummy	equal to one if individual i lives in the Anhui province at time t, and 0 otherwise.
$Fujian_{it}$	Dummy	equal to one if individual i lives in the Fujian province at time t, and 0 otherwise.
$Jiangxi_{it}$	Dummy	equal to one if individual i lives in the Jiangxi province at time t, and 0 otherwise.
$Shandong_{it}$	Dummy	equal to one if individual i lives in the Shandong province at time t, and 0 otherwise.
$Henan_{it}$	Dummy	equal to one if individual i lives in the Henan province at time t, and 0 otherwise.
$Hubei_{it}$	Dummy	equal to one if individual i lives in the Hubei province at time t, and 0 otherwise.
$Hunan_{it}$	Dummy	equal to one if individual i lives in the Hunan province at time t, and 0 otherwise.
$Guangdong_{it}$	Dummy	equal to one if individual i lives in the Guangdong province at time t, and 0 otherwise.
$Guangxi_{it}$	Dummy	equal to one if individual i lives in the Guangxi province at time t, and 0 otherwise.
$Sichuan_{it}$	Dummy	equal to one if individual i lives in the Sichuan province at time t, and 0 otherwise.
$Guizhou_{it}$	Dummy	equal to one if individual i lives in the Guizhou province at time t, and 0 otherwise.
$Yunnan_{it}$	Dummy	equal to one if individual i lives in the Yunnan province at time t, and 0 otherwise.
$Shaanxi_{it}$	Dummy	equal to one if individual i lives in the Shaanxi province at time t, and 0 otherwise.

Appendix 2.2– Figures

Figure 2.1 Number of individual business in China
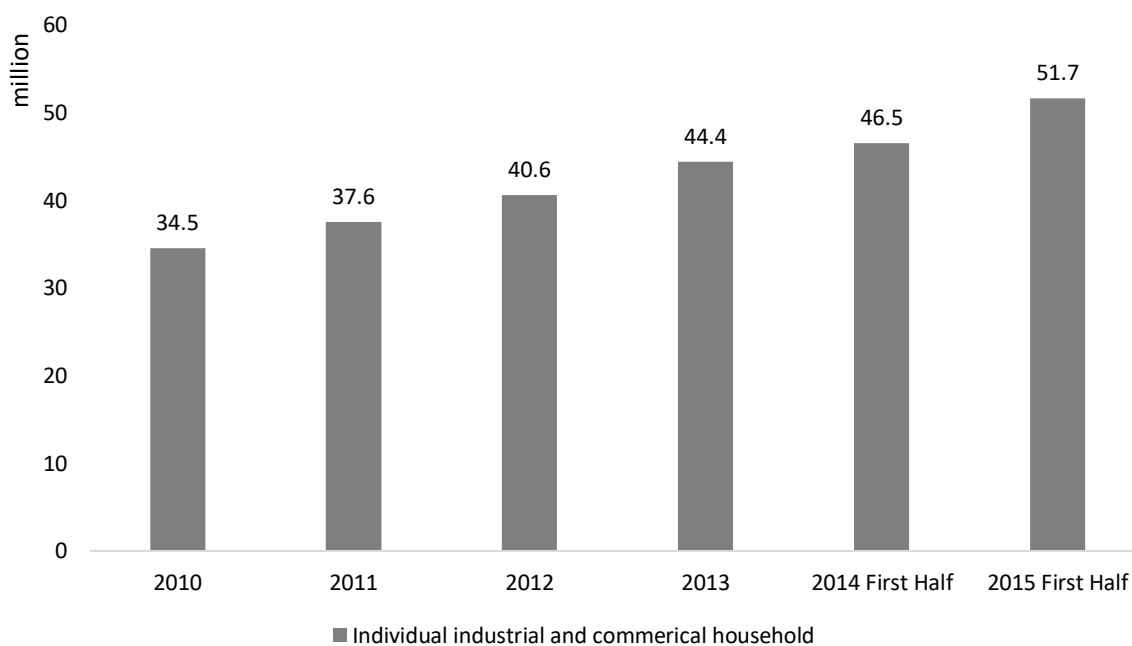
(Source: National Bureau of Statistics)

Figure 2.2 Number of private enterprises in China
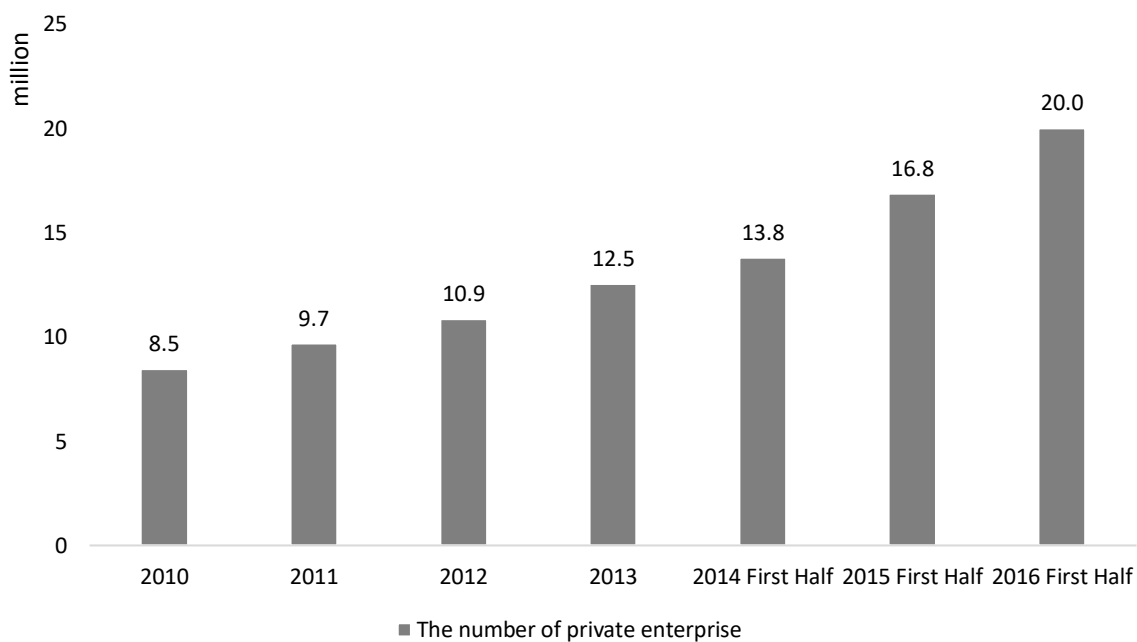
(Sources: National Bureau of Statistics, People's Daily and Finance China)

Figure 2.3 Loan to deposit ratio in China
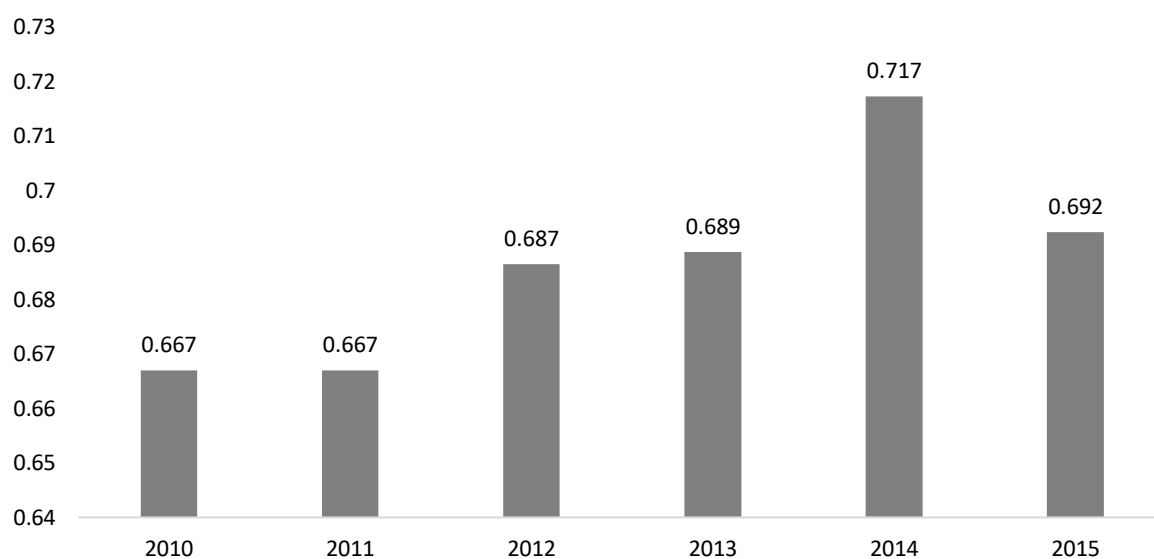
Table 2. 1 Average housing price per square meter of the municipalities/capital cities in different provinces

(Yuan/m²)	2010-Jan	2011-Dec	2012-Jan	2013-Dec	2014-Jan	2015-Dec
BEIJING	18,648	25,016	25,480	37,947	37,204	38,269
TIANJIN	10,540	13,066	13,324	14,188	14,723	15,680
HEBEI	4,847	6,068	6,612	7,849	7,937	8,418
SHANXI	5,315	6,629	6,538	7,611	7,579	8,152
LIAONING	5,325	7,495	7,506	7,639	7,635	7,092
JILIN	4,088	6,309	6,283	6,916	6,970	6,534
HEILONGJIANG	7,129	7,627	7,590	7,189	7,254	7,358
SHANGHAI	21,187	24,217	24,654	28,867	31,487	35,320
JIANGSU	11,389	14,050	14,272	17,349	17,693	18,029
ZHEJIANG	17,911	17,389	18,020	19,088	18,631	17,722
ANHUI	5,085	6,245	6,201	7,168	7,281	8,493
FUJIAN	9,039	10,842	10,795	13,663	13,798	15,208
JIANGXI	5,513	7,753	7,752	9,208	9,146	8,925
SHANDONG	6,688	8,404	8,248	9,480	9,501	10,121
HENAN	5,144	7,112	7,150	8,902	8,864	9,473
HUBEI	5,843	7,822	7,710	8,786	8,867	10,020
HUNAN	4,955	6,541	6,507	6,441	6,385	6,313
GUANGDONG	10,803	14,806	15,078	18,905	19,037	19,723
GUANGXI	5,837	6,949	6,856	6,919	6,843	7,008
CHONGQING	5,278	6,825	6,857	7,279	7,273	6,869
SICHUAN	7,414	8,552	8,650	8,820	8,776	7,980
GUIZHOU	4,624	5,540	5,588	5,756	5,754	6,153
YUNNAN	6,041	8,860	8,633	8,643	8,673	8,148
SHAANXI	4,941	7,451	7,344	6,929	6,992	6,646
GANSU	4,980	7,559	7,691	8,439	8,585	8,478

Table 2. 2 NERI index

	2010	2012	2014
BEIJING	7.66	8.31	9.08
TIANJING	6.98	8.87	9.17
HEBEI	5.07	5.58	6.19
SHANXI	4.6	4.89	5.27
LIAONING	6.36	6.65	7
JILIN	5.49	6.15	6.42
HEILONGJIANG	4.84	6.01	6.22
SHANGHAI	8.74	8.67	9.77
JIANGSU	8.58	9.95	9.63
ZHEJIANG	8.23	9.33	9.78
ANHUI	6.18	6.36	7.46
FUJIAN	6.63	7.27	8.07
JIANGXI	5.66	5.74	6.79
SHANDONG	6.87	7.41	7.93
HENAN	6.19	6.48	7
HUBEI	5.59	6.32	7.28
HUNAN	5.49	5.73	6.79
GUANGDONG	7.73	8.37	9.35
GUANXI	5.11	6.19	6.51
CHONGQING	6.14	6.89	7.78
SICHUAN	5.8	6.1	6.62
GUIZHOU	3.55	4.36	4.85
YUNNAN	5.01	4.49	4.94
SHAANXI	3.95	5.18	6.36
GANSU	3.43	3.38	4.04

(Source: NERI INDEX of Marketization of China's Provinces, 2011)

Table 2. 3 Descriptive data for pooled sample in which net asset information is available

Transition Type	2010				2012				2014			
	Become Entre in 2012	Keep Non_Entre in 2012	Diff		Become Entre in 2014	Keep Non_Entre in 2014	Diff		Become Entre in 2016	Keep Non_Entre in 2016	Diff	
Individual information												
Male	0.78	0.53	0.25	***	0.7	0.54	0.16	***	0.75	0.56	0.19	***
Age	36.2	37.6	-1.4		39	43	-4	***	39.4	44.1	-4.7	***
Education year	7.7	7.9	-0.2		8.3	7.2	1.1	***	8.1	6.5	1.6	***
Married	1	0.99	0.01		0.99	1	-0.01		0.99	1	-0.01	
Education year(father)	6.7	5.7	1	*	5.8	4.4	1.4	***	5	3.7	1.3	***
Education year(mother)	3.6	3.7	-0.1		8	6.9	1.1	***	5.7	4.8	0.9	*
Education year(Spouse)	3.6	3.7	-0.1		3.8	3.5	0.3	**	3.3	3	0.3	
Number of children	1.6	1.5	0.1		1.6	1.7	-0.1	**	1.75	1.77	-0.02	
Individual income	0.012	0.013	-1E-03		0.02	0.013	0.007	***	0.017	0.007	0.01	***
BMI	23.4	22.2	1.2	**	22.9	22.8	0.1	*	24	23	1	***
Self-rated health level	0.67	0.54	0.13	**	0.73	0.67	0.06		0.8	0.73	0.07	*
Family-information												
House ownership	0.92	0.95	-0.03		0.98	0.97	0.01		0.98	0.99	-0.01	
Family size (excl.children)	2.9	2.8	0.1		3.1	2.7	0.4	***	3.4	3	0.4	**
Land acquisition	0	0.03	-0.03		0.022	0.021	0.001		0.09	0.08	0.01	
Net asset	0.22	0.25	-0.03		0.37	0.28	0.09	***	0.37	0.27	0.1	***
Income of other family members	0.022	0.023	-0.001		0.03	0.033	-0.003		0.03	0.035	-0.005	
Rural	0.67	0.57	0.1		0.46	0.63	-0.17	***	0.74	0.78	-0.04	
Observation	63	1404			182	4328			97	3460		

*p<0.1; **p<0.05; ***p<0.01

Source : CFPS 2010, 2012, 2014, 2016

Table 2. 4 Descriptive data for pooled sample in which housing value appreciation information is available

Transition Type	2010				2012				2014			
	Become Entre in 2012	Keep Non_Entre in 2012	Diff		Become Entre in 2014	Keep Non_Entre in 2014	Diff		Become Entre in 2016	Keep Non_Entre in 2016	Diff	
Individual-information												
Male	0.77	0.54	0.23	***	0.71	0.54	0.17	***	0.74	0.56	0.18	***
Age	36.4	37.5	-1.1		39.4	42.8	-3.4	***	39.2	44.2	-5	***
Education year	8	8	0		8.1	7.3	0.8	***	7.9	6.6	1.3	***
Married	1	1	0		1	1	0		0.99	1	-0.01	
Education year(father)	6.8	5.6	1.2	**	5.7	4.5	1.2	***	4.7	3.7	1	***
Education year(mother)	3.9	3.6	0.3		8	7	1	***	5.8	4.8	1	**
Education year(Spouse)	3.8	3.7	0.1		3.6	3.5	0.1		3.5	3	0.5	**
Number of children	1.6	1.5	0.1		1.6	1.7	-0.1	*	1.81	1.77	0.04	
Individual income	0.015	0.014	0.001		0.019	0.013	0.006	***	0.017	0.008	0.009	***
BMI	22.8	22.2	0.6		23.2	22.9	0.3		23.9	22.9	1	***
Self-rated health level	0.58	0.53	0.05		0.7	0.67	0.03		0.81	0.72	0.09	**
Family-information												
House ownership	0.93	0.95	-0.02		0.91	0.92	-0.01		0.97	0.96	0.01	
Family size (excl.children)	2.8	2.9	-0.1		3.1	2.7	0.4	***	3.6	3	0.6	***
Land acquisition	0	0.024	-0.024		0.021	0.022	-0.001		0.11	0.08	0.03	
Housing value appreciation	0.31	0.29	0.02		0.24	0.19	0.05	***	0.06	0.03	0.03	***
Income of other family members	0.022	0.023	-0.001		0.03	0.03	0		0.031	0.035	-0.004	
Rural	0.6	0.55	0.05		0.42	0.6	-0.18	***	0.7	0.77	-0.07	*
Observation	83	1944			182	4328			123	3968		

*p<0.1; **p<0.05; ***p<0.01

Source: CFPS 2010, 2012, 2014, 2016

Table 2. 5 The pooled regression for pooled sample in which net asset information is available

Y:1=Entrepreneur,	Probit			OLS		
0=Non-Entre	1	2	3	4	5	6
Net_asset	0.274***			0.022**		
	(0.085)			(0.009)		
	[0.020]					
Net_asset*Rural		0.436***			0.032***	
		(0.132)			(0.012)	
		[0.032]				
Net_asset*Urban		0.222**			0.018*	
		(0.091)			(0.01)	
		[0.017]				
Net_asset*Highdevelop			0.073			0.003
			(0.108)			(0.009)
			[0.005]			
Net_asset*(1-Highdevelop)			0.451***			0.043***
			(0.113)			(0.014)
			[0.035]			
Male	0.319***	0.317***	0.319***	0.023***	0.023***	0.023***
	(0.06)	(0.06)	(0.06)	(0.004)	(0.004)	(0.004)
	[0.022]	[0.022]	[0.022]			
Age	-0.021***	-0.021***	-0.021***	-0.001***	-0.001***	-0.001***
	(0.003)	(0.003)	(0.003)	(0.0003)	(0.0002)	(0.0002)
	[-0.001]	[-0.002]	[-0.002]			
Year of education (father)	0.133**	0.013**	0.013**	0.001*	0.001*	0.001*
	(0.067)	(0.007)	(0.007)	(0.0005)	(0.0005)	(0.0005)
	[0.001]	[0.001]	[0.001]			
Number of children	0.071*	0.072**	0.071*	0.003	0.003	0.003
	(0.037)	(0.037)	(0.037)	(0.003)	(0.003)	(0.003)
	[0.005]	[0.005]	[0.005]			

Table 2.5 Continued

Y:1=Entrepreneur, 0=Non-Entre	Probit			OLS		
	1	2	3	4	5	6
Income	2.922	2.87	2.85	0.367*	0.368*	0.359*
	(1.885)	(1.883)	(1.884)	(0.200)	(0.200)	(0.196)
	[0.212]	[0.208]	[0.207]			
BMI	0.026***	0.026***	0.026***	0.002***	0.002***	0.002***
	(0.007)	(0.007)	(0.007)	(0.001)	(0.001)	(0.001)
	[0.002]	[0.002]	[0.002]			
Income of other	-2.70***	-2.834***	-2.846***	-0.193***	-0.202***	-0.213***
Family Members	(1.01)	(1.012)	(1.015)	(0.071)	(0.071)	(0.073)
	[-0.20]	[-0.206]	[-0.206]			
Rural	-0.415	-0.105	-0.315	-0.002	-0.005	-0.005
	(0.064)	(0.075)	(0.064)	(0.005)	(0.006)	(0.005)
	[-0.003]	[-0.002]	[-0.002]			
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes
Province control	Yes	Yes	Yes	Yes	Yes	Yes
Other control variables	Yes	Yes	Yes	Yes	Yes	Yes
Observations	9534	9534	9534	9534	9534	9534

*p<0.1; **p<0.05; ***p<0.01

Note:

1. Average marginal effect of Probit are showed in brackets. Robust standard errors are showed in the parentheses.

2. For brevity and making our key findings prominent, we fold the coefficient of those control variables. "YES" in this table means this variables group is included into the regression as the control variable(s). "NO" means this variables group is not included into the regression.

Source: CFPS 2010, 2012, 2014, 2016

Table 2. 6 The pooled regression for pooled sample in which the housing value appreciation information is available

Y:1=Entrepreneur, 0=Non-Entre	Probit			OLS		
	1	2	3	4	5	6
Hv_appre	0.279**			0.027**		
	(0.125)			(0.125)		
	[0.022]					
Hv_appre*Rural		0.393***			0.034**	
		(0.142)			(0.014)	
		[0.027]				
Hv_appre*Urban		0.159			0.019	
		(0.163)			(0.016)	
		[0.014]				
Hv_appre*Highdevelop			0.121			0.01
			(0.163)			(0.015)
			[0.009]			
Hv_appre*(1-Highdevelop)			0.49***			0.050***
			(0.166)			(0.019)
			[0.040]			
Male	0.336***	0.337***	0.338***	0.025***	0.025***	0.025***
	(0.053)	(0.053)	(0.053)	(0.004)	(0.004)	(0.004)
	[0.025]	[0.025]	[0.025]			
Age	-0.18***	-0.18***	-0.18***	-0.001***	-0.001***	-0.001***
	(0.003)	(0.003)	(0.003)	(0.0002)	(0.0002)	(0.0002)
	[-0.001]	[-0.001]	[-0.001]			
Year of education (father)	0.116**	0.116**	0.114**	0.001*	0.001*	0.001*
	(0.006)	(0.006)	(0.006)	(0.0005)	(0.0005)	(0.0005)
	[0.001]	[0.001]	[0.001]			
Number of children	0.094***	0.092***	0.095***	0.006**	0.006**	0.006**
	(0.032)	(0.032)	(0.032)	(0.003)	(0.003)	(0.003)
	[0.007]	[0.007]	[0.007]			

Table 2.6 Continued

Y:1=Entrepreneur,	Probit			OLS		
0=Non-Entre	1	2	3	4	5	6
Income	3.98**	3.93**	3.89**	0.470***	0.470***	0.461***
	(1.614)	(1.614)	(1.618)	(0.173)	(0.173)	(0.173)
	[0.307]	[0.304]	[0.300]			
BMI	0.016**	0.016**	0.016**	0.001**	0.001**	0.001**
	(0.007)	(0.007)	(0.007)	(0.0005)	(0.0005)	(0.0005)
	[0.001]	[0.001]	[0.001]			
Income of other	-1.438*	-1.413*	-1.471*	-0.110*	-0.110*	-0.115*
Family Members	(0.860)	(0.860)	(0.860)	(0.066)	(0.066)	(0.066)
	[-0.111]	[-0.110]	[-0.113]			
Rural	-0.149***	-0.196***	-0.151***	-0.011**	-0.013**	-0.011**
	(0.055)	(0.064)	(0.055)	(0.005)	(0.005)	(0.005)
	[-0.012]	[-0.012]	[-0.012]			
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes
Province control	Yes	Yes	Yes	Yes	Yes	Yes
Other control variables	Yes	Yes	Yes	Yes	Yes	Yes
Observations	11655	11655	11655	11655	11655	11655

*p<0.1; **p<0.05; ***p<0.01

Note:

1. Average marginal effect of Probit are showed in brackets. Robust standard errors are showed in the parentheses.

2. For brevity and making our key findings prominent, we fold the coefficient of those control variables. "YES" in this table means this variables group is included into the regression as the control variable(s). "NO" means this variables group is not included into the regression.

Source: CFPS 2010, 2012, 2014, 2016

Table 2. 7 Concavity check in pooled sample in which net asset information is available

Y:1=Entrepreneur,	OLS		
0=Non-Entre	1	2	3
Net_asset	0.064***		
	(0.017)		
Net_asset^2	-0.022***		
	(0.006)		
Net_asset*Rural		0.077***	
		(0.022)	
Net_asset^2*Rural		-0.033***	
		(0.010)	
Net_asset*Urban		0.056**	
		(0.023)	
Net_asset^2*Urban		-0.018**	
		(0.009)	
Net_asset*Highdevelop			0.0313
			(0.026)
Net_asset^2*Highdevelop			-0.011
			(0.009)
Net_asset*(1-Highdevelop)			0.075***
			(0.024)
Net_asset^2*(1-Highdevelop)			-0.025
			(0.019)
Control variables	Yes	Yes	Yes
Observations	9534	9534	9534

*p<0.1; **p<0.05; ***p<0.01

Note:

1. For brevity and making our key findings prominent, we fold the coefficient of those control variables. "YES" in this table means this variables group is included into the regression as the control variable(s). "NO" means this variables group is not included into the regression.

Source: CFPS 2010, 2012, 2014, 2016

Table 2. 8 Concavity check in pooled sample in which housing value appreciation is available

Y:1=Entrepreneur, 0=Non-Entre	OLS		
	1	2	3
Hv_appre	0.055**		
	(0.028)		
Hv_appre^2	-0.028		
	(0.028)		
Hv_appre*Rural		0.059*	
		(0.031)	
Hv_appre^2*Rural		-0.024	
		(0.035)	
Hv_appre*Urban		0.048	
		(0.038)	
Hv_appre^2*Urban		-0.029	
		(0.038)	
Hv_appre*Highdevelop			0.019
			(0.037)
Hv_appre^2*Highdevelop			-0.007
			(0.034)
Hv_appre*(1-Highdevelop)			0.065*
			(0.038)
Hv_appre^2*(1-Highdevelop)			-0.020
			(0.051)
Control variables	Yes	Yes	Yes
Observations	11655	11655	11655

*p<0.1; **p<0.05; ***p<0.01

Note:

1. For brevity and making our key findings prominent, we fold the coefficient of those control variables. "YES" in this table means this variables group is included into the regression as the control variable(s). "NO" means this variables group is not included into the regression.

Source: CFPS 2010, 2012, 2014, 2016

Table 2. 9 Descriptive data for modified panel sample in which net asset information is available

Transition Type	2010				2012				2014			
	Become Entre in 2012	Otherwise in 2012	Diff		Become Entre in 2014	Otherwise in 2014	Diff		Become Entre in 2016	Otherwise in 2016	Diff	
Individual-information												
Male	0.78	0.53	0.25	***	0.7	0.55	0.15	***	0.76	0.56	0.2	***
Age	36.2	37.6	-1.4		39	43	-4	***	39	44	-5	***
Education year	7.7	7.9	-0.2		8.3	7.2	1.1	***	8.3	6.5	1.8	***
Married	1	0.99	0.01		0.99	1	-0.01		0.99	1	-0.01	
Education year(father)	6.7	5.7	1	*	5.8	4.4	1.4	***	4.9	3.7	1.2	***
Education year(mother)	3.6	3.7	-0.1		8	6.9	1.1	***	6.2	4.8	1.4	**
Education year(Spouse)	3.6	3.7	-0.1		3.8	3.5	0.3	**	3.4	3	0.4	
Number of children	1.6	1.5	0.1		1.6	1.7	-0.1	**	1.74	1.78	-0.04	
Individual income	0.012	0.013	-0.001		0.02	0.013	0.007	***	0.017	0.007	0.01	***
BMI	23.4	22.2	23.3	**	23.3	23	0.3	*	24	23	1	***
Self-rated health level	0.67	0.54	0.13	**	0.73	0.67	0.06		0.79	0.73	0.06	
Family-information												
House ownership	0.92	0.95	-0.03		0.98	0.97	0.01		0.98	0.99	-0.01	
Family size (excl.children)	2.9	2.8	0.1		3.1	2.6	0.5	***	3.34	3	0.34	*
Land acquisition	0	0.03	-0.03		0.022	0.021	0.001		0.11	0.08	0.03	
Net asset	0.22	0.25	-0.03		0.37	0.28	0.09	***	0.35	0.27	0.08	**
Income of other family members	0.022	0.023	-0.001		0.031	0.033	-0.002		0.03	0.035	-0.005	*
Rural	0.67	0.57	0.1		0.46	0.63	-0.17	***	0.77	0.78	-0.01	
Observation	63	1404			182	4438			80	3450		

*p<0.1; **p<0.05; ***p<0.01

Source : CFPS 2010, 2012, 2014, 2016

Table 2. 10 Descriptive data for modified panel sample in which housing value appreciation information is available

Transition Type	2010				2012				2014			
	Become Entre in 2012	Otherwise in 2012	Diff		Become Entre in 2014	Otherwise in 2014	Diff		Become Entre in 2016	Otherwise in 2016	Diff	
Individual-information												
Male	0.77	0.54	0.23	***	0.71	0.54	0.17	***	0.74	0.56	0.18	***
Age	36.4	37.5	-1.1		39.4	42.8	-3.4	***	39	44.2	-5.2	***
Education year	8	8	0		8.1	7.3	0.8	**	7.9	6.6	1.3	***
Married	1	0.99	0.01		0.99	1	-0.01		0.99	1	-0.01	
Education year(father)	6.8	5.6	1.2	**	5.7	4.5	1.2	***	4.5	3.7	0.8	**
Education year(mother)	3.9	3.6	0.3		8	7	1	***	6	4.8	1.2	**
Education year(Spouse)	3.8	3.7	0.1		3.6	3.5	0.1		3.5	3	0.5	**
Number of children	1.6	1.5	0.1		1.6	1.7	-0.1	**	1.83	1.77	0.06	
Individual income	0.015	0.014	0.001		0.02	0.013	0.007	***	0.017	0.008	0.009	***
BMI	22.8	22.2	23.3		23.2	22.9	0.3		24	23	1	***
Self-rated health level	0.58	0.53	0.05		0.7	0.67	0.03		0.81	0.72	0.09	*
Family-information												
House ownership	0.93	0.95	-0.02		0.91	0.92	-0.01		0.96	0.96	0	
Family size (excl.children)	2.8	2.9	-0.1		3.1	2.7	0.4	***	3.5	3	0.5	**
Land acquisition	0	0.24	-0.24		0.021	0.022	-0.001		0.13	0.08	0.05	*
Housing value appreciation	0.31	0.29	0.02		0.24	0.19	0.05	***	0.06	0.03	0.03	**
Income of other family members	0.022	0.023	-0.001		0.033	0.033	0		0.03	0.035	-0.005	*
Rural	0.6	0.55	0.05		0.42	0.6	-0.18	***	0.72	0.77	-0.05	
Observation	83	1944			237	5449			103	3964		

*p<0.1; **p<0.05; ***p<0.01

Source: CFPS 2010, 2012, 2014, 2016

Table 2. 11 The random-effect panel regression for modified panel sample in which net asset information is available

Y:1=Entrepreneur,	RE-Probit			RE-OLS		
0=Non-Entre	1	2	3	4	5	6
Net_asset	0.236***			0.021***		
	(0.090)			(0.004)		
	[0.016]					
Net_asset*Rural		0.390**			0.018*	
		(0.147)			(0.011)	
		[0.027]				
Net_asset*Urban		0.187*			0.012	
		(0.099)			(0.009)	
		[0.013]				
Net_asset*Highdevelop			0.076			0.001
			(0.126)			(0.009)
			[0.005]			
Net_asset*(1-Highdevelop)			0.377***			0.027**
			(0.114)			(0.013)
			[0.028]			
Male	0.317***	0.316***	0.317***	0.021***	0.021***	0.021***
	(0.062)	(0.062)	(0.062)	(0.004)	(0.004)	(0.004)
	[0.021]	[0.021]	[0.021]			
Age	-0.020***	-0.021***	-0.021***	-0.001***	-0.001***	-0.001***
	(0.004)	(0.004)	(0.004)	(0.0002)	(0.0002)	(0.0002)
	[-0.001]	[-0.001]	[-0.001]			
Year of education (father)	0.011	0.011*	0.011	0.001*	0.001*	0.001*
	(0.007)	(0.007)	(0.007)	(0.0005)	(0.0005)	(0.0005)
	[0.001]	[0.005]	[0.001]			

Table 1.11 Continued

Y:1=Entrepreneur,	RE-Probit			RE-OLS		
0=Non-Entre	1	2	3	4	5	6
Number of children	0.071*	0.073*	0.071*	0.002	0.002	0.003
	(0.039)	(0.039)	(0.039)	(0.003)	(0.003)	(0.003)
	[0.005]	[0.005]	[0.005]			
Income	3.185*	3.15*	3.17*	0.587*	0.588***	0.583***
	(1.853)	(1.853)	(1.854)	(0.197)	(0.197)	(0.197)
	[0.221]	[0.218]	[0.219]			
BMI	0.025***	0.024***	0.024***	0.001***	0.001***	0.001***
	(0.008)	(0.008)	(0.008)	(0.0005)	(0.0005)	(0.0005)
	[0.002]	[0.002]	[0.002]			
Income of other	-3.05***	-3.201***	-3.176***	-0.215***	-0.220***	-0.228***
Family Members	(1.037)	(1.045)	(1.041)	(0.069)	(0.069)	(0.071)
	[-0.211]	[-0.222]	[-0.220]			
Rural	-0.016	-0.075	-0.009	-0.001	-0.003	-0.0001
	(0.064)	(0.079)	(0.064)	(0.005)	(0.006)	(0.005)
	[-0.001]	[-0.0004]	[-0.006]			
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes
Province control	Yes	Yes	Yes	Yes	Yes	Yes
Other control variables	Yes	Yes	Yes	Yes	Yes	Yes
Observations	9617	9617	9617	9617	9617	9617

*p<0.1; **p<0.05; ***p<0.01
Note:
1. Average marginal effect of RE-Probit are showed in brackets. Robust standard error are showed in the parentheses.
2. For brevity and making our key findings prominent, we fold the coefficient of those control variables. "YES" in this table means this variables group is included into the regression as the control variable(s). "NO" means this variables group is not included into the regression.
Source: CFPS 2010, 2012, 2014, 2016

Table 1. 12 The random-effect panel regression for modified panel sample in which housing value appreciation information is available

Y:1=Entrepreneur,	RE-Probit			RE-OLS		
0=Non-Entre	1	2	3	4	5	6
Hv_appre	0.298**			0.026**		
	(0.130)			(0.125)		
	[0.022]					
Hv_appre*Rural		0.381**			0.030**	
		(0.156)			(0.014)	
		[0.026]				
Hv_appre*Urban		0.021			0.022	
		(0.162)			(0.017)	
		[0.018]				
Hv_appre*Highdevelop			0.141			0.014
			(0.164)			(0.015)
			[0.010]			
Hv_appre*(1-Highdevelop)			0.505**			0.043**
			(0.181)			(0.018)
			[0.039]			
Male	0.330***	0.330***	0.331***	0.023***	0.023***	0.023***
	(0.054)	(0.054)	(0.053)	(0.004)	(0.004)	(0.004)
	[0.023]	[0.023]	[0.023]			
Age	-0.018***	-0.018***	-0.018***	-0.001***	-0.001***	-0.001***
	(0.003)	(0.003)	(0.003)	(0.0002)	(0.0002)	(0.0002)
	[-0.001]	[-0.001]	[-0.001]			
Year of education (father)	0.009	0.009	0.009**	0.001*	0.001*	0.001*
	(0.006)	(0.006)	(0.006)	(0.0005)	(0.0005)	(0.0005)
	[0.001]	[0.001]	[0.001]			

Table 2.12 Continued

Y:1=Entrepreneur,	RE-Probit			RE-OLS		
0=Non-Entre	1	2	3	4	5	6
Number of children	0.096***	0.095***	0.097***	0.006**	0.006**	0.006**
	(0.033)	(0.033)	(0.033)	(0.003)	(0.003)	(0.003)
	[0.007]	[0.007]	[0.007]			
Income	4.340**	4.312**	4.26**	0.694***	0.694***	0.687***
	(1.587)	(1.588)	(1.588)	(0.173)	(0.173)	(0.173)
	[0.320]	[0.318]	[0.314]			
BMI	0.015**	0.015**	0.015**	0.001*	0.001**	0.001**
	(0.007)	(0.007)	(0.007)	(0.0005)	(0.0005)	(0.0005)
	[0.001]	[0.001]	[0.001]			
Income of other	-1.548*	-1.530*	-1.583*	-0.120*	-0.119*	-0.124*
Family Members	(0.849)	(0.849)	(0.850)	(0.064)	(0.064)	(0.065)
	[-0.114]	[-0.113]	[-0.117]			
Rural	-0.134*	-0.168***	-0.135**	-0.010**	-0.011**	-0.010**
	(0.054)	(0.066)	(0.054)	(0.005)	(0.005)	(0.005)
	[-0.010]	[-0.010]	[-0.010]			
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes
Province control	Yes	Yes	Yes	Yes	Yes	Yes
Other control variables	Yes	Yes	Yes	Yes	Yes	Yes
Observations	11780	11780	11780	11780	11780	11780

*p<0.1; **p<0.05; ***p<0.01
Note:
1. Average marginal effect of RE-Probit are showed in brackets. Robust standard errors are showed in the parentheses.
2. For brevity and making our key findings prominent, we fold the coefficient of those control variables. "YES" in this table means this variables group is included into the regression as the control variable(s). "NO" means this variables group is not included into the regression.
Source: CFPS 2010, 2012, 2014, 2016

Table 2. 13 Concavity check for modified panel sample in which net asset information is available

Y:1=Entrepreneur,	RE-OLS		
0=Non-Entre	1	2	3
Net_asset	0.048***		
	(0.017)		
Net_asset^2	-0.018***		
	(0.007)		
Net_asset*Rural		0.065***	
		(0.021)	
Net_asset^2*Rural		-0.031***	
		(0.008)	
Net_asset*Urban		0.036**	
		(0.023)	
Net_asset^2*Urban		-0.011**	
		(0.009)	
Net_asset*Highdevelop			0.025
			(0.026)
Net_asset^2*Highdevelop			-0.010
			(0.009)
Net_asset*(1-Highdevelop)			0.060***
			(0.020)
Net_asset^2*(1-Highdevelop)			-0.0240*
			(0.012)
Control variables	Yes	Yes	Yes
Observations	9617	9617	9617

*p<0.1; **p<0.05; ***p<0.01
Note:
1. For brevity and making our key findings prominent, we fold the coefficient of those control variables. "YES" in this table means this variables group is included into the regression as the control variable(s). "NO" means this variables group is not included into the regression.
Source: CFPS 2010, 2012, 2014, 2016

Table 2. 14 Concavity check for modified panel sample in which housing value appreciation is available

Y:1=Entrepreneur, 0=Non-Entre	RE-OLS		
	1	2	3
Hv_appre	0.045		
	(0.028)		
Hv_appre^2	-0.018		
	(0.028)		
Hv_appre*Rural		0.039*	
		(0.031)	
Hv_appre^2*Rural		-0.008	
		(0.034)	
Hv_appre*Urban		0.051	
		(0.038)	
Hv_appre^2*Urban		-0.030	
		(0.038)	
Hv_appre*Highdevelop			0.018
			(0.036)
Hv_appre^2*Highdevelop			-0.003
			(0.034)
Hv_appre*(1-Highdevelop)			0.053*
			(0.038)
Hv_appre^2*(1-Highdevelop)			-0.013
			(0.050)
Control variables	Yes	Yes	Yes
Observations	11780	11780	11780

*p<0.1; **p<0.05; ***p<0.01
Note:
1. For brevity and making our key findings prominent, we fold the coefficient of those control variables.
"YES" in this table means this variables group is included into the regression as the control variable(s).
"NO" means this variables group is not included into the regression.
Source: CFPS 2010, 2012, 2014, 2016

Table 2. 15 Descriptive data for raw panel sample in which net asset information is available

Transition Type	2010				2012				2014			
	Become Entre in 2012	Otherwise in 2012	Diff		Become Entre in 2014	Otherwise in 2014	Diff		Become Entre in 2016	Otherwise in 2016	Diff	
Individual-information												
Male	0.78	0.55	0.23	***	0.7	0.56	0.14	***	0.75	0.57	0.18	***
Age	36.2	37.5	-1.3		38.8	42.7	-3.9	***	39.4	43.8	-4.4	***
Education year	7.7	8	-0.3		8.3	7.3	1	***	8.1	6.7	1.4	***
Married	1	0.99	0.01		0.99	1	-0.01		0.99	1	-0.01	
Education year(father)	6.7	5.8	0.9	*	5.8	4.6	1.2	***	5	3.8	1.2	***
Education year(mother)	3.6	3.6	0		8	6.9	1.1	***	5.7	5	0.7	
Education year(Spouse)	3.6	3.7	-0.1		3.8	3.5	0.3	**	3.3	3	0.3	
Number of children	1.6	1.5	0.1		1.6	1.7	-0.1	**	1.75	1.77	-0.02	
Individual income	0.012	0.013	-0.001		0.02	0.012	0.008	***	0.017	0.007	0.01	***
BMI	23.4	22.3	1.1	**	23.3	23	0.3		24	23	1	***
Self-rated health level	0.67	0.54	0.13	**	0.73	0.68	0.05		0.8	0.73	0.07	
Family-information												
House ownership	0.92	0.95	-0.03		0.98	0.97	0.01		0.98	0.99	-0.01	
Family size (excl.children)	2.9	2.8	0.1		3	2.7	0.3	***	3.4	3	0.4	**
Land acquisition	0	0.028	-0.028		0.022	0.022	0		0.09	0.08	0.01	
Net asset	0.22	0.25	-0.03		0.37	0.29	0.08	***	0.37	0.29	0.08	**
Income of other family members	0.022	0.023	-0.001		0.03	0.033	-0.003		0.03	0.035	-0.005	
Rural	0.67	0.55	0.12	*	0.46	0.61	-0.15	***	0.74	0.76	-0.02	
Observation	63	1549			182	5041			97	3858		

*p<0.1; **p<0.05; ***p<0.01

Source: CFPS 2010, 2012, 2014, 2016

Table 2. 16 Descriptive data for raw panel sample in which housing value appreciation information is available

Transition Type	2010				2012				2014			
	Become Entre in 2012	Keep Non_Entre in 2012	Diff		Become Entre in 2014	Keep Non_Entre in 2014	Diff		Become Entre in 2016	Keep Non_Entre in 2016	Diff	
Individual-information												
Male	0.78	0.55	0.23	***	0.71	0.56	0.15	***	0.74	0.57	0.17	***
Age	36.4	37.4	-1		39.4	42.5	-3.1	***	39.3	43.9	-4.6	***
Education year	8	8	0		8.1	7.5	0.6	**	7.9	6.8	1.1	***
Married	1	0.99	0.01		0.99	1	-0.01		0.99	1	-0.01	
Education year(father)	6.8	5.7	1.1	**	5.7	4.6	1.1	***	4.7	3.8	0.9	**
Education year(mother)	3.9	3.6	0.3		8	7.1	0.9	***	5.8	5	0.8	*
Education year(Spouse)	3.8	3.7	0.1		3.6	3.5	0.1		3.5	3	0.5	**
Number of children	1.6	1.5	0.1		1.6	1.7	-0.1	*	1.81	1.76	0.05	
Individual income	0.015	0.014	1E-03		0.02	0.012	0.008	***	0.017	0.007	0.01	***
BMI	22.8	22.3	0.5		23.2	23	0.2		24	23	1	***
Self-rated health level	0.58	0.54	0.04		0.7	0.67	0.03		0.81	0.73	0.08	*
Family-information												
House ownership	0.93	0.95	-0.02		0.91	0.91	0		0.97	0.96	0.01	
Family size (excl.children)	2.8	2.9	-0.1		3.1	2.7	0.4	***	3.6	3	0.6	***
Land acquisition	0	0.024	-0.02		0.021	0.023	-0		0.11	0.08	0.03	
Housing value appreciation	0.31	0.29	0.02		0.24	0.19	0.05	***	0.06	0.03	0.03	**
Income of other family members	0.022	0.023	-0		0.033	0.033	0		0.03	0.035	-0.01	*
Rural	0.6	0.54	0.06		0.42	0.58	-0.16	***	0.7	0.75	-0.05	
Observation	83	2145			237	6275			123	4453		

*p<0.1; **p<0.05; ***p<0.01

Source: CFPS 2010, 2012, 2014, 2016

Table 2. 17 The random-effect panel regression for raw panel sample in which net asset information is available

Y:1=Entrepreneur,	RE-Probit			RE-OLS		
0=Non-Entre	1	2	3	4	5	6
Net_asset	0.159*			0.008		
	(0.083)			(0.007)		
	[0.011]					
Net_asset*Rural		0.235*			0.096	
		(0.135)			(0.009)	
		[0.016]				
Net_asset*Urban		0.132			0.007	
		(0.092)			(0.008)	
		[0.009]				
Net_asset*Highdevelop			0.019			-0.002
			(0.121)			(0.007)
			[0.001]			
Net_asset*(1-Highdevelop)			0.261**			0.017*
			(0.101)			(0.010)
			[0.018]			
Male	0.252***	0.251***	0.252***	0.016***	0.016***	0.016***
	(0.058)	(0.058)	(0.058)	(0.004)	(0.004)	(0.004)
	[0.016]	[0.016]	[0.016]			
Age	-0.017***	-0.017***	-0.017***	-0.001***	-0.001***	-0.001***
	(0.004)	(0.004)	(0.004)	(0.0002)	(0.0002)	(0.0002)
	[-0.001]	[-0.001]	[-0.001]			
Year of education (father)	0.011*	0.011*	0.011*	0.001*	0.001*	0.001*
	(0.006)	(0.006)	(0.006)	(0.0005)	(0.0005)	(0.0005)
	[0.001]	[0.001]	[0.001]			

Table 2.17 Continued

Y:1=Entrepreneur, 0=Non-Entre	RE-Probit			RE-OLS		
	1	2	3	4	5	6
Number of children	0.052	0.053	0.052	0.002	0.002	0.002
	(0.037)	(0.037)	(0.037)	(0.002)	(0.002)	(0.002)
	[0.005]	[0.004]	[0.003]			
Income	6.25***	6.25***	6.29***	0.75***	0.751*	0.753*
	(1.682)	(1.681)	(1.682)	(0.173)	(0.173)	(0.173)
	[0.212]	[0.417]	[0.419]			
BMI	0.021***	0.021***	0.021***	0.001**	0.001**	0.001**
	(0.008)	(0.008)	(0.008)	(0.0005)	(0.0005)	(0.0005)
	[0.002]	[0.001]	[0.001]			
Income of other	-2.23**	-2.29**	-2.282***	-0.149**	-0.151**	-0.155**
Family Members	(0.962)	(0.966)	(0.963)	(0.060)	(0.060)	(0.061)
	[-0.20]	[-0.153]	[-0.152]			
Rural	-0.018	-0.049	-0.011	-0.0005	-0.001	0.0001
	(0.060)	(0.075)	(0.060)	(0.004)	(0.005)	(0.004)
	[-0.003]	[-0.001]	[-0.001]			
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes
Province control	Yes	Yes	Yes	Yes	Yes	Yes
Other control variables	Yes	Yes	Yes	Yes	Yes	Yes
Observations	10790	10790	10790	10790	10790	10790

*p<0.1; **p<0.05; ***p<0.01

Note:

1. Average marginal effect of RE-Probit are showed in brackets. Robust standard error are showed in the parentheses.

2. For brevity and making our key findings prominent, we fold the coefficient of those control variables. "YES" in this table means this variables group is included into the regression as the control variable(s). "NO" means this variables group is not included into the regression.

Source: CFPS 2010, 2012, 2014, 2016

Table 2. 18 The random-effect panel regression for raw panel sample in which housing value appreciation information is available

Y:1=Entrepreneur,	RE-Probit			RE-OLS		
0=Non-Entre	1	2	3	4	5	6
Hv_appre	0.223* (0.125) [0.016]			0.017 (0.011)		
Hv_appre*Rural		0.310** (0.150) [0.020]			0.022* (0.013)	
Hv_appre*Urban		0.13 (0.155) [0.010]			0.012 (0.014)	
Hv_appre*Highdevelop			0.077 (0.157) [0.005]			0.006 (0.013)
Hv_appre*(1-Highdevelop)			0.419** (0.174) [0.031]			0.033** (0.016)
Male	0.270*** (0.051) [0.018]	0.270*** (0.051) [0.018]	0.271*** (0.051) [0.018]	0.018*** (0.003)	0.018*** (0.003)	0.018*** (0.003)
Age	-0.015*** (0.003) [-0.001]	-0.015*** (0.003) [-0.001]	-0.015*** (0.003) [-0.001]	-0.001*** (0.0002)	-0.001*** (0.0002)	-0.001*** (0.0002)
Year of education (father)	0.009 (0.006) [0.001]	0.009 (0.006) [0.001]	0.009 (0.006) [0.001]	0.001 (0.0004)	0.001 (0.0004)	0.001 (0.0004)

Table 2.18 Continued

Y:1=Entrepreneur, 0=Non-Entre	RE-Probit			RE-OLS		
	1	2	3	4	5	6
Number of children	0.078**	0.077**	0.079**	0.005*	0.005*	0.005*
	(0.032)	(0.032)	(0.032)	(0.002)	(0.002)	(0.002)
	[0.005]	[0.005]	[0.005]			
Income	7.37***	7.37***	7.32***	0.859***	0.860***	0.860***
	(1.452)	(1.452)	(1.452)	(0.152)	(0.152)	(0.152)
	[0.516]	[0.516]	[0.512]			
BMI	0.011*	0.011*	0.011*	0.001	0.001	0.001
	(0.007)	(0.007)	(0.007)	(0.0005)	(0.0005)	(0.0005)
	[0.001]	[0.001]	[0.001]			
Income of other Family Members	-1.269	-1.252	-1.292	-0.096*	-0.095*	-0.095*
	(0.797)	(0.797)	(0.797)	(0.056)	(0.056)	(0.056)
	[-0.089]	[-0.088]	[-0.090]			
Rural	-0.117**	-0.153**	-0.118**	-0.008*	-0.009**	-0.009**
	(0.051)	(0.062)	(0.051)	(0.004)	(0.005)	(0.005)
	[-0.008]	[-0.008]	[-0.008]			
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes
Province control	Yes	Yes	Yes	Yes	Yes	Yes
Other control variables	Yes	Yes	Yes	Yes	Yes	Yes
Observations	13316	13316	13316	13316	13316	13316

*p<0.1; **p<0.05; ***p<0.01

Note:

1. Average marginal effect of RE-Probit are showed in brackets. Robust standard error are showed in the parentheses.

2. For brevity and making our key findings prominent, we fold the coefficient of those control variables. "YES" in this table means this variables group is included into the regression as the control variable(s). "NO" means this variables group is not included into the regression.

Source: CFPS 2010, 2012, 2014, 2016

Table 2. 19 Concavity check for raw panel sample in which net asset information is available

Y:1=Entrepreneur,	RE-OLS		
0=Non-Entre	1	2	3
Net_asset	0.036**		
	(0.014)		
Net_asset^2	-0.014***		
	(0.005)		
Net_asset*Rural		0.041**	
		(0.018)	
Net_asset^2*Rural		-0.020***	
		(0.007)	
Net_asset*Urban		0.03	
		(0.019)	
Net_asset^2*Urban		-0.011	
		(0.007)	
Net_asset*Highdevelop			0.015
			(0.021)
Net_asset^2*Highdevelop			-0.007
			(0.007)
Net_asset*(1-Highdevelop)			0.047***
			(0.017)
Net_asset^2*(1-Highdevelop)			-0.021**
			(0.009)
Control variables	Yes	Yes	Yes
Observations	10790	10790	10790

*p<0.1; **p<0.05; ***p<0.01
Note:
1. For brevity and making our key findings prominent, we fold the coefficient of those control variables. "YES" in this table means this variables group is included into the regression as the control variable(s). "NO" means this variables group is not included into the regression.
Source: CFPS 2010, 2012, 2014, 2016

Table 2. 20 Concavity check for raw panel sample in which housing value appreciation is available

Y:1=Entrepreneur,	RE-OLS		
0=Non-Entre	1	2	3
Hv_appre	0.040*		
	(0.024)		
Hv_appre^2	-0.023		
	(0.023)		
Hv_appre*Rural		0.043	
		(0.027)	
Hv_appre^2*Rural		-0.021	
		(0.030)	
Hv_appre*Urban		0.036	
		(0.032)	
Hv_appre^2*Urban		-0.023	
		(0.032)	
Hv_appre*Highdevelop			0.014
			(0.031)
Hv_appre^2*Highdevelop			-0.006
			(0.028)
Hv_appre*(1-Highdevelop)			0.052
			(0.034)
Hv_appre^2*(1-Highdevelop)			-0.025
			(0.046)
Control variables	Yes	Yes	Yes
Observations	13316	13316	13316

*p<0.1; **p<0.05; ***p<0.01

Note:

1. For brevity and making our key findings prominent, we fold the coefficient of those control variables. "YES" in this table means this variables group is included into the regression as the control variable(s). "NO" means this variables group is not included into the regression.

Source: CFPS 2010, 2012, 2014, 2016

Figure 2.4 Concavity check for the overall relationship between net asset and entrepreneurial entry in pooled sample

Self_employ = -0.022*Net_asset^2+0.064*Net_asset
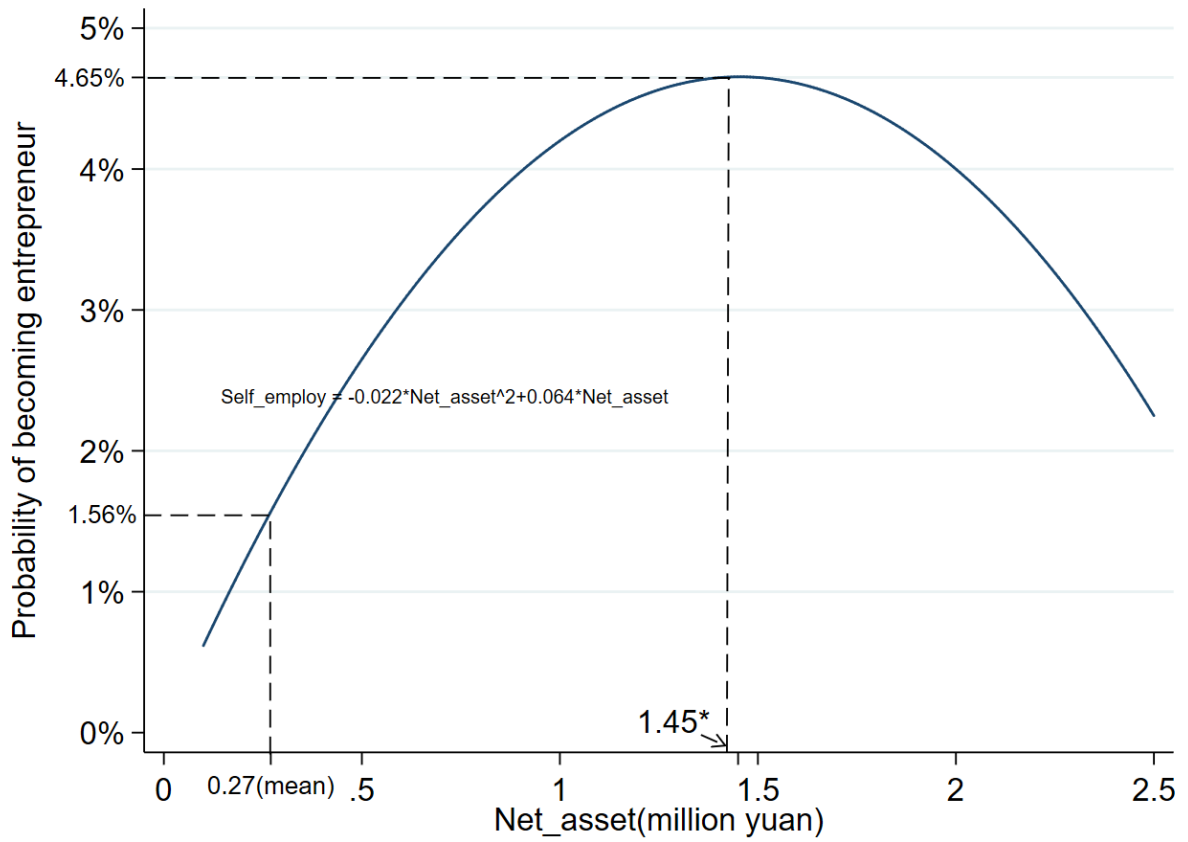
(Note: 0.27 is the mean of the net asset and 1.45 is 98% percentile of the net asset in pooled sample .This figure is made by the author via STATA)

Figure 2.5 Concavity check for the relationship between net asset and entrepreneurial entry in urban/rural area in pooled sample
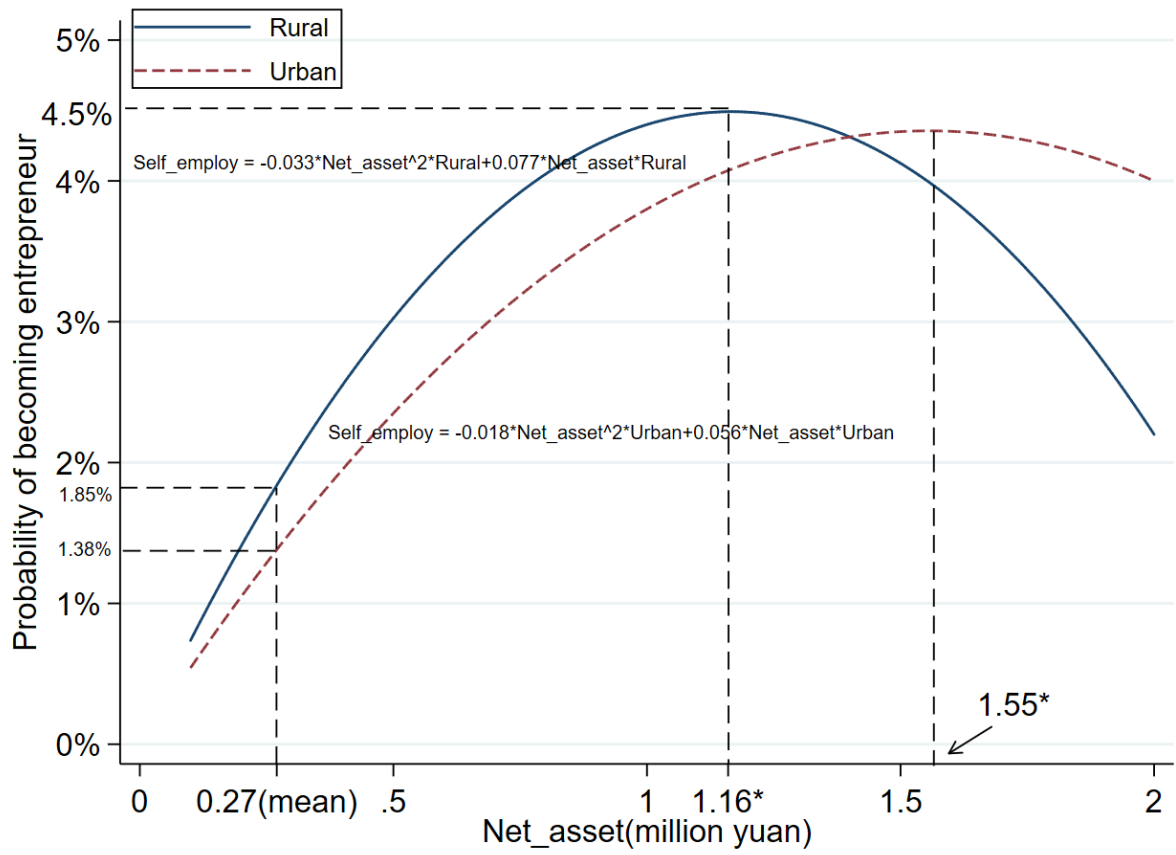
(Note: 0.27 is the mean of the net asset and 1.16 is 97% percentile of the net asset in pooled sample. This figure is made by the author via STATA)

Figure 2.6 Concavity check for relationship between net asset and entrepreneurial entry in less financial developed areas in pooled sample
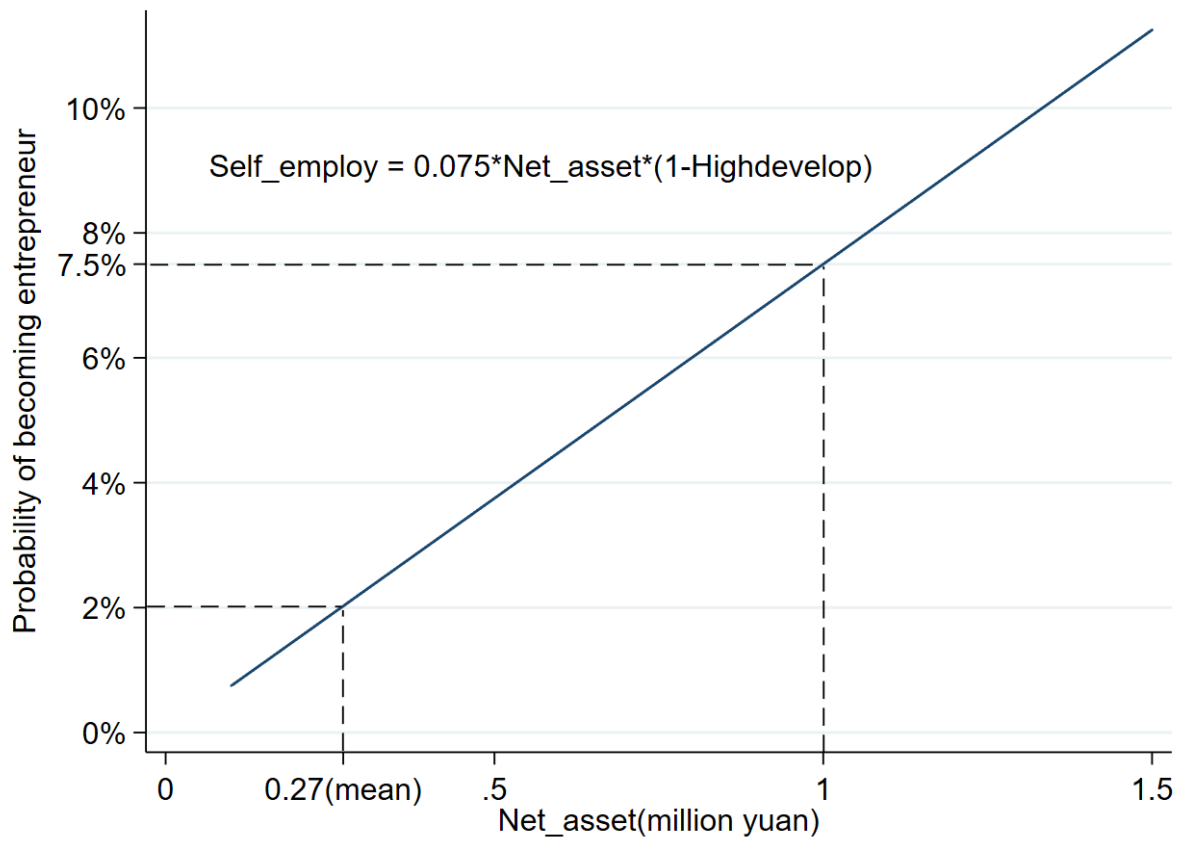
(Note: 0.27 is the mean of the net asset and 1 is 96.02% percentile of the net asset in pooled sample. This figure is made by the author via STATA)

Figure 2.7 Concavity check for the overall relationship between net asset and entrepreneurial entry in modified panel sample
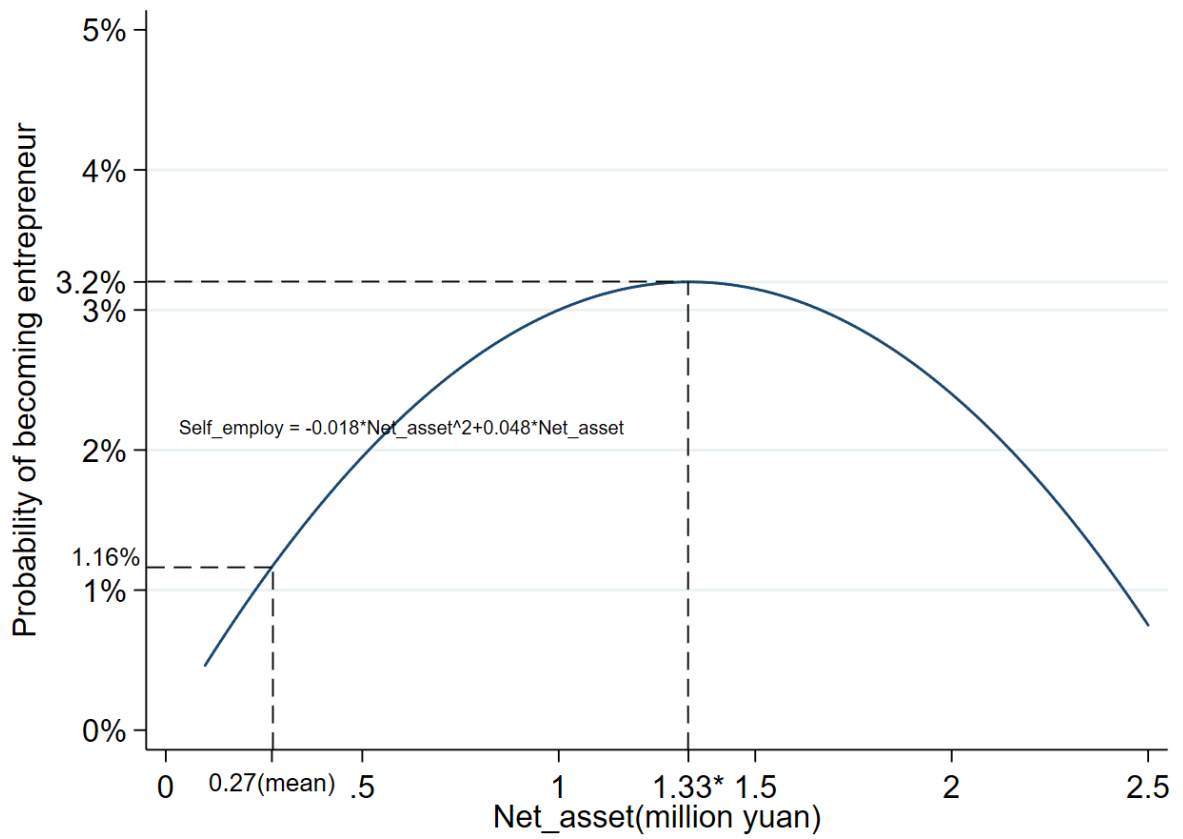
(Note: 0.27 is the mean of the net asset and 1.33 is 97.75% percentile of the net asset in modified panel sample. This figure is made by the author via STATA)

Figure 2.8 Concavity check for relationship between net asset and entrepreneurial entry in urban/rural area modified panel sample
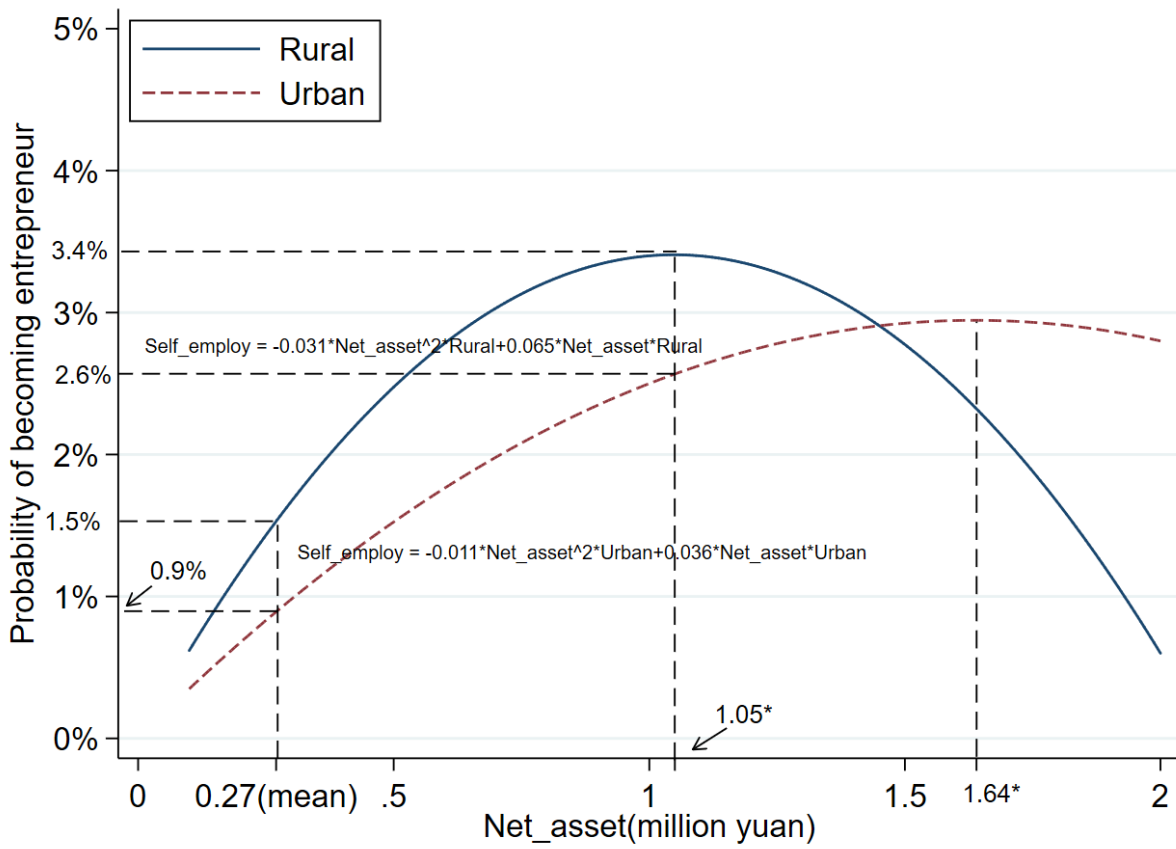
(Note: 0.27 is the mean of the net asset and 1.05 is 96.67 % percentile of the net asset in modified panel sample. This figure is made by the author via STATA)

Figure 2.9 Concavity check for relationship between net asset and entrepreneurial entry in less financial developed areas in raw panel sample

Self_employ = -0.024*Net_asset^2*(1-Highdevelop)+0.06*Net_asset*(1-Highdevelop)
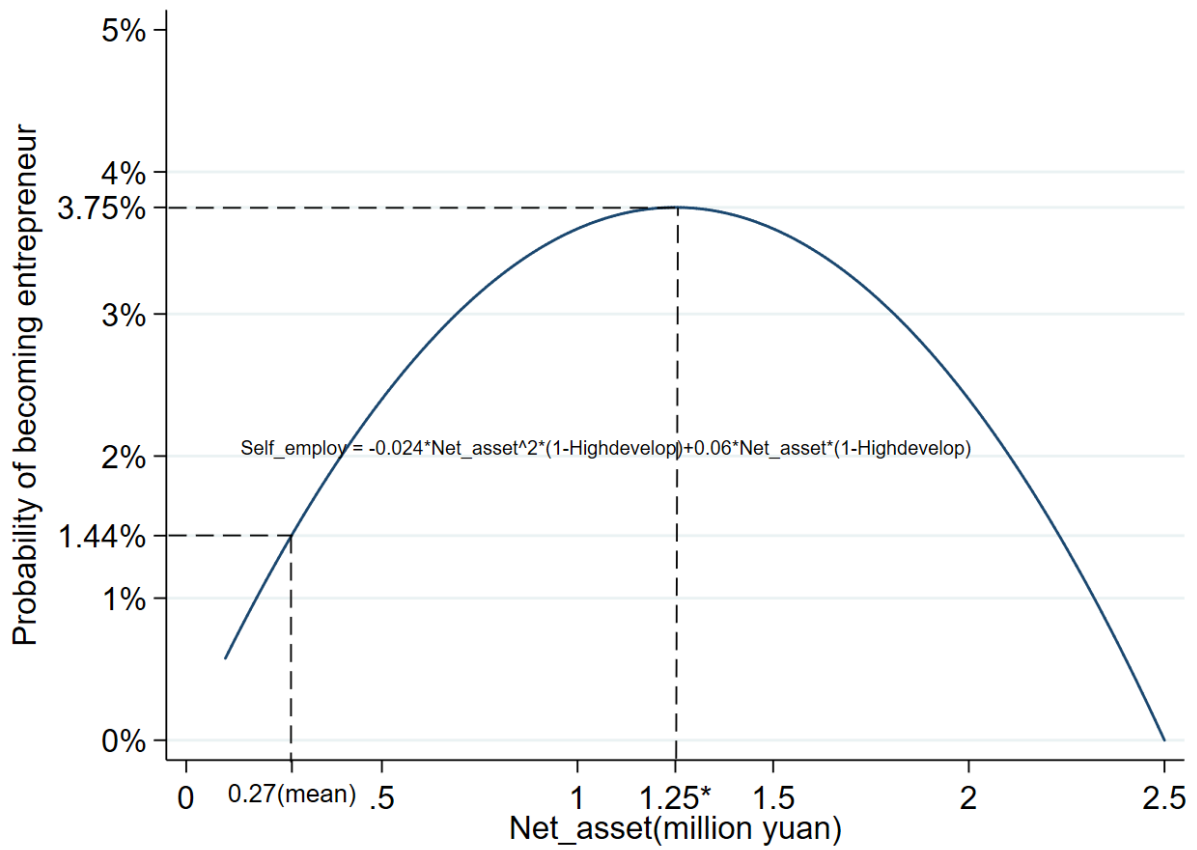
(Note: 0.27 is the mean of the net asset and 1.25 is 97.49 % percentile of the net asset in raw panel sample. This figure is made by the author via STATA)

Figure 2.10 Concavity check for the overall relationship between net asset and entrepreneurial entry in raw panel sample
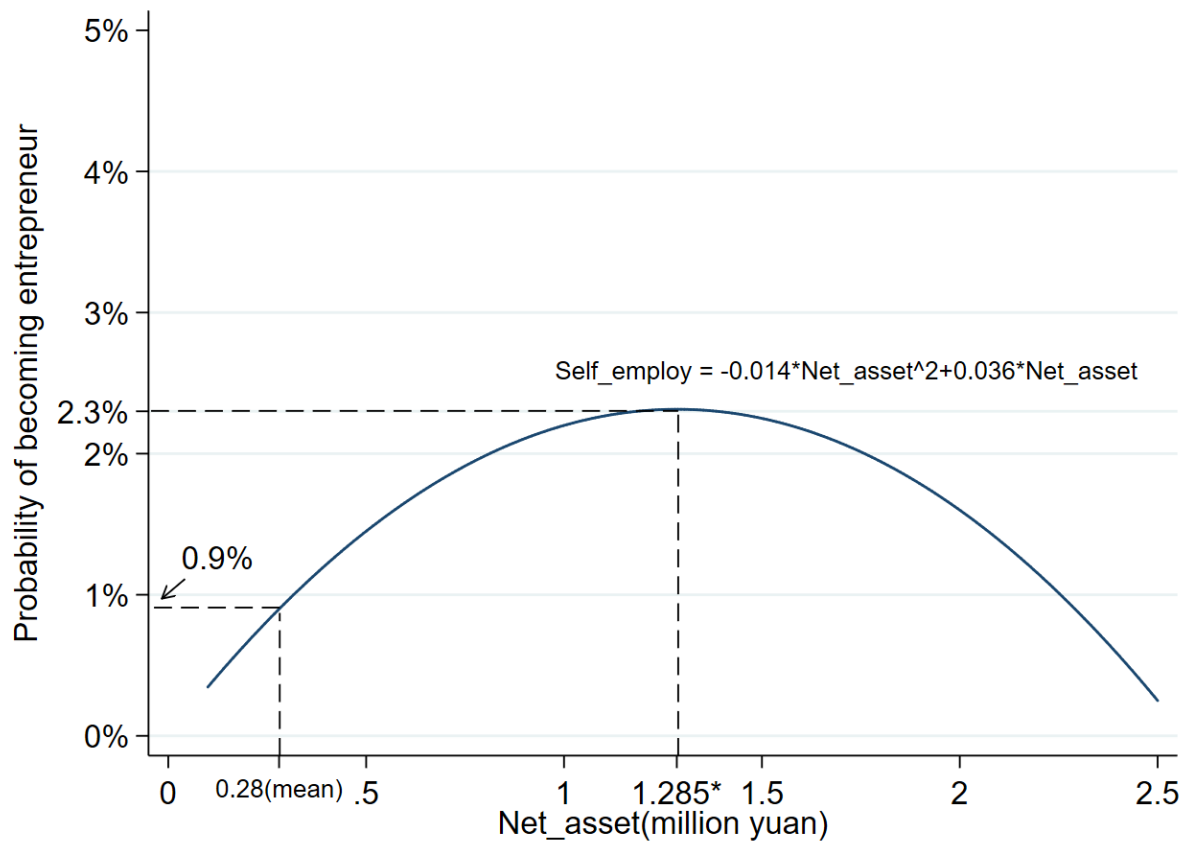
(Note: 0.28 is the mean of the net asset and 1.285 is 97.4 % percentile of the net asset in raw panel sample. This figure is made by the author via STATA)

Figure 2.11 Concavity check for the relationship between net asset and entrepreneurial entry in rural area in raw panel sample
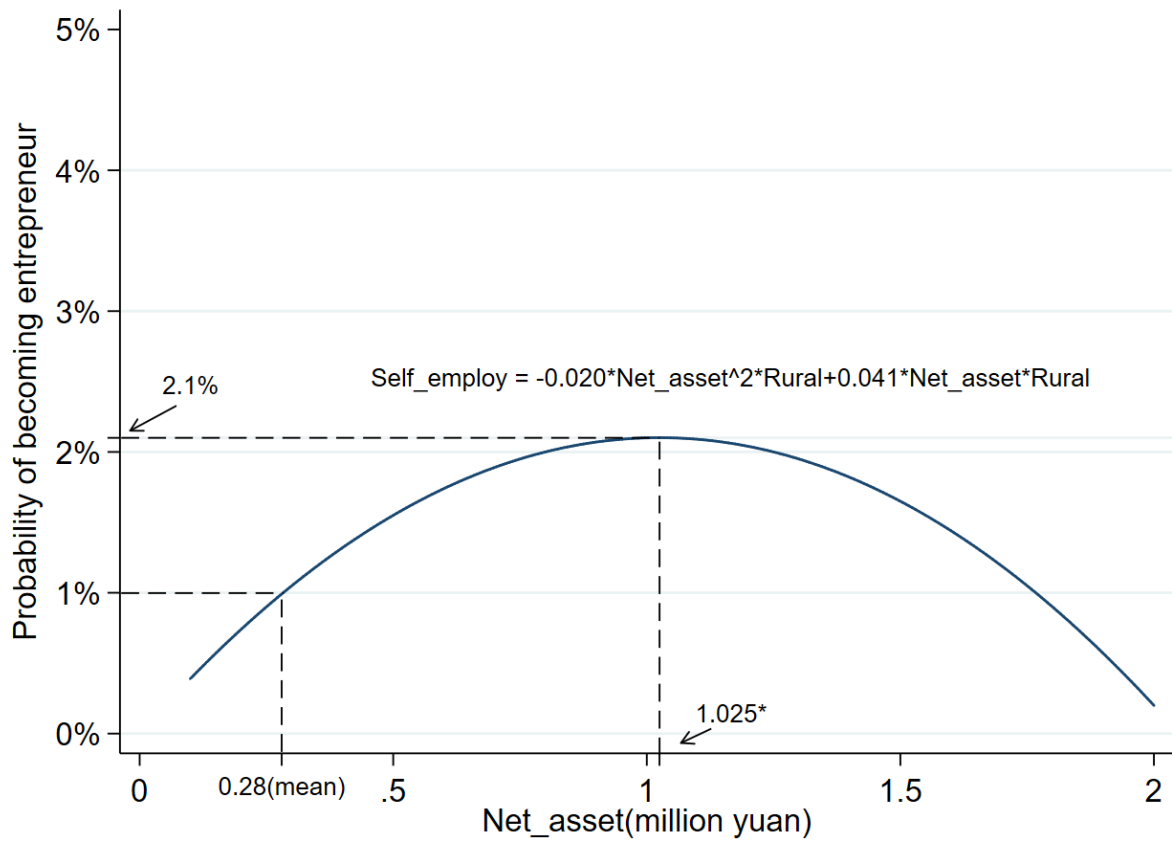
(Note: 0.28 is the mean of the net asset and 1.025 is 95.96% percentile of the net asset in raw panel sample. This figure is made by the author via STATA)

Figure 2.12 Concavity check for the relationship between net asset and entrepreneurial entry in less financial developed areas in raw panel sample
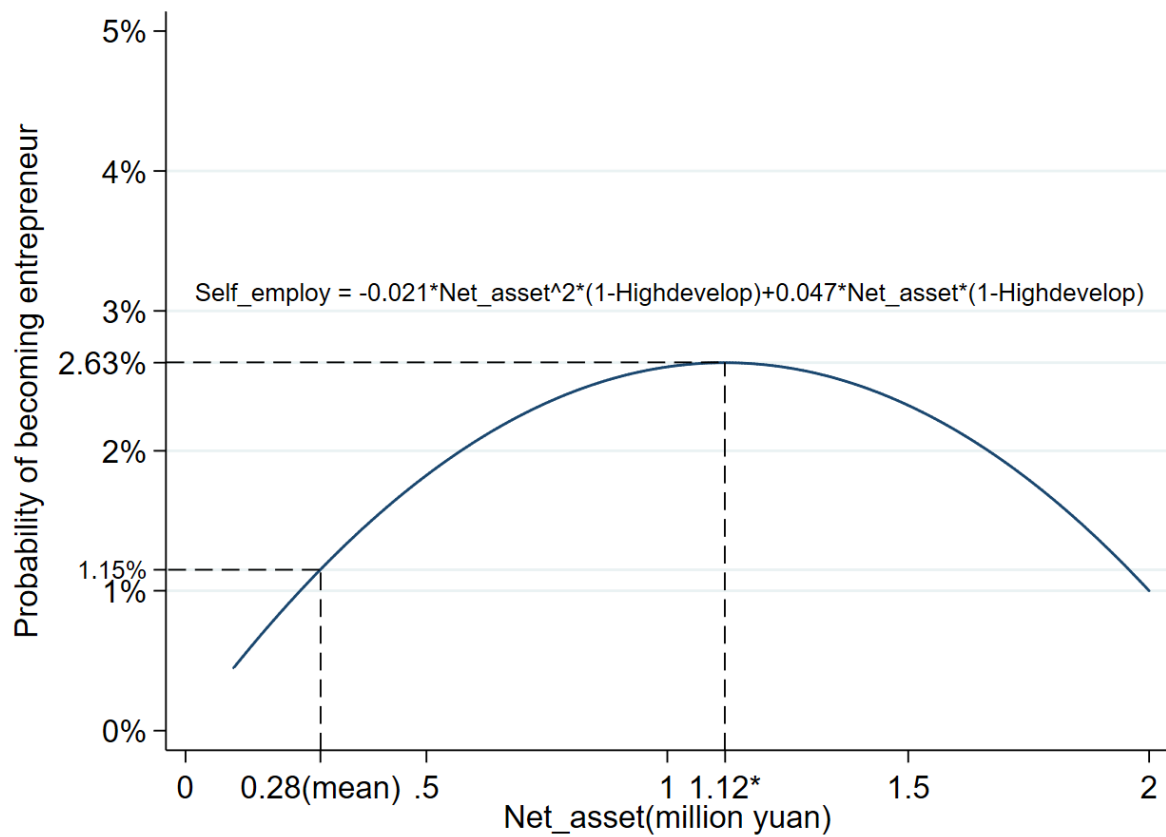
(Note: 0.28 is the mean of the net asset and 1.12 is 96.66% percentile of the net asset in raw panel sample. This figure is made by the author via STATA)

Chapter Three: The Emergence of Hybrid Entrepreneurs and Its Effect on Entry into Full-time Self-employment: Evidence from the UK

3.1 Introduction

As our first chapter illustrates, entrepreneurship is the engine of a country's development. Therefore, methods for increasing the number of high-quality, full-time entrepreneurs powering an economy should be carefully considered by policy makers.

Today, if paid employees want to become full-time entrepreneurs, instead of giving up their current employment and transitioning into full-time self-employment directly, they can first start up their own business while retaining their regular employment. They can then transition into full-time self-employment, only when they feel they are capable of doing so.[44] Due to the high cash outlay and the risks associated with transitioning into full-time self-employment directly, [45] this staged transition method is more often adopted by the public (Burke et al., 2008; Folta et al., 2010).

This phenomenon of starting one's own business, whilst simultaneously working for a regular, employment wage, is today widespread across the world.[46] Folta et al. (2010) first labeled this

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[44] During the period of running their own business, these entrepreneurial candidates are learning by doing. Specifically, they test the feasibility of their business model, the potential of their venture and their own capability to fit in the entrepreneurial context (Folta et al,2010). After verifying above these three key points, they face three choices: stop running the business, keep running the business but without transitioning into full-time self-employment or transition into full-time self-employment (Folta et al., 2010). Jovanovic (1982) emphasized that when an individual is uncertain about whether his capabilities can match the entrepreneurial context, the best way to ascertain the quality of the match is to enter and gain experience.

[45] The paid earners may need to give up what they have in their current employed job, such as the regular salary, job position, retirement benefits, etc. if they choose to transition into full-time self-employment directly (Folta et al,2010). Due to greater initial investment, running full-time business directly puts more resources at risk than for running the same business on a part-time basis. (Raffiee and Feng, 2014)

[46] Global Entrepreneurship Monitor, a large cross-national study on entrepreneurship, 112 countries involved currently, shows that 80% of nascent entrepreneurs also have regular wage job (Petrova, 2012). In European countries, based on the evidences from the European Labour Force Survey, there are 11% in Greece, 18% in France, 32% in Sweden and 68% in the Netherland self-employed who also hold other type of work (Strohmeyer and Tonoyan, 2007).

phenomenon hybrid entrepreneurship and individuals engaged in this are referred to as hybrid entrepreneurs. Specifically, the definition of hybrid entrepreneurs strengthens the assumption that the regular paid employment held by the individuals should be their primary job and running their own business is their secondary job.[47]

Compared with ventures established by full-time entrepreneurs, those set up by hybrid entrepreneurs have higher growth potential and can survive for a longer period of time.[48][49] More importantly, due to the high potential of transitioning into full-time self-employment,[50] the advantages possessed by the ventures that they establish will be inherited by their full-time enterprises. This means that the overall quality of the enterprises will be improved as the hybrid entrepreneurs transition into full-time self-employment.

Compared with paid employees, hybrid entrepreneurs have a much greater transition rate into full-time self-employment.[51] For the entrepreneurial development of an economy, it is vital to consider two points. Firstly, since all hybrid entrepreneurs are potential candidates for transitioning into full-time entrepreneurship, understanding the reasons why paid

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[47] Obviously, hybrid entrepreneurs belong to moonlighters and hybrid entrepreneurship is one type of moonlighting. There are two other types of moonlighting. First, individuals are self-employed in their primary job while holding a secondary employed job. Secondly, individuals are employed in their primary job while holding the other secondary employed job.

[48] The businesses started from hybrid are found to survive longer on average than those directly established without experiencing hybrid process (Raffiee and Feng, 2014). Furthermore, since hybrid entrepreneurs are often educated better than full-time entrepreneurs, the ventures they engage in by them have higher growth potential (Folta et al., 2010).

[49] However, the literature has not focus on hybrid entrepreneurs until Folta et al. (2010) systematically illustrates the specialty and importance of hybrid entrepreneurs. Demir et al. (2020) conduct a systematic literature review for hybrid entrepreneurship. They use different key words (part-time entrepreneurs, moonlight entrepreneurs, mixed workers, side activity entrepreneur, multiple job holding) to search for the hybrid entrepreneurs related researches via Google Scholar and only find 43 studies. The oldest identified study dates from 1977 and the most recent one is in 2018. Furthermore, the authors find that, before 2010, there were only 7 relevant papers.

[50] Folta et al. (2010) and Raffiee & Feng (2014) show that hybrid entrepreneurs have full potential to evolve into promising full-time entrepreneurs.

[51] Folta et al. (2010) shows that in Sweden, in over half of jobs, on average, for males, 8.5% hybrid entrepreneurs will transition into full-time self-employment while only 0.7% of paid workers will transition into full-time self-employment.

employees choose to become hybrid entrepreneurs are important. Secondly, since we see the transition into full-time self-employment from hybrid entrepreneurs, it is also important to understand the reasons why hybrid entrepreneurs choose to transition into full-time self-employment.

In terms of the first point, there are four potential driving factors: in order to supplement income (Folta et al., 2010), to protect against risk associated with the primary job (Delmar et al., 2008), non-pecuniary benefits (Thorgren et al., 2014), and the transition into full-time self-employment (Raffiee & Feng, 2014).

In terms of the second point, there are three potential driving factors: the good performance of the secondary self-employed job (Folta et al., 2010), the age of hybrid entrepreneurs (Thorgren et al., 2015), and the determinants which drive paid employees into hybrid entrepreneurship (Block & Landgraf, 2016).

Within the second largest economy in Europe,[52] the UK's, individuals with the potential to become hybrid entrepreneurs are widespread.[53] Moreover, based on the British Household Panel Survey and the Understanding Society datasets from the period between 1991 to 2018, we find that 6.6% of hybrid entrepreneurs will transition into full-time self-employment, while only 1.2% of paid employees will transition into full-time self-employment. [54] Hybrid entrepreneurs are, therefore, five times more likely to transition into full-time self-employment in the UK than paid employees. On the other hand, only 18.5% of entrepreneurs

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[52] International Monetary Fund (April 2020).

[53] Burke et al. (2008) followed 11,361 men and women from the British National Child Development Study and found that 'pure' self-employed are outnumbered by individuals who mix their time with periods in both self-employment and paid work (Burke et al.,2008).

[54] The transition data in the UK are calculated by the author of this paper by using Understanding Society waves 1-9 and harmonized BHPS waves 1-18.

based in the UK are hybrid entrepreneurs. [55] Given the important role that hybrid entrepreneurs play in the entrepreneurial development of an economy, establishing the reasons for the two transitions discussed above is important for the economy of the UK. However, few studies focus on hybrid entrepreneurs in the UK.[56]

To fill this gap in the literature, this paper will study hybrid entrepreneurship in the UK. Since hybrid entrepreneurship studies today are mainly based on Folta et al. (2010), this paper will use Folta et al. (2010) as a guide and will aim to answer the following research questions:

1. In the UK, why do paid employees choose to become hybrid entrepreneurs? How likely is it that this decision is driven by the desire to become full-time self-employed?

2. Are hybrid entrepreneurs more likely to transition into full-time self-employment than full-time, paid employees in the UK?

Given the argument of Folta et al. (2010) that every hybrid entrepreneur can learn from their secondary self-employed job and decide whether to enter full-time self-employment, this study will answer this third question:

3. Will hybrid entrepreneurs be motivated by the good performance of their secondary self-employed job to transition into full-time self-employment?

This paper contributes to existing literature by providing the first systematic study into hybrid entrepreneurship in the UK. The study will be arranged as follows: previous literatures related to hybrid entrepreneurship will be reviewed in Section 2. The contribution and hypotheses of

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[55] There are 47.3% (Folta et al., 2010) and 68% (Strohmeyer and Tonoyan, 2007) entrepreneurs are hybrid entrepreneurs in Sweden and Netherland.

[56] Only one study, Schulz et al. (2017) studies the earnings structure of multiple job holders in the UK and find that those paid workers who wish to set up their own business will be more likely to hold self-employed second job.

this study will be given in Sections 3 and 4, respectively. In Section 5, we will introduce the methods used to research the questions mentioned in the introduction. In Section 6, we will outline the data used in this study. In Section 7, we present the results. In Section 8, we will compare and discuss our result and the result acquired by the previous studies. In the final section, we conclude and put forward some policy implications of our study.

3.2 Literature Review

This section consists of two parts. In the first part, this paper will review the potential drivers of hybrid entrepreneurship that have been examined within existing literature. In the second part, this paper will review studies illustrating whether hybrid entrepreneurship can facilitate the transition into full-time self-employment, and the potential motivators which drive hybrid entrepreneurs into full-time self-employment.[57]

3.2.1 Transition into hybrid entrepreneurship

While numerous previous studies have examined the determinants of moonlighting, few studies have demonstrated interest in the drivers of transitioning to hybrid entrepreneurship. However, Folta et al. (2010) and Delmar et al. (2008) find that the drivers of moonlighting can also be used to explain the transition to hybrid entrepreneurship. Specifically, Folta et al. (2010) illustrates that *supplementing income*, *non-pecuniary benefits* and *a desire to transition into full-time self-employment* are three drivers of hybrid entrepreneurship. Delmar et al. (2008) illustrates that *protecting against any risk associated with the main employment* is another driver of hybrid entrepreneurship. Among these four drivers, previous studies show that *supplementing income*, *protecting against any risk associated with the main employment* and *non-pecuniary benefits* are also the determinants of moonlighting. Since moonlighters are hybrid entrepreneurs and hybrid entrepreneurship is a type of moonlighting behavior (Folta et al., 2010), and due to the scarcity of literature researching the potential drivers of

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[57] As Thorgren et al. (2016) puts it, very few studies focus on the transition into full-time self-employment made by hybrid entrepreneurs. To the best of our search, only four studies show their interest on it.

hybrid entrepreneurship, it is then rational for us to review the studies which research the drivers of moonlighting as a replacement for, and supplement to, the literature review.

In the first part of the literature review section, we will review four potential drivers behind hybrid entrepreneurship: supplementing income, protecting against any risk associated with the main employment, non-pecuniary benefits and a desire to transition into full-time self-employment (Folta et al., 2010; Delmar et al., 2008).

3.2.1.1 Supplementing income

The first driver of hybrid entrepreneurship is the supplementation of income. Paid employees choose to become hybrid entrepreneurs because they want to increase their income, either due to financial pressures or to enhance their level of wealth. Although Hamilton (2000) finds that the income from self-employment is considerably less than in a similar job as an employee with a similar background, [58] choosing self-employment rather than finding secondary employment may be more attractive for paid employeees who want to earn more money. The reason is that a secondary self-employed job can provide a high degree of flexibility in terms of working schedule for paid employees (Renna 2006). This allows them to determine how many hours they wish to work and how hard they wish to work, thus enabling paid employees to increase their income while improving the balance of their work and family life (Folta et al., 2010).

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[58] It means, compared with transition into hybrid entrepreneurs, holding the other secondary employed job is more reasonable for paid workers if they only pursue for more incomes.

3.2.1.1.1 Supplementing income in order to cope with financial pressures

3.2.1.1.1.1 Research on countries other than the UK:

Kimmel and Conway (2001) study the features of moonlighters to understand why people choose to become moonlighters in the U.S. The data used in this study is the 1984 panel of the Survey of Income and Program Participation (SIPP). The sample of this survey is collected every four months. This study includes 203 individuals and 586 observations. The descriptive table of this study illustrates that moonlighters work fewer hours on their primary job than non-moonlighters on average. The main result of this study shows that moonlighters, on average, have a lower primary job wage, lower non-labor income and a higher number of children. The authors of this research conclude that people in the U.S. choose to become moonlighters because they want to work more hours to increase their disposable income. One interesting finding in this study shows that moonlighters are poorer than the average employees, even though they work longer hours overall, which means that their moonlighting cannot eliminate the economic hardship entirely (Kimmel and Conway, 2001). The small size of the sample used in this study, combined with the fact that this study does not remove the heterogeneity of the individuals, makes the result of this study less persuasive.

Kim (2005) researches why people choose to moonlight in Romania. The author finds that people hold secondary job(s) for survival, since the wage of their primary job cannot satisfy their basic needs. The data used in this paper is a sample which includes 1,709 Romanian married couples from the Romanian household survey of Informal Economy Activities, where 2,585 households were interviewed in September 1996. Furthermore, whether or not the husband works in the informal sector is shown to affect the wife's decision as to whether or not she works in the informal sector. This finding is further evidence that it is poverty and the need for basic consumption that is driving people in Romania to take up a secondary job in

the informal sector. Two comments can be made in relation to this study. Firstly, the sample used is considerably limited and only spans one year, meaning that the findings of this study are not representative. Furthermore, the author omits the data of those who work for non-pecuniary reasons and focuses only on those who work for financial gain. This is not appropriate for this study as it will enlarge the effect of the gap between low income and consumption on participation in the informal sector.

Renna (2006) researches the effect of hours regulation on the decision of paid employees to moonlight or to work overtime. The author finds that a decrease in working hours within the primary job increases the likelihood of moonlighting. The data used by this study is from nine OECD countries between the years of 1990 to 2000. Specifically, the author assumes that an underemployed worker can acquire more earnings, either by finding a secondary job or by working overtime. Correspondingly, by considering the possible correlation between moonlighting and working overtime, this study builds a bivariate probit model. There are two dependent variables in this model – whether they are moonlighting and whether they are working overtime. The independent variables in this model are the standard hours within the primary employment, paid at the straight-time rate and the overtime premium.[59] Control variables include age, marital status, schooling, tenure, firm size and professional status. The estimated result of the bivariate probit model shows that longer standard hours within primary employment are negatively associated with moonlighting, but are positively associated with working overtime. Overtime premium is positively associated with moonlighting but is negatively associated with working overtime.

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[59] Overtime premium is the extra salary needs to be paid by the employer if the workers work more hours than statutory workweek hours.

3.2.1.1.1.2 Research on the UK:

Wu et al. (2009) research the determinants of moonlighting in the UK for both males and females. The data used in this paper is taken from the British Household Panel Survey, Waves 1 to 11, collected during the period between 1991 to 2001. The authors find that, for both males and females, financial pressures play an important role in moonlighting in the UK. Specifically, a higher primary employment wage significantly decreases the labour supply of the secondary employment, thus reducing the incentive to moonlight. Therefore, financial pressure plays an important role in motivating people to moonlight in the UK. Two comments can be made in relation to this study. Firstly, the dependent variable of the baseline model in this study is the number of working hours of the secondary job. It only identifies the determinants of the number of secondary job working hours undertaken by moonlighters. The reasons that individuals are moonlighters or the reasons why they choose to become moonlighters in the first place are not examined. Secondly, as the family income is not included in the baseline model built in this paper, other income variables included in the model will be biased if the family income is associated with them.

Atherton et al. (2016) re-examine the factors affecting moonlighting behaviours for both males and females in the UK. Although a larger dataset is used in this study, the British Household Panel Survey Waves 1 to 18 during the period between 1991 to 2008, their key finding does not change. This study shows that being faced with housing payment difficulties and a lower annual labour income motivates both male and female moonlighters to work more hours in their secondary job. Specifically, regardless of gender, difficulties in paying for housing costs is positively associated with secondary job working hours, while annual labour income is negatively associated with secondary job working hours. Therefore, the authors of

this paper conclude that facing financial pressure remains the major driver for moonlighters to work more hours in their secondary job.

3.2.1.1.2 Supplementing income to increase wealth
3.2.1.1.2.1 Research on countries other than the UK:

Clarke (1999) claims that there is no correlation between economic hardship and moonlighting in Russia. The data used in this study is a recent survey, conducted by the Independent Institute for Comparative Labour Relations Research in April and May 1998, and includes 4,000 adult members of households in four Russian cities – Kemerovo, Samara, Syktyvkar, and Lyubertsy. The author finds that uptake of secondary employment is not considered to be an alternative survival strategy, as people in the Russia are severely constrained by the limited opportunities and relatively few choices available to them. People who have resources are more likely to work a secondary job. Specifically, those who are better educated, have more work experience and are in an occupation with a higher prestige have the greatest opportunity for taking on a secondary job. Supporting the arguments that have been made, this study shows that only 12% of the respondents reported receiving an income from secondary employment. This demonstrates that secondary employment is not widespread in Russia. However, given that secondary employment can mitigate the effect of the loss of primary income and employment (taking up to almost 40% of the total family income), if people in Russia cope with economic hardship via moonlighting, the percentage of people engaging in moonlighting behavior should be much higher. This study also applies different regressions to examine the association between economic hardship and moonlighting in Russia. However, no evidence shows that engaging in secondary employment

is a response to financial hardship due to wage arrears in the primary employment, constrained working hours and, most importantly, the level of household income per head with secondary earnings excluded. None of these factors are seen to have a significant influence on the likelihood of engaging in secondary employment. Therefore, the author concludes that moonlighting does not provide a solution as to how Russian households survive in a non-monetary market economy with few opportunities. Since the author does not show the regression result table in this study, it is difficult to provide suitable comments for this study.

3.2.1.1.2.2 Research in the UK:

Heineck (2003) studies secondary employment levels for both males and females, respectively, within the UK. The author finds that constraints on working hours in primary employment motivates both males and females in the UK to take up a secondary job. However, since the gross earnings from the primary job are positively associated with the decision to moonlight, people in the UK who choose to moonlight may not necessarily be doing so due to financial pressure. The data used in this study is the first ten waves of British Household Panel Survey from 1991 to 2000. Two comments can be made in relation to this study. Firstly, it is more appropriate to consider net payment rather than gross earnings, because net payment is the actual income workers can acquire from their primary job. Secondly, as Wu et al. (2017) show, being faced with housing costs also affects the decision moonlight in the UK. Omitting this variable is likely to result in a biased estimation of both variables - whether one wishes to work more hours and the gross earnings from the primary job. Wu et al. (2017) have already shown that there is a positive association between facing

housing costs and the number of working hours in the secondary job. Additionally, the income from the primary job is also likely to be associated with family income. Therefore, the result acquired by Heineck (2003) is not sufficiently persuasive.

3.2.1.2 Protecting against any risk of uncertainty associated with the primary job

For paid employees, the second driver of hybrid entrepreneurship is to protect against the risk of uncertainty within their current job, such as being unexpectedly laid off or fluctuating income when there is a financial shock.

3.2.1.2.1 Research on countries other than the UK:

Delmar et al., (2008) examine the dynamics of combining self-employment and employment in Sweden. It suggests that one of the reasons that paid employees engage in a self-employed job simultaneously is to protect against the risk of unemployment. However, this study only suggested that this might be the case, but does not test the validity of this argument, either qualitatively or quantitatively.

Guariglia and Kim (2004) find that, in Russia, moonlighting attenuates the effect of earnings uncertainty within the primary job, and this, in turn, affects people's savings. Employees experiencing negative financial shocks may decide to hold a secondary job, which acts as an alternative to precautionary savings. The data used in this paper is from the Russia Longitudinal Monitoring Survey Rounds 5 to 9 covering the period between 1994 to 2000. This study shows that holding more than one job attenuates the effect of the concern of losing one's current job on the amount of monthly savings. The author concludes that moonlighting

in Russia can be treated as a self-insurance mechanism to use as an alternative to precautionary savings, in order to guarantee a particular level of consumption in the presence of fluctuating earnings. Given the fact that the situation of the Russian economy is substantially different before and after the year 2000, the findings would be more convincing if the author could extend their study period post 2000.

Livanos et al. (2012) research the determinants of moonlighting behaviors among male workers in Greece. The authors find that, for paid employees, apart from working hours constraints and financial hardship, hedging against the insecurity of the current job is another important factor that they consider when deciding whether to become moonlighters. Specifically, the data used in this study is taken from the Greek Labour Force Survey (LFS) from 2000 to 2004. This study shows that individuals with temporary or fixed contracts in their primary job are more likely to hold a second job than those who have permanent jobs. Moonlighting is likely to be used as a hedging strategy against job insecurity. Since this paper only focuses on males, the findings are not appliable to the moonlighting behaviors of females in Greece.

3.2.1.2.2 Research in the UK:

Bell et al. (1997) examine the link between job security and holding multiple jobs in the UK. The data used in this paper is from the British Household Panel Survey, Waves 1 to 4 from 1991 to 1994. The authors examine whether workers hold a secondary job to cushion the

financial impact of losing their primary source of earnings. However, they find little evidence to support this point of view.[60]

3.2.1.3 For non-pecuniary benefits

For paid employees, the third driver of hybrid entrepreneurship/moonlighting is to acquire non-pecuniary benefits. There are two types of non-pecuniary benefits which can be acquired by holding a secondary job. The first non-pecuniary benefit is called "heterogenous job hypothesis", put forward by Conway and Kimmel in 1998. It demonstrates that employees will become less satisfied with their job if they work considerably long hours in a single job with less varied job content. These paid employees will take up another job to acquire the benefits of diversifying their working tasks. This phenomenon is supported by the fact that most moonlighters hold a different job from their primary one (Wu et al., 2009). The second non-pecuniary benefit is that secondary job holders can pursue their hobby or activities that they are passionate about. Folta et al.(2010) states that the second type of non-pecuniary benefit is more likely to drive paid employees into hybrid entrepreneurship, due to the fact that holding a secondary self-employed job provides them with more flexibility to do what they want, whether or not they are pursuing a hobby or exploring an interest (Hundley, 2001).

3.2.1.3.1 Research on countries other than the UK:

Hamilton (2000) examines the difference between the earnings acquired by self-employed and paid employees. The author finds that the non-pecuniary benefits of self-employment

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[60] This study is cannot be download or viewed online, we can only review its abstract.

are significant. Although it provides both lower initial earnings and a lower growth earning rate than paid employment, most self-employed entrepreneurs persist in running their businesses. The data used in this study is from the 1984 panel of the Survey of Income and Program Participation, which includes nine four-month waves covering mid-1983 to mid-1986. This study shows that after 10 years in business or working in the job, the monthly income withdrawn by entrepreneurs from their company will be lower than the wage earned by paid employees by 19%, which increases to 33% if net profit is used. The author explains that individuals are willing to enter self-employment although they will have lower future earnings due to the fact that non-pecuniary benefits, such as "being their own boss", can compensate them for sacrificing their salary income.

Thorgren et al. (2014) find that passion plays an important role in driving paid employees to transition to hybrid entrepreneurship in Sweden. Specifically, the authors design a survey which asks informants the main motivation for choosing to combine employment with running a business. This survey was sent to 1,457 business owners based on a list of contacts from The Statistic Sweden by the author and they received usable questionnaires from 455 business owners, out of which 261 were hybrid entrepreneurs. The answers received from these 261 hybrid entrepreneurs show that, the most frequent option selected is "to work with something I am passionate about", taking up 34% of all answers. The option "to earn money" ranked second (16%), followed by "I enjoy the business/work combination" (13%). Subsequently, the authors interview a group of hybrid entrepreneurs (27 interviewees including 19 men and eight women) to verify the validity of the answers given by the informants. When asked the reasons for being a hybrid entrepreneur, many answer that it has stemmed from their hobby which they wish to develop, and it is something that they are

passionate about. Therefore, the authors conclude that, working with something one is passionate about is the top motivation for becoming a hybrid entrepreneur in Sweden.

3.2.1.3.2 Research on the UK:

Wu et al. (2009) find that people in the UK also moonlight due to a desire to work in a heterogenous job. They show that, in the first 11 waves of the British Household Panel Survey from 1991 to 2001, there are 9,888 moonlighters reporting the occupation of their second job and only 1,136 moonlighters work in the same occupation for both their primary and secondary job. 88.5% of moonlighters work in a different occupation in their secondary job from their primary one. Therefore, the author of this study concludes that this phenomenon shows a strong tendency for people in the UK to moonlight in order to add diversification to their working life, i.e., the heterogenous jobs hypothesis is likely to exist in the UK.

Similarly, Heineck (2003) finds that the heterogenous jobs hypothesis for moonlighting exists in the UK for both males and females. By using Waves 8 to 10 of the British Household Panel Survey from 1998 to 2000, for both males and females in the UK, the author finds that the wish to start one's own business is positively associated with being a moonlighter. The author argues that this phenomenon proves that the desire for heterogenous jobs motivates people in the UK to take up a secondary job. Secondary self-employed jobs can not only provide them with entrepreneurial experience and relevant skills, but also provides them with a variety of challenges to deal with.

3.2.1.4 In order to transition into full-time self-employment

The fourth driver of hybrid entrepreneurship is the desire to become full-time self-employed.

There are two reasons why paid employees do not transition directly into full-time self-employment – they are either subject to financial constraints or they are risk averse. Specifically, the non-risk-averse paid employees, who wish to become full-time self-employed, choose to become hybrid entrepreneurs first, only if they are short of initial capital and there are no borrowing options available to allow them to set up their own business directly. This scenario is analyzed by Pertrova (2005, 2012). For risk-averse paid employees, who wish to become full-time self-employed, even if they have access to substantial initial capital, they will not transition into full-time self-employment directly as it would mean giving up all of the pecuniary and non-pecuniary benefits of their current employed job. Furthermore, given the uncertainty of their own capability of running the business, combined with the high risk associated with a greater initial investment when entering self-employment directly, risk-averse paid employees will choose to become hybrid entrepreneurs first in order to test their entrepreneurial ability and the validity of their business plan (Petrova, 2012; Raffiee and Feng, 2014).

3.2.1.4.1 Not transitioning into full-time self-employment directly due to financial constraints

Petrova (2005) investigates why paid employees in the U.S. choose to become part-time entrepreneurs, rather than transition directly into full-time self-employment. The financial constraints hypothesis is examined by the author. The author defines part-time entrepreneurs as those who work a regular employed salaried job some of the time and work

on their own business at other times. Specifically, if individuals work 35 hours or more per week on their start-ups, they will be defined as being full-time entrepreneurs. If individuals work on their start-ups less than 35 hours per week, they are defined as being part-time entrepreneurs. The author examines whether the initial level of wealth of individuals in the U.S. affects their decision to be part-time entrepreneurs. The data used in this study is from the first wave of the Panel Study of Entrepreneurial Dynamics between 1998 and 2000. There are 1,052 observations, including 469 part-time entrepreneurs, 194 full-time entrepreneurs and 389 non-entrepreneurs. This study shows that household net worth is not associated with entry into part-time entrepreneurship. Subsequently, the author uses monthly changes to the Standard & Poor 500 Index as an instrument variable for household net worth and this further compounds the argument that household net worth is not associated with the decision to enter part-time entrepreneurship. Therefore, this paper concludes that part-time entrepreneurs in the U.S. are not financially constrained. There are two aspects that can be criticized in this paper. Firstly, the dummy dependent variable of the logit model established in this paper treats both part-time entrepreneurs and full-time entrepreneurs as one group. This will produce a biased regression result, Folta et al. (2010) has shown that the factors driving part-time entrepreneurship are systematically different from those leading individuals to enter self-employment directly. Secondly, the control variables of the baseline model built by this paper are significantly limited. Many control variables, such as salary and non-salary income which prove to be important factors associated with the transition into part-time entrepreneurship, are not included. If salary and household net worth are correlated, the result obtained by the author will be biased.

Pertrova (2012) re-examines the effect of household net worth and household income on being a part-time entrepreneur in the U.S. The data used in this paper is from the first wave

of Panel Study of Entrepreneurial Dynamics between 1998 and 2000. There are 1,049 observations available in the sample of this study after screening.61 It includes 469 part-time entrepreneurs, 194 full-time entrepreneurs and 386 non-entrepreneurs. The author finds that both household net worth and household income have no significant effect on the decision to be a part-time entrepreneur. This result, once again, proves that part-time entrepreneurs in the U.S. are not financially constrained. Compared with Petrova (2005), this study uses more control variables. However, the salaries of the employed jobs held by part-time and full-time entrepreneurs are still not included in the baseline model of this study. Therefore, the result given by this paper is likely to be biased since the salary and household net worth are likely to be correlated with each other.

3.2.1.4.2 Deciding not to transition directly into full-time self-employment due to risk aversion

3.2.1.4.2.1 Research on countries other than the UK:

Petrova (2010) builds a theoretical model and shows that individuals become part-time entrepreneurs because they are uncertain about their entrepreneurial ability. They initially prefer to spend only a small part of time to engaging in entrepreneurship without running the risk of losing all income if their entrepreneurial ability is insufficient. Based on their expectations of the prospect of their business, entrepreneurs decide how much time to spend working on their business and how much capital they should invest. They can receive an indication of their entrepreneurial ability as they spend more time in the start-up and can

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[61] Since Petrova (2005) does not illustrate how the data used in that paper is screened, we do not why three non-entrepreneurs are missing in Pertrova (2012) given the same wave of data is used.

decide whether they should transition into full-time self-employment or give up their self-employed business and focus only on their paid employment. More effective entrepreneurs will transform their start-ups into successfully operating businesses, while those with less entrepreneurial ability will choose to withdraw. The author finds that her model works well by using the data from Wave 1 of the Panel Study of Entrepreneurial Dynamic between 1998 and 2000.

Raffiee and Feng (2014) research whether hybrid entrepreneurship can enhance the chances of entering, and the survival rates of, entrepreneurship. The 1979 cohort of the National Longitudinal Survey of Youth is used in this study. The author finds that, due to greater initial investment, starting a full-time business puts more capital at risk than starting the same business on a part-time basis. Therefore, individuals who are risk averse and less confident are more likely to become hybrid entrepreneurs instead of transitioning into full-time self-employment. During the hybrid phase, hybrid entrepreneurs can gather entrepreneurial information and can learn by doing. Consequently, compared with ventures established by those who transition into directly full-time self-employment from paid employment, the ventures established by individuals who transition into full-time self-employment via hybrid entrepreneurship have a much higher rate of survival and can also survive for longer. Furthermore, the ventures established by hybrid entrepreneurs, who have entrepreneurial experience, can survive even longer once they become full-time self-employed.

Schulz et al. (2016) research the effect of firm entry deregulation on hybrid entrepreneurship in Mexico. A large Mexican household panel from the period between 2009 and 2013 is used in this study. The authors find that during the period of implementing SARE (System for Rapid Opening of Enterprises), many employees establish their ventures to test their business ideas

and explore business opportunities. Interestingly, the employees are four times more likely to become hybrid entrepreneurs than self-employed when SARE is implemented. Furthermore, in terms of individual sensitivity towards SARE, better educated individuals respond quicker to SARE than less educated individuals to establish their venture via hybrid entrepreneurship. Additionally, individuals who become hybrid entrepreneurs during the SARE implementation period are better educated than those who become full-time self-employed. Finally, the author finds that, only in those industries covered by SARE can the above phenomenon be witnessed.

3.2.1.4.2.2 Research on the UK:

Schulz et al. (2017) examine why moonlighters have higher hourly earnings in their second job than in their primary job in the UK for both males and females. The British Household Panel Survey from 1991 to 2008 is used in this study. All employees aged between 18 and 65 are selected as the research samples. The authors find that male paid employees who would like to set up their own business are more likely to hold a higher paid secondary job than those who do not wish to set up their business. To further establish the types of secondary jobs that are held by paid employees, the author divides the secondary jobs into self-employed and employed. They find that male paid employees who wish to set up their own business are more likely to hold a secondary self-employed job, rather than an additional employed job. This means male paid employees who wish to establish their own business are more likely to become hybrid entrepreneurs. Finally, the author finds that, regardless of gender, hybrid entrepreneurs are more likely to have higher earnings in their secondary job

than paid employees who hold an additional employed job. However, this study does not consider and control all other potential drivers of becoming hybrid entrepreneurs.

3.2.2 Transition into full-time self-employment from hybrid entrepreneurship

In the second part, we will review whether hybrid entrepreneurship can facilitate entry into full-time self-employment. Subsequently, the factors which affect or drive hybrid entrepreneurs into full-time self-employment will also be reviewed. Previous studies show that there are three factors – the good performance of the secondary self-employed job, the age of hybrid entrepreneurs and the determinants driving paid employees into hybrid entrepreneurship.

Wennburg et al. (2006) find that part-time entrepreneurship is the first step into full-time self-employment. Specifically, this study shows that individuals who wish to set up their own business do not directly transition into full-time self-employment but instead choose hybrid entrepreneurship. The authors of this study argue that part-time entrepreneurship can minimize the uncertainty related to self-employment. The sample used by this research is based on the 1997 cohort of the full population of employees in the Swedish knowledge-intensive sector. The data used by this study is from an extensive longitudinal study of entrepreneurship in the knowledge intensive sector from 1989 to 2002. The authors examine whether previous entry into part-time entrepreneurship plays a role in transitioning into full-time self-employment. A baseline model is built by the author. The dependent variable is a dummy equal to one if the individual is a full-time entrepreneur. The independent variable is a dummy equal to one if the individual has experience of part-time entrepreneurship. The

control variables include uncertainty of the industry in which the individual currently works,[62] the work tenure of their previous paid employment, the fixed assets of the industry in which the individual currently works in,[63] the intangible assets of the industry in which the individual currently works in,[64] and the industry leverage level.[65] The regression result of this model shows that previous experience of part time self-employment has a significantly positive affect on subsequent entry to full-time self-employment. Therefore, the authors conclude that entry into self-employment should be considered as a stepwise entry process. Individuals use part time entrepreneurship to examine and test the values of their conceived business opportunity, where positive economic information can inspire them to transition into full time entrepreneurship. However, the author does not specify the kinds of positive economic information that can lead part-time entrepreneurs into full-time entrepreneurship, and does not verify whether positive economic information can lead part-time entrepreneurs into full-time entrepreneurship.

Folta et al. (2010) study hybrid entrepreneurship in Sweden. The data used in this study is an eight-year period sample which includes nearly 45,000 Swedish men who started their salaried job in 1994. The period covered by the data used in this study is not specified by the author. The first finding of this paper is that economic hardship is not a reason for salaried earners in Sweden to become hybrid entrepreneurs as, compared with salaried earners, hybrid entrepreneurs have a higher primary income and a wealthier household. Subsequently, the author demonstrates that hybrid entrepreneurship can facilitate the transition into full-time self-employment in Sweden. Specifically, hybrid entrepreneurs are 38 times more likely

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[62] Measured by the authors themselves by using publicly available data on industry-level investment level.
[63] Such as buildings, machinery and equipment.
[64] Calculated by the authors through dividing intangible assets by total assets in each industry.
[65] Calculated by the authors through dividing total book assets by the industry's long-term debt.

to transition into full-time self-employment than paid employees. Furthermore, the author finds that hybrid entrepreneurs can learn from the performance of the secondary self-employed job and can decide whether to transition into full-time self-employment. A positive indication of performance prospects of their secondary self-employed job may inspire hybrid entrepreneurs to leave their salaried employment and enter full time self-employment (Folta et al.,2010). Moreover, the authors confirm that the potential to learn from the performance of the secondary self-employment job is available to all hybrid entrepreneurs, regardless of whether they intend to become full-time self-employed. Finally, this study shows that the earnings from the secondary self-employed job is positively associated with entry into self-employment. This study has three key weaknesses. Firstly, it focuses only on males in Sweden. Secondly, it does not control the working hours of the secondary self-employed job in the model built within this study. Thirdly, the argument made by the authors of this study is not verified by them. Our paper will consider these three points when investigating hybrid entrepreneurship in the UK.

Thorgren et al. (2016) find that age is an additional factor which affects the decision of hybrid entrepreneurs to transition into full-time self-employment in Sweden. Specifically, the author finds that younger and older hybrid entrepreneurs are more likely to transition into full-time self-employment than middle-age hybrid entrepreneurs, i.e. there is a convex relationship between age and the decision to transition into full-time entrepreneurs. The data used in this study is collected by the author himself. He distributes a questionnaire in 2012 via email to 749 business owners and receives 256 responses. To be considered a hybrid entrepreneur, he sets two criteria which need to be met by the business owners. Firstly, the business owners need to hold salaried employment. Secondly, the business owners need to engage in an entrepreneurial venture at the time of data collection. After screening the sample based on

these two criteria, the author acquires 103 hybrid entrepreneurs. Subsequently, a baseline model is constructed by the author. The dependent variable is a dummy equal to one if the business owner's intent is to transition into full-time self-employment. In order to verify whether the business owner eventually transitions into full-time self-employment, the author attempts to contact the 103 entrepreneurs in 2014 and successfully reaches 87 of them. Among these 87 hybrid entrepreneurs, 26.53% had transitioned to full-time entrepreneurship. Considering that 24.27% of the respondents indicated that they would transition into full-time self-employment when they completed the survey in 2012, the author confirms the validity of using the intent to transition as the dependent variable in the baseline model built by him. Two comments can be made on this study. Firstly, the sample used in this study is significantly limited, meaning the conclusion is less persuasive. Secondly, it is not appropriate to use the intention of transitioning into full-time entrepreneurship to represent the actual transition made by hybrid entrepreneurs, as the author cannot guarantee that the person wishing to transition into full-time self-employed makes the transition successfully.

Block & Landgraf (2016) find that the factors driving individuals into part-time entrepreneurship in Germany will be the same ones that drive them into full-time entrepreneurship. In this paper, part-time entrepreneurs are not the same as hybrid entrepreneurs, as the former group is not required to hold paid employment. Both financial and non-financial factors are examined by the authors. Financial factors include increasing their income and achieving financial success. Non-financial factors include achieving independence, self-realization, social recognition, innovation of a product and following the example of a person they admire. The data used in this paper is collected by the author through a survey designed to focus on part-time entrepreneurs in Germany during the period between September 2012 and January 2013. 1,119 individuals were surveyed. After screening,

the authors obtain 481 observations for their study. This study shows that, among the non-financial factors which drive individuals into part-time entrepreneurship, achieving independence or self-realization will further motivate part-time entrepreneurs to transition into full-time entrepreneurship, while achieving social recognition is negatively associated with transitioning. Among the financial factors which drive individuals into part-time entrepreneurship, supplementing income is negatively associated with the transition. Two comments can be provided on this study. Firstly, this paper does not explain why these financial and non-financial factors drive individuals into full-time entrepreneurship via part-time entrepreneurship, rather than driving individuals into full-time entrepreneurship directly. Secondly, this paper does not consider the "learning process" mentioned by Folta et al. (2010), which shows that the good performance of the secondary job can drive hybrid entrepreneurs into full-time entrepreneurship. The two financial factors, pursuing more income and achieving financial success, are likely to correlate with the good performance of the secondary job. Therefore, without controlling the good performance of the secondary job, the result acquired from this paper has the potential to be biased.

3.2.3 Summary of literature review

In this section, we have reviewed previous studies which examine the potential determinants that drive paid employees into hybrid entrepreneurship and the potential determinants which drive hybrid entrepreneurs into full-time self-employment both in the UK and outside of the UK.

Previous literature outside of the UK show that the potential drivers of hybrid entrepreneurship are supplementing income, hedging against uncertainty associated with the

primary job, non-pecuniary benefits and the wish to eventually transition into full-time self-employment. Furthermore, hybrid entrepreneurship can facilitate entry into full-time self-employment. Additionally, the good performance of the secondary self-employed job of hybrid entrepreneurs and the determinants of hybrid entrepreneurship can drive hybrid entrepreneurs into full-time self-employment. Finally, there is a convex relationship between the age of hybrid entrepreneurs and their decision to transition into full-time entrepreneurs.

Previous literature in the UK shows that the potential drivers of hybrid entrepreneurship are supplementing income, non-pecuniary benefits and transitioning into full-time self-employment. No relevant studies examine whether being a hybrid entrepreneur, initially, can facilitate entry into full-time self-employment. No relevant studies research the potential determinants which also drive hybrid entrepreneurs into full-time self-employment.

In contrast from previous studies, which examine one or some of the specific potential drivers of hybrid entrepreneurship, this study will examine all potential drivers of hybrid entrepreneurship in the UK. Furthermore, we will examine whether hybrid entrepreneurship can facilitate the transition into full-time self-employment in the UK. Additionally, we will examine the effect of the good performance of the secondary self-employed job on the decision to transition into full-time self-employment. The relationship between the age of hybrid entrepreneurs and their decision to transition into full-time entrepreneurs will be examined in the robustness test part of this study. Our study does not examine whether the determinants of hybrid entrepreneurship can further drive hybrid entrepreneurs into full-time self-employment. This is due to the fact that our study investigates the drivers of hybrid entrepreneurship and the determinants which drive hybrid entrepreneurs into full-time self-

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employment separately.66 As there is evidence that the labor supply decisions of men and women are different (Altonji and Blank, 1999), which translates into differences in rates of those holding multiple jobs in the UK (Panos et al., 2014), our study will examine all issues discussed above separately for males and females in the UK.

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[66] More details can be found at the end of Discussion section of this study.

3.3. Contribution

This study contributes to the literature by providing the first systematic investigation into hybrid entrepreneurship in the UK. Specifically, the contribution of this study consists of six aspects:

(1) By taking all potential driving factors into consideration, we examine whether paid employees in the UK are driven by these factors to become hybrid entrepreneurs. In particular, we examine the role of the desire to start one's own business on the decision to enter hybrid entrepreneurship in the UK.

(2) We examine whether hybrid entrepreneurship can facilitate the transition into full-time self-employment in the UK.

(3) We examine whether the good performance of the secondary self-employed job can inspire hybrid entrepreneurs to transition into full-time self-employment in the UK.

Folta et al. (2010) argues that the potential to learn from the secondary self-employed job is available to every hybrid entrepreneur, irrespective of whether or not they wish to become full-time self-employed. What this means is that every hybrid entrepreneur, regardless of whether they would like to become full-time self-employed/set up their own business, can be inspired by the good performance of their secondary self-employed job, and thus be driven into transitioning into full-time self-employment. In order to verify this statement:

(4) We further examine the role of wishing to start one's own business on the decision of hybrid entrepreneurs to transition into full-time self-employment in the UK.

(5) We further examine whether a wish to start one's own business has an impact on the hypothesis (3) that the good performance of the secondary self-employed job can inspire hybrid entrepreneurs to transition into full-time self-employment in the UK.

(6) We examine (1) to (5) separately for males and females.

3.4 Hypotheses

Previous studies have shown that the wish to become full-time self-employed is an important factor driving paid employees to become hybrid entrepreneurs in countries outside of the UK (Raffiee and Feng, 2014; Schulz et al., 2016). In the UK, Schulz et al. (2017) also show that employees who wish to start their own business are more likely to hold a secondary self-employed job.[67] Supported by this evidence, this study presents its first hypothesis:

H1 *For paid employees in the UK, the wish to start one's own business is positively associated with the decision to become a hybrid entrepreneur.*

Previous literature has shown that hybrid entrepreneurs in Sweden are more likely to become full-time self-employed (Wennberg et al., 2008; Folta et al., 2010). In the UK, based on the British Household Panel Survey and Understanding Society database from the period between 1991 and 2018, we also find that hybrid entrepreneurs are much more likely to become full-time self-employed than paid employees. [68] Therefore, this study makes this second hypothesis:

H2 *Hybrid entrepreneurs are more likely to transition into full-time self-employment than paid employees in the UK.*

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[67] However, this study does not consider and control all other potential drivers of becoming hybrid entrepreneurs in their study.

[68] The calculation is undertaken by the author of this study. We find that hybrid entrepreneurs are five times more likely to transition into full-time self-employed than paid workers (6.6% vs 1.2%).

Folta et al. (2010) has shown that, in Sweden, the good performance of the secondary self-employed job can inspire hybrid entrepreneurs to leave their salaried employment and transition into full-time self-employment. In the UK, based on the British Household Panel Survey and Understanding Society database from the period between 1991 and 2018, we also find that hybrid entrepreneurs, who transition into full-time self-employment, have higher secondary self-employed job earnings than their colleagues who do not make the transition.[69] Therefore, this study makes this third hypothesis:

H3 *The good performance of the secondary self-employed job can inspire hybrid entrepreneurs to transition into full-time self-employment in the UK.*

Moreover, Folta et al. (2010) reinforces the theory that the potential to learn from the secondary self-employed job is available to every hybrid entrepreneur, regardless of whether they wish to become full-time self-employed. However, Folta et al. (2010) does not verify this point, either qualitatively or quantitatively. In order to verify this argument put forward by Folta et al. (2010), this study makes the fourth and fifth hypotheses:

H4 *Regardless of whether one wishes to start one's own business, hybrid entrepreneurs are more likely to transition into full-time self-employment than paid employees in the UK.*

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[69] Hybrid entrepreneurs who transition into full-time self-employed earn £532 via their secondary self-employed job on average while their colleagues who do not transition earn £369 via their secondary self-employed job on average.

H5 *Regardless of whether one wishes to start one's own business, the good performance of the secondary self-employed job can inspire hybrid entrepreneurs to transition into full-time self-employment in the UK.*

Hypotheses 1 to 3 are not obvious and interesting to verify.

For the hypothesis 1, I wish to verify, for paid employees, whether a desire to start their own business is an important determinant for them to become hybrid entrepreneurs. Hypothesis 1 is not obvious because, rather than transitioning into hybrid entrepreneurs, paid employees in the UK who wish to start their own business can choose to transition into full-time entrepreneurs directly (Taylor, 2004; Disney and Gathergood, 2008). Furthermore, for those paid employees who are not willing to start their own business also could become hybrid entrepreneurs since by doing a side business, they can increase their income, explore their habits and protect against the risk of uncertainty within their current job. Therefore, for verifying whether a desire to start own business is an important determinant for paid employees to become hybrid entrepreneurs, it is interesting and important to verify hypothesis 1.

In terms of the hypothesis 2, it is not obvious, because for some hybrid entrepreneurs, they set up their side business is purely for pursing their hobby rather than pecuniary reasons. For these hybrid entrepreneurs, they are not more likely to transition into full-time self-employment than paid employees. Therefore, the hypothesis 2 becomes invalid for these hybrid entrepreneurs. However, hypothesis 2 will become valid if the majority of hybrid entrepreneurs in the UK originates from the pecuniary reasons such as setting up own business or supplementing the income, since these hybrid entrepreneurs will learn from their

side business and the good performance of their side business will inspire them to transition into full-time self-employment (Folta, 2010). Hypothesis 2 is interesting and important because if it is valid which means hybrid entrepreneurs are more likely to become full-time entrepreneurs than the paid employees in the UK. In other word, the UK government can increase the number of full-time entrepreneurs by increasing the number of hybrid entrepreneurs.

Similarly, for the hypothesis 3, it is not obvious because for some hybrid entrepreneurs, they set up their side business is purely for pursing their hobby rather than pecuniary reasons. High return from the side business will not inspire these hybrid entrepreneurs to transition into full-time self-employment. Therefore, the hypothesis 2 becomes invalid for these hybrid entrepreneurs.

3.5 Baseline specification
3.5.1 Baseline model 1

To test the first hypothesis, we utilize the following baseline equation based on Folta et al. (2010) and Schulz et al. (2016):

$$\Pr(Hybrid_{ij,t+1} = 1) = \beta_0 + \beta_1 desire\_business_{it} + \boldsymbol{\beta_x X_{it}} + v_i + v_j + v_t + \varepsilon_{ijt} \quad (1)$$

where the dependent variable is a dummy equal to one if the individual i is employed in their primary job and has no secondary job in time t (paid employee), but becomes self-employed in their secondary job in time t+1 while still employed in their primary job (hybrid entrepreneur).

Our key explanatory variable is:

$desire\_business_{it}$, which is a dummy equal to one if individual i is a paid employee at time t and responds to the following question in the British Household Panel Survey or Understanding Society with YES:

Would you like to start your own business?[70]

(This question asks all respondents that currently working whether they want to change their current employment situation to self-employed. If respondents answer this question with YES, it means they want to become full-time self-employed)

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[70] The same question for the self-employed individuals is "*Would you like to start up a new business?*"

In line with the hypotheses (H1), we expect β_1 in equation (1) to be positive and significant.

X_{it} **are other control variables.**[71]

v_i is the individual heterogeneity effect.

v_j is the regional effect.

v_t is the time effect.

ε_{ijt} is the stochastic error.

3.5.2 Baseline model 2

To test the hypotheses (H2) and (H3), we utilize the following baseline equation based on Folta et al. (2010) and Wennberg et al. (2008):

$$\Pr\big(Self\_employed_{ij,t+1} = 1\big) = \beta_0 + \beta_1 Hybrid\_entrepreneur_{it}/performance_{it} +$$

$$\boldsymbol{\beta_x X_{it}} + v_i + v_j + v_t + \varepsilon_{ijt} \qquad\qquad (2)$$

where the dependent variable is a dummy equal to one if the individual *i* is employed in their primary job in time t but becomes self-employed in their primary job in time *t*+1.

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[71] The detail of control variables is illustrated in the Appendix A– Control variables.

Our key explanatory variables are:

$Hybrid\_entrepreneur_{it}$, which is a dummy equal to one if the individual *i* at time t is a hybrid entrepreneur and equal to zero if the individual *i* at time t is a paid worker.

$Performance_{it}$, which represents the performance of the secondary self-employed job of hybrid entrepreneurs *i* at time *t*. Based on Folta et al. (2010), this paper measures both absolute performance and relative performance of the secondary self-employed job.

Absolute performance of the secondary self-employed job:

Secondary_job_earnings, which is the monthly gross secondary self-employed earnings obtained by hybrid entrepreneurs *i* at time *t*.

Relative performance of the secondary self-employed job:

Secondary_job_ratio, is the ratio calculated by dividing Secondary_job_earnings by Net payment per month.

In line with the hypotheses (H2) and (H3), we expect β_1 in equation (2) to be positive and significant.

X_{it} are other control variables.[72]

v_i is the individual heterogeneity effect.

v_j is the regional effect.

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[72] The detail of control variables is illustrated in the Appendix A– Control variables.

v_t is the time effect.

ε_{ijt} is the stochastic error.

Subsequently, to test hypotheses (H4) and (H5), we modify equation (2) as follows:

$$\Pr\left(Self\_employed_{ij,t+1} = 1\right) = \beta_0 + \beta_1 Hybrid\_entrepreneur_{it}/performance_{it} *$$

$$desire\_business_{it} + \beta_2 Hybrid\_entrepreneur_{it}/performance_{it} * (1 -$$

$$desire\_business_{it}) + \boldsymbol{\beta_x X_{it}} + v_i + v_j + v_t + \varepsilon_{ijt} \qquad (3)$$

In equation (3):

$desire\_business_{it}$, which is a dummy equal to one if individual *i* is a hybrid entrepreneur at time t and wishes to start their own business.

All other variables are the same as those in equation (2).

In line with hypotheses (H4) and (H5), both coefficients β_1 and β_2 should be statistically significant in equation (3).

3.5.3 Estimation method

As the dependent variable is binary in both baseline models (1) and (2), for controlling the unobserved heterogeneity of individuals we will use both random effect probit and fixed-effect linear probability models to estimate equations (1), (2) and (3). Unlike Folta et al. (2010), in which the fixed-effect logit model is applied, our paper does not use it, as fixed-effect logit models only take into account respondents who transition between states. They, thus, end

up being based on a considerably limited sample of observations. For results comparable to those given by random effect probit, which is based on a larger sample, we will instead use a fixed-effect linear probability model.

3.6 Data

This study uses the British Household Panel Study, Waves 1 to 18, from the period between 1991 to 2009 and the successor of BHPS - Understanding Society, Waves 1 to 9, from the period between 2009 to 2018. The BHPS samples rejoin the Understanding Society from Waves 2 onward. Both databases are designed using a stratified random sampling method. As an annual survey, each adult (aged 16 years and over) from a nationally representative sample of households from England, Scotland, Wales and Northern Ireland is interviewed. Both the primary and secondary employment situations are self-assessed in the BHPS and Understanding Society questionnaire via the question "*Are you an employee or self-employed?*" Establishing whether the interviewee holds a secondary job is carried out via the question "*Do you currently earn any money from (a second job) odd jobs or from work that you might do from time to time (separate from your primary job)*?" These two databases are, therefore, suitable for researching hybrid entrepreneurship in the UK. The sample used in our study from both databases are working individuals aged between 16 and 65 years old. All income type variables (income from the primary and secondary job, non-salary income and family income) are expressed in 2015 British Pounds. All outliners are deleted from our sample.

3.7. Result

Desire_business, whether one would like to start their own business, is a key variable to our study. It is an independent variable in our baseline model 1 and is an important control variable in our baseline model 2. However, this variable is only available in Waves 8-18 of the British Household Panel Survey and Waves 2, 4, 6 and 8 of the Understanding Society database. Therefore, the main result of our study is acquired by using these waves of data. In the robustness test, we drop this variable, i.e., *Desire_business*, and use full Waves 1-18 of the British Household Panel Survey and full Waves 1-9 of Understanding Society in order to test the robustness of our main result. Nevertheless, due to the omission of this key variable, we can only test the robustness of part of our main result. In this section, we will illustrate and analyze the validity of each hypotheses that we made above, in chronological order, and this section then ends with the robustness test.

3.7.1 Reasons for entering into hybrid entrepreneurship in the UK
3.7.1.1 Bivariate analysis

Table 3.1 reports the mean of our variables across paid employees who will entry into hybrid entrepreneurship (Hybrid Entry) and paid employees who do not enter into hybrid entrepreneurship (No Entry) for both males and females in the UK. For males, the variable mean of Hybrid Entry and No Entry are reported in column (1) and (2), respectively. Column (3) reports the significant mean differences between Hybrid Entry and No Entry for males. For females, correspondingly, column (4), (5) and (6) report the variable mean of Hybrid Entry and No Entry, as well as the significant mean difference between these two groups, respectively.

Column (3) and (6) sheds light on the reasons why paid employees enter into hybrid entrepreneurship, for both males and females. We find that the reasons for Hybrid Entry are very similar for male and female paid employees. All four potential drivers for entering into hybrid entrepreneurship are applied to both male and female paid employees in the UK.

Specifically, for both male and female paid employees in the UK:

Firstly, there are many indicators that financial pressures are positively associated with Hybrid Entry. Paid employees who will enter into hybrid entrepreneurship are less likely to work full-time, have fewer working hours in a normal week (job-hours constraints), have lower monthly net payments from their current job, are in poorer financial situations, have lower household incomes (but not significantly) and are less likely to own a house. Interestingly, we find that the mean, non-salary income of the paid employees who will enter into hybrid entrepreneurship is significantly higher than their colleagues who do not enter into hybrid entrepreneurship. It seems contradictory to the argument to state that financial pressure drives paid employees into hybrid entrepreneurship. However, as the mean difference of non-salary income between the Hybrid Entry and the No Entry group is insignificant, and non-salary income only accounts for a small part of the total personal income, the abnormality of this variable does not challenge the validity of the finding that financial pressures are positively associated with Hybrid Entry.

Secondly, there are indicators that paid employees engage with secondary self-employed jobs in order to hedge against uncertainty associated with the primary job. As shown by Livanos

et al. (2012),[73] the paid employees, whose current job is not permanent, are more likely to enter into hybrid entrepreneurship in the UK.

Thirdly, there is strong evidence to show that paid employees use the hybrid phase as a preparation period for full-time entry into self-employment. The proportion of paid employees who wish to start their own business in the Hybrid Entry group is significantly larger than that in the No Entry group. Specifically, as shown in columns (1) and (2), 32% of paid employees in the Hybrid Entry group would like to start their own business, while this number is a mere 18% in the No Entry group. For females, as shown in columns (4) and (5), 28% of the paid employees in the Hybrid Entry group would like to start their own business, while this number is only 12% in the No Entry group. This demonstrates that, regardless of gender, paid employees who will enter into hybrid entrepreneurship are more eager to set up their own business than those who do not.

Lastly, since the desire to set up one's own business can also be recognized as the need for a heterogenous career,[74] paid employees in the UK are also driven by the need to diversify their jobs.

Other information we can acquire from table 3.1 is that, compared with their colleagues in the No Entry group, paid employees, who are in the Hybrid Entry group are also younger, more likely to be single, are better educated, work in smaller firms, are less satisfied with their current job and have more children (this only applies to female paid employees).

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[73] This study finds that individuals with temporary or fixed contracts in their primary job are more likely to hold a second job than those who have permanent jobs.
[74] Because it represents that individuals wish to acquire the related skills and deal with more challenges through establishing their own business (Heineck,2003).

3.7.1.2 Multivariate analysis

As there is a significant selection bias embedded in the result of a bivariate analysis, our study also uses a multivariate analysis – both a fixed-effect linear probability model and a random effect probit model are used. After proving the validity of using the random-effect probit model in our study,[75] we show the regression result of both the random effect probit model and the fixed-effect linear probability model in table 3.2. Columns (1) and (2) show the result of RE-Probit and FE-LPM for equation (1) for males. Columns (3) and (4) show the result of RE-Probit and FE-LPM for equation (1) for females.

For males, based on the result of RE-Probit in column (1), compared with the No Entry group, paid employees who are relatively older, better educated, would like to set up their own business, have a current job which is temporary, work in a smaller firm, have lower monthly net payments from their current job and a higher non-salary income and are more likely to enter into hybrid entrepreneurship. This result is similar to that of the bivariate analysis. It means paid employees are driven into hybrid entrepreneurship by financial pressures, hedging against the uncertainty of their primary job, a desire to start own business and the need to diversify their jobs. Among these drivers, the wish to start one's own business plays the most important role in Hybrid Entry. It increases the likelihood of Hybrid Entry by 1%. However, after removing individual heterogeneity, the result of FE-LPM in column (2) shows that protecting against the uncertainty of the primary job is the most important driver for

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[75] The reason why we need to prove the validity of using the random effect Probit model is that Probit model is estimated by maximum likelihood estimation which will produce biased result if the event is rare in the dependent variable. From table 3.1 we can see that, compared with the number of events in no entry group, there are only 673 and 580 events in hybrid entry group for males and females, respectively. However, based on the argument from Allison (2012), "If you have a sample size of 1000 but only 20 events, you have a problem. If you have a sample size of 10,000 with 200 events, you may be OK. If your sample has 100,000 cases with 2000 events, you are golden", we are located somewhere between "OK" and "golden". Therefore, it is valid for us to use the random effect Probit model in this study.

paid employees to become hybrid entrepreneurs, followed by the desire to establish one's own business and financial pressure. Specifically, a temporary primary job will increase the probability of Hybrid Entry by 1.7%, while a desire to establish one's own business will increase the number by 0.6%. Finally, a £1,000 decrease of monthly household income will enhance the probability of Hybrid Entry by 0.2%.

For females, based on the result of RE-Probit in column (3), compared with the No Entry group, paid employees who are relatively older, better educated, would like to set up their own business, work in a smaller firm, work less hours per week at their current job and are in a worse financial situation, are more likely to enter into hybrid entrepreneurship. This means that paid employees are driven into hybrid entrepreneurship by financial pressures, a desire to start their own business and the need to diversify their jobs. Among these drivers, a desire to start one's own business plays the most important role in Hybrid Entry. It increases the likelihood of Hybrid Entry by 1%. Furthermore, even after removing individual heterogeneity, the result of FE-LPM in column (4) shows that a desire to start one's own business still plays the most important role in Hybrid Entry. Specifically, a desire to start one's own business will increase the probability of Hybrid Entry by 1%, while working 10 hours less at the current primary job will increase the number by 0.3%. Lastly, a one level decrease within one's subjective financial situation will increase the probability of Hybrid Entry by 0.2%.

To summarize, the reasons for becoming a hybrid entrepreneur are slightly different between male paid employees and female paid employees in the UK. After removing individual heterogeneity, for male paid employees, protecting against any uncertainty associated with of the primary job is the most important reason for them to become hybrid entrepreneurs, followed by the desire to set up their own business and financial pressures. After removing

individual heterogeneity, for female paid employees, a desire to establish one's own business is the most important reason for them to become hybrid entrepreneurs, followed by financial pressures. This confirms hypothesis 1 for both male and female paid employees in the UK.

To further understand whether the need to diversify one's job drives paid employees into hybrid entrepreneurship, we match the job occupation code of the secondary self-employed job of hybrid entrepreneurs with that of their current primary job and with that of their previous employed job. The result is shown in table 3.3, which is based on the full waves of the BHPS and Understanding Society. From table 3.3 we can see that, for males, there are 1,373 cases of Hybrid Entry made by paid employees. Only 22% of these have the same job occupation code of both their current secondary self-employed job and their previous employed job. Only 21% of them have the same job occupation code of both their current secondary self-employed job and their current primary job. Only 19% have the same job occupation code of their current secondary self-employed job, current primary job and previous employed job. The job occupation code of the current secondary self-employed job of 76% of those surveyed is neither the same as that of their primary job, nor the same as that of their previous employed job. The same phenomenon can be witnessed in the female group. This demonstrates that paid employees who enter into hybrid entrepreneurship are more likely to work in a field at their secondary self-employed job which is neither the same as that of their current primary job, nor the same as that of their previous employed job. This finding is similar to the one found by Wu et al. (2009).[76] Therefore, it is reasonable to say that

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[76] This study finds that 88.5% of moonlighters work in a different occupation in their secondary job from their primary one.

the desire for a heterogenous career/a need to diversify their jobs also drives paid employees into hybrid entrepreneurship for both males and females in the UK.

3.7.2 The effect of hybrid entrepreneurship on entry into self-employment in the UK

In order to verify hypothesis 2, we estimate equation (2) by using both a random effect probit model and a fixed effect linear probability model. The regression results of RE-Probit and FE-LPM are shown in tables 3.4 and table 3.5, respectively. In table 3.4 and table 3.5, column (1) shows the result of verifying the hypothesis 2 for males, while column (4) shows the same for females.

This demonstrates that, regardless of gender and the model used, hypothesis 2 is confirmed. Specifically, for males, column (1) of table 3.4 shows that hybrid entrepreneurs are 2.6% more likely than paid employees to transition into full-time self-employment. As shown by column (1) of table 3.5, this number drops to 1.8% after removing individual heterogeneity. For females, column (4) of table 3.4 shows that hybrid entrepreneurs are 1.5% more likely than paid employees to transition into full-time self-employment. As shown by column (4) of table 3.5, this number does not change, even after removing individual heterogeneity.

To further confirm that hybrid entrepreneurs are more likely to transition into full-time self-employment than paid employees, by using the full waves of the BHPS and Understanding Society data, we also calculate the transition rate into full-time self-employment of both hybrid entrepreneurs and paid employees. Additionally, for hybrid entrepreneurs who transition into full-time self-employment, we verify whether their full-time self-employed job is related to their previous secondary self-employed job. Therefore, we match the job occupation code of their full-time self-employed job with that of their previous secondary

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self-employed job. These results are showed in tables 3.6 and 3.7 for males and females, respectively.

For males, from table 3.6 we can see that there are 3,698 hybrid entrepreneurs in total in our full-waves sample. 21.8% of these have the same job occupation code of their current secondary self-employed job and their current primary job.[77] On the one hand, column (3) of table 3.6 shows that, among these 3,698 hybrid entrepreneurs, 251 of them transition into full-time self-employment, resulting in a transition rate equal to 6.8%. On the other hand, column (6) of table 3.6 shows that, only 1.7% paid employees transition into full-time self-employment. This demonstrates that, compared with paid employees, hybrid entrepreneurs are four times more likely to transition into full-time self-employment. Furthermore, among these 251 nascent self-employed individuals, 126 of them work in the same field as their previous secondary self-employed job. This means that more than half of these nascent entrepreneurs, who start their self-employed job during a hybrid phase, continue to do it after their transition into full-time self-employment. From column (8) of table 3.6 we can see that 50.2% of nascent entrepreneurs work in the same field as their previous secondary self-employed job. Significantly, less than half (49.2%) of nascent entrepreneurs, who transitioned from being paid employees, work in the same field as they did in their previous employed job. This finding further builds on the evidence that, in relation to males, hybrid entrepreneurs are more likely to transition into full-time self-employment than paid employees.

For females, from table 3.7 we can see that there are 3,370 hybrid entrepreneurs in total in our full-waves sample. 22.4% of these have the same job occupation codes of their current

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[77] This percentage is very close to the one showed in table 3.3. In table 3.3, we show that, for nascent male hybrid entrepreneurs, 21% of them have same job occupation code between their current secondary self-employed job and their current primary job. Therefore, it is reasonable to deem that nascent male hybrid entrepreneurs in table 3.3 form parts of male hybrid entrepreneurs in table 3.6.

secondary self-employed job and their current primary job.[78] On the one hand, column (3) of table 3.6 shows that, among these 3,370 hybrid entrepreneurs, 214 of them transition into full-time self-employment, resulting in a transition rate equal to 6.4%. On the other hand, column (6) of table 3.6 shows that, only 0.9% of paid employees transition into full-time self-employment. This demonstrates that, compared with paid employees, hybrid entrepreneurs are seven times more likely to transition into full-time self-employment. Furthermore, among these 214 nascent self-employed individuals, 126 work in the same field as they did in their previous secondary self-employed job. This means that more than half of these nascent entrepreneurs, who begin their self-employed job by way of a hybrid phase, continue to do it after they have transitioned into full-time self-employment. From column (8) of table 3.6 we see that 58.9% of nascent entrepreneurs work in the same field as they did in their previous secondary self-employed job. Interestingly, 46.2% of nascent entrepreneurs, who transitioned from being paid employees, work in the same field as their previous employed job. This finding further builds on the evidence that, in relation to females, hybrid entrepreneurs are more likely to transition into full-time self-employment than paid employees.

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[78] This percentage is also close to the one showed in table 3.3. In table 3.3, we show that, for nascent female hybrid entrepreneurs, 21% of them have same job occupation code between their current secondary self-employed job and their current primary job. Therefore, it is also reasonable to deem that nascent female hybrid entrepreneurs in table 3.3 form parts of female hybrid entrepreneurs in table 3.6.

3.7.3 The effect of good performance of the secondary job on entry into self-employment in the UK

In order to verify hypothesis 3, we estimate equation (2) by using both a random effect probit model and a fixed effect linear probability model. The regression results of RE-Probit and FE-LPM are shown in tables 3.4 and 3.5, respectively. In tables 3.4 and 3.5, column (2) and (3) show the result of verifying the hypothesis 3 for males, while column (5) and (6) shows this for females.

This demonstrates that, regardless of the model used, hypothesis 3 is only confirmed for females. Specifically, column (2) of table 3.4 shows that, for male hybrid entrepreneurs, a £1,000 increase in the secondary self-employed job earnings increases the probability of their transition into full-time self-employment by 0.2%. As shown in column (2) of table 3.5, this number increases to 1.1% after removing individual heterogeneity. However, both numbers are not statistically significant. Additionally, column (3) of table 3.4 shows that, if the amount of secondary self-employed job earnings reaches that of the current primary job, it will increase the probability of hybrid entrepreneurs transitioning into self-employment by 0.6%. As shown in column (3) of table 3.5, this number increases to 2% after removing individual heterogeneity. However, both numbers are also not statistically significant.

For females, column (5) of table 3.4 shows that a £1,000 increase in secondary self-employed job earnings will make hybrid entrepreneurs 0.7% more likely to transition into self-employment, than when earnings do not increase. As shown in column (2) of table 3.5, this number increases to 3.5% after removing individual heterogeneity. Both numbers are statistically significant at 5% significance level. Additionally, column (6) of table 3.4 shows that, if the level of secondary self-employed job earnings reaches that of the current primary job,

it will increase the probability of hybrid entrepreneurs transitioning into self-employment by 0.9%. As shown in column (6) of table 3.5, this number increases to 5.5% after removing individual heterogeneity. Both numbers are significant at 1% significance level.

3.7.4 The wish to establish one's own business influences the effect of hybrid entrepreneurship on entry into self-employment in the UK

In order to verify hypothesis 4, we estimate equation (3) by using both a random effect probit model and a fixed effect linear probability model. The regression results of RE-Probit and FE-LPM are shown in tables 3.8 and 3.9, respectively. In tables 3.8 and 3.9, column (1) shows the result of verifying hypothesis 4 for males, while column (4) shows this for females.

This demonstrates that, regardless of gender, hypothesis 4 is only confirmed in the RE-Probit model. After removing the individual heterogeneity, the FE-LPM model shows that hypothesis 4 is no longer satisfied for both males and females. Specifically, for males and females, column (1) and (4) of table 3.8 shows that, regardless of whether there exists a desire to start one's own business, hybrid entrepreneurs are significantly more likely to transition into full-time self-employment than paid employees. Furthermore, in relation to males, hybrid entrepreneurs who wish to set up their own business are 6.7% more likely to transition into full-time self-employment than paid employees, while this number drops to 3.7% for those hybrid entrepreneurs who do not intend to do this. In relation to females, the corresponding numbers are 5.9% and 2.3%, respectively.

However, for both males and females, columns (1) and (4) of table 3.9 show that, after removing the individual heterogeneity, only those hybrid entrepreneurs who wish to establish their own business are significantly more likely to transition into full-time self-employment

than the paid employees. Specifically, in relation to males, hybrid entrepreneurs, who wish to set up their own business, are 3.4% more likely to transition into full-time self-employment than paid employees. In relation to females, hybrid entrepreneurs, who wish to set up their own business, are 3.9% more likely to transition into full-time self-employment than paid employees.

3.7.5 The wish to establish one's own business influences the effect of good performance of the secondary job on entry into self-employment in the UK

In order to verify hypothesis 5, we estimate equation (3) by using both a random effect probit model and a fixed effect linear probability model. The regression results of RE-Probit and FE-LPM are shown in tables 3.8 and 3.9, respectively. In tables 3.8 and 3.9, columns (2) and (3) show the result of verifying hypothesis 5 for males, while columns (5) and (6) show this for females.

This demonstrates that, in relation to males, hypothesis 5 is not confirmed in both RE-Probit and FE-LPM models. In relation to females, hypothesis 5 is confirmed in RE-Probit model, while remains unconfirmed in the FE-LPM model. Specifically, for male hybrid entrepreneurs, columns (2) and (3) of tables 3.8 and 3.9 show that, regardless of whether there exists the desire to start one's own business, the good performance of the secondary self-employed job has no significant effect on their decision to transition into full-time self-employment.

In relation to females, columns (5) and (6) of table 3.8 show that, regardless of whether there exists the desire to start one's own business, the good performance of the secondary self-employed job is positively associated with the decision to transition into full-time self-employment. Specifically, for female hybrid entrepreneurs who wish to start their own

business, a £1,000 increase in secondary self-employed job earnings will increase the probability of their transition into full-time self-employment by 3%. This number drops to 0.5% for those female hybrid entrepreneurs who do not have this intention. Additionally, for female hybrid entrepreneurs who wish to start their own business, if the level of their secondary self-employed job earnings reaches that of their current primary job, it will also increase the probability of their transition into self-employment by 3%. This number drops to 0.6% for those female hybrid entrepreneurs who do not have this intention. Furthermore, columns (5) and (6) of table 3.9 show that, after removing individual heterogeneity, only for those female hybrid entrepreneurs who wish to establish their own business, the good performance of their secondary self-employed job is positively associated with their decision to transition into full-time self-employment. Specifically, for female hybrid entrepreneurs who wish to start their own business, a £1,000 increase in secondary self-employed job earnings will increase the probability of their transition into full-time self-employment by 17.2%. If the level of their secondary self-employed job earnings reaches that of their current primary job, it will also increase the probability of their transition into self-employment by 14.3%.

3.7.6 Robustness test

As our key regression results are acquired by using part of the waves, rather than full waves of our sample, we check whether our main result is still robust by using full waves of our sample. However, a key variable of our study, *Desire_business,* is only available in Waves 2, 4, 6 and 8 of Understanding Society and Waves 8-18 of the BHPS. This means that, when using the full waves of our sample, we need to exclude the variable *Desire_business* from our

equations (1), (2) and (3). The consequence of this is that we can only test hypotheses 2 and 3 in our full-waves sample.

However, we argue that, for hypothesis 1, even if we cannot test whether a desire to set up one's own business is associated with Hybrid Entry, we can test whether the other drivers of Hybrid Entry still hold their position in the full-waves sample, as they did in main-results sample. If the other drivers of Hybrid Entry all hold in the full-waves sample, it confirms the robustness of our main results which test hypothesis 1. Table 3.10 shows the full-waves sample regression result of equation (1) by using RE-Probit and FE-LPM models. This demonstrates that, the result shown by table 3.10 is similar to that shown by table 3.2. Specifically, after removing individual heterogeneity, for male paid employees, protecting against the uncertainty of the primary job is still the most important reason for them to become hybrid entrepreneurs, followed by financial pressures. After removing individual heterogeneity, for female paid employee, financial pressures still play an important role in driving them into hybrid entrepreneurship. Therefore, it is reasonable to assume that the result of table 3.2, which demonstrates the outcome of testing hypothesis 1, is robust.

In order to verify hypothesis 2 by using the full-waves sample, we estimate equation (2) by using both the random effect probit model and the fixed effect linear probability model. The regression results of RE-Probit and FE-LPM are shown in tables 3.11 and 3.12, respectively. In tables 3.11 and 3.12, column (1) shows the result of verifying hypothesis 2 for males, while column (4) shows this for females.

This demonstrates that, regardless of gender and the model used, hypothesis 2 is satisfied in full-waves sample as well. Specifically, for males, column (1) of table 3.11 shows that hybrid entrepreneurs are 2.8% more likely than paid employees to transition into full-time self-

employment. As shown by column (1) of table 3.12, this number drops to 2.3% after removing individual heterogeneity. For females, column (4) of table 3.4 shows that hybrid entrepreneurs are 1.9% more likely than paid employees to transition into full-time self-employment. As shown by column (4) of table 3.5, this number increases to 2.4% after removing individual heterogeneity. This confirms that our main results shown in tables 3.4 and 3.5, which test hypothesis 2, are robust.

In order to verify hypothesis 3 by using the full-waves sample, we estimate equation (2) by using both the random effect probit model and the fixed effect linear probability model. The regression results of RE-Probit and FE-LPM are shown in tables 3.11 and 3.12, respectively. In tables 3.11 and 3.12, columns (2) and (3) show the result of verifying hypothesis 3 for males, while columns (5) and (6) show this for females.

Significantly, regardless of the model used, hypothesis 3 is confirmed in the full-waves sample for both males and females. This robustness test result is contradictory to our main results of testing hypothesis 3, shown in tables 3.4 and 3.5. These show that, regardless of the model used, hypothesis 3 is only confirmed in relation to females. Should our main result or this robustness test result be accepted? In this robustness test, we do not include the variable *Desire_business* in equation (2). However, our main result shows that *Desire_business* is positively and significantly associated with entry into self-employment for both males and females, regardless of the model used.[79] Moreover, it is also rational to assume that the desire to set up one's own business and the good performance of the secondary self-employed job are likely to be positively associated with each other. [80] Consequently, omitting

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[79] We fold the coefficient of *Desire_business* for brevity in all our main results. The full main results table are available from the author of this study.
[80] The underlying reason for this argument is intuitive. On the one hand, attractive earnings from the secondary self-employed job show hybrid entrepreneurs with the promising prospect of their business, making them more

Desire_business from equation (2) is likely to make the coefficient of the good performance of the secondary self-employed job positively biased. Given the fact that our main result of testing hypothesis 3 takes *Desire_business* into consideration, but the robustness test result does not, but uses the full-waves sample, we argue that, to establish whether hypothesis 3 is confirmed in relation to males, the findings from both the main results and the robustness test results should be considered. We therefore conclude that hypothesis 3 is strongly confirmed in relation to females, while it is only weakly confirmed in relation to males in the UK.

Subsequently, in order to further examine whether hypothesis 3 is still confirmed in a sample which only includes hybrid entrepreneurs,[81] we estimate equation (2) by using both a random effect probit model and a fixed effect linear probability model in a sample which only includes hybrid entrepreneurs. The regression results of RE-Probit and FE-LPM are shown in tables 3.13 and 3.14, respectively. We also add an additional variable to represent the relative good performance of the secondary self-employed job, *secondary_job_diff*, which is the difference between the monthly secondary job earnings and the monthly net payment of the primary job. From table 3.13 we can see that, regardless of gender, all three performance indicators of the secondary self-employed job, *secondary_job_earnings*, *secondary_job_ratio* and *secondary_job_diff*, are positively associated with entry into self-employment. However, after removing individual heterogeneity, as shown by table 3.14, in relation to males, all three performance indicators become insignificant. For females, only *secondary_job_diff* is still positively associated with entry into self-employment. The robustness test result of

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eager to set up their business. On the other hand, desiring to set up own business will urge hybrid entrepreneurs to work harder in their secondary self-employed job and potentially enhance the performance.

[81] In the sample used by our models which test hypothesis 3, paid workers are included as well. Like Folta et al. (2010), since paid workers in our study are those who only have paid employed job and do not have secondary job, the secondary job earnings and secondary job ratio are set to zero for them.

hypothesis 3 is similar to our main result of testing hypothesis 3 shown in tables 3.4 and 3.5, providing additional evidence to the robustness of our main result of testing hypothesis 3.

Finally, our study examines the findings of Thorgren (2016,) which shows that there is a convex relationship between the age of hybrid entrepreneurs and entry into self-employment. The result is shown in tables 3.13 and 3.14. This demonstrates that, regardless of gender, the model used and the type of success indicator we put into our model, the age of hybrid entrepreneurs is not associated with their decision to transition into full-time self-employment at all.

3.8 Discussion

Similar to previous relevant studies conducted in the UK, this study finds that, for both male and female paid employees, financial pressures and desire for a career change drive them into hybrid entrepreneurship. Specifically, Wu et al. (2009) find that, for both males and females, a higher primary employment wage significantly decreases the labour supply of the secondary employment, thus reducing the incentive to moonlight in the UK. Furthermore, in their sample, 88.5% of moonlighters work in a different occupation in their secondary job from their primary one. Atherton et al. (2016) find that, regardless of gender, difficulties in paying for housing costs is positively associated with secondary job working hours, while annual labour income is negatively associated with secondary job working hours in Sweden. In my study, I find that, for males, a high household income will significantly decrease probability of hybrid entry. For females, better subjective financial situation will significantly decrease probability of hybrid entry. Additionally, in the sample of my study, 76% of male hybrid entrepreneurs and 77% of female hybrid entrepreneurs work in a different occupation in their secondary job from their primary one.

As in the findings shown by previous literature (Folta et al.,2010; Schulz et al., 2017), our study also finds that a desire to start one's own business plays an important role in driving paid employees into hybrid entrepreneurship in the UK. Specifically, for male paid employees, while the key determinant of hybrid entry is to protect against uncertainty associated with the primary job, the desire to establish one's own business ranks second of all potential drivers of entry into hybrid entrepreneurship. For female paid employees, a desire to set up their own business is the most important driver of Hybrid Entry. However, in contrast from the findings of Folta et al. (2010), which show little evidence that paid employees in Sweden

choose to become hybrid entrepreneurs in order to supplement their income, our study finds that financial pressure is also an important driver for both male and female paid employees in the UK to become hybrid entrepreneurs. Furthermore, Folta et al. (2010) find that paid employees, who work in a larger firm, are more likely to enter hybrid entrepreneurship than those who work in a smaller firm. On the contrary, our study finds that, regardless of gender, paid employees, who work in a smaller firm, are more likely to become hybrid entrepreneurs. This evidence is partly supported by Elfenbein et al. (2008, 2010) which shows that paid employees, working at smaller firms, are significantly more likely than others to leave their paid employment in order to establish their own ventures. Rather than leaving their firms, the paid employees in UK, who work at smaller firms, choose to set up their own business, while retaining their paid employed position. This indicates that the high initial cost outlay of leaving paid employment is a consideration of hybrid entrepreneurs in the UK.

The most prominent findings of our study, which differ from those in Folta et al. (2010), is in the post hybrid entry period. Specifically, Folta et al. (2010) finds that hybrid entrepreneurship can facilitate entry into self-employment. The underlying reason is that hybrid entrepreneurs can learn from their secondary self-employed job - the good performance of their secondary job provides them with promising prospects for their business and inspires them to eventually transition into full-time self-employment. Furthermore, Folta et al. (2010) argues that, regardless of whether there exists a desire to become full-time self-employed, the potential to learn from the secondary self-employed job is available to every hybrid entrepreneur. But this point is not verified by Folta et al. (2010).

After examining this point put forward by Folta et al. (2010), our study finds that whether there exists a desire to start one's own business (to become full-time self-employed)

influences the "potential to learn" theory. Specifically, after removing individual heterogeneity, our study identifies the following two evidences:

Firstly, for both males and females in the UK, hybrid entrepreneurs are more likely to become full-time self-employed than paid employees. However, after classifying hybrid entrepreneurs into two groups – those with a desire to set up their own business group and those with no interest in setting up their own business group - our study finds that, only in the former group, hybrid entrepreneurs are more likely to become full-time self-employed than paid employees.

Secondly, for male hybrid entrepreneurs in the UK, only weak evidence is found to indicate that the good performance of the secondary self-employed job is positively associated with entry into full-time self-employment.[82] Furthermore, after classifying hybrid entrepreneurs into the desire business group and the no desire group, our study finds that, the good performance of the secondary self-employed job is not associated with entry into self-employment.

For female hybrid entrepreneurs in the UK, substantial evidence indicates that the good performance of the secondary self-employed job is positively associated with entry into full-time self-employment.[83] However, after classifying hybrid entrepreneurs into the desire business group and the no desire group, our study finds that, only in the former group, the good performance of the secondary self-employed job plays an important role in entry into full-time self-employment.

The two evidences above show that, a desire to set up one's own business is particularly important to the decision made by hybrid entrepreneurs in the UK to enter into self-

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[82] Column (1), (2) and (3) of table 12.
[83] Check our main results and robustness test result.

employment. If hybrid entrepreneurs do not wish to set up their own business, even if their secondary self-employed job is performing extraordinarily well, they will not transition into full-time self-employment. The reasons for this are clear. If hybrid entrepreneurs undertake their secondary self-employed job for purely non-pecuniary reasons, [84] then even if the secondary self-employed job is performing extraordinarily well, these hybrid entrepreneurs will not be inspired to transition into full-time self-employment. This argument could be used to explain why male hybrid entrepreneurs in our study, even those who wish to set up their own business alongside employment, are not inspired by the good performance of their secondary self-employed job to transition into full-time self-employment. A possible explanation is that, for males, the main driver of becoming hybrid entrepreneurs is to protect against the uncertainty of their current job, rather than setting up own business, this being the main driver of Hybrid Entry for females. Therefore, male hybrid entrepreneurs may not as sensitive as female hybrid entrepreneurs to the good performance of their secondary self-employed job. For female hybrid entrepreneurs, if the reason why they choose to become hybrid entrepreneurs is in order to establish their own business and to become full-time self-employed, then they will be very aware of the earnings of their secondary self-employed job. Once they have seen that their business is promising and they are inspired by this, they will immediately transition into full-time self-employment, due to the fact that is exactly what they wish for and this is the exact moment they are waiting for. However, for male hybrid entrepreneurs in our study, establishing their own business is not the main reason why they choose to become hybrid entrepreneurs. Even if, for whatever reason, they wish to set up their own business after becoming hybrid entrepreneurs, they will not be as sensitive as

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[84] For example, for protecting environment and to collect a variety of rubbishes and sell them to recycle institutions outside working hours of primary job.

female hybrid entrepreneurs to the good performance of their secondary self-employed job, as becoming full-time self-employed is not the main driver for them for becoming hybrid entrepreneurs.

However, the above potential explanation as to why male hybrid entrepreneurs are not inspired by the good performance of their secondary self-employed job to become full-time self-employed, even if they wish to set up their own business at the hybrid phase, is based on a precondition. Our study continues to track the complete life period of paid employees in our database, from the time they become hybrid entrepreneurs until they successfully transition into full-time self-employment. Nevertheless, we do not do this. Like Folta et al. (2010), we separately examine the three research questions illustrated in the introduction of this study.

Therefore, the limitation of our study is that it is a dichotomous study. Rather than researching all three research questions in the same group of paid employees, our study examines the first research question for all paid employees in our sample and examines the second and third questions for all hybrid entrepreneurs in our sample. The paid employees and hybrid entrepreneurs in our sample may or may not be the same group of individuals.[85] The advantage of using different groups of individuals to examine the research questions is that we can use all relevant cases, substantially increasing the number of observations for our regression. The disadvantage is that we cannot examine whether the decision to enter into self-employment made by hybrid entrepreneurs is affected by the factors which drive them into hybrid entrepreneurship. This means we cannot verify the finding of Block & Landgraf

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[85] Our study has showed some evidence that hybrid entrepreneurs and paid workers in our study are likely to be the same group of individuals. Details can be found in table 3, 6 and 7.

(2016) in the UK which shows that the determinants of hybrid entrepreneurship will affect subsequent entry into full-time self-employment.

For future studies into hybrid entrepreneurship in the UK, the success of hybrid entrepreneurs who transition into self-employment can be investigated. Raffiee and Feng (2004) show that the businesses established by entrepreneurs, who transitioned from hybrid entrepreneur status, are more likely to survive than those established by individuals who entered full-time self-employment directly. One can investigate whether this phenomenon can be witnessed in the UK.

3.9 Conclusion and policy implication

We find that, for both male and female paid employees in the UK, the desire to set up one's own business plays an important role in their decision to become hybrid entrepreneurs.

For female hybrid entrepreneurs, the good performance of their secondary self-employed job can inspire and drive them to transition into full-time self-employment. However, if these female hybrid entrepreneurs do not wish to turn their part-time business into full-time basis, they will not transition into full-time self-employment, even if their secondary self-employed job is performing extraordinarily well.

These findings suggest that if paid workers who have an unswerving desire to become entrepreneurs in the UK, they are finally more likely to be entrepreneurs than the employed.

Therefore, in order to enhance the entrepreneurial development of the UK, the question is how to instill the desire in paid employees in the UK to set up their own businesses. Policy makers in the UK need to investigate why some paid employees wish to establish their own

businesses, while others do not. Once this is known, policy makers can implement a variety of policies to cultivate entrepreneurial awareness of the paid employees. Based on the findings in our study, the overall entrepreneurial activity in the UK will be increased.

Appendix 3.1 – Control Variables

Variable name	Variable type	Description
Age_{it}	Continuous	the age of the individual i at time t.
$Age\ square/1000_{it}$	Continuous	The squared age divided by 1000.
$Married_{it}$	Dummy	equal to one if individual i is married or living as couple at time t, and 0 otherwise.
$Selfrated\ health\ level_{it}$	Ordered	Self-rated health level by individual i at time t. 1: very poor, 2: poor, 3: Neutral, 4: good, 5: very good.
$Degree_{it}$	Dummy	equal to one if individual i is holds a degree, and 0 otherwise.
$Other\ higher\ degree_{it}$	Dummy	equal to one if individual i is holds other higher degrees, and 0 otherwise.
$A\ Level_{it}$	Dummy	equal to one if individual i is has certificate of A level, and 0 otherwise.
$GCSE_{it}$	Dummy	equal to one if individual i is has certificate of GCSE, and 0 otherwise.
$Other\ qualification_{it}$	Dummy	equal to one if individual i is holds other qualifications, and 0 otherwise.
$Permanent\ job_{it}$	Dummy	equal to one if the current main job of individual i is a permanent job, and 0 otherwise.
$fulltime\ job_{it}$	Dummy	equal to one if the current main job of individual i is a full-time job, and 0 otherwise.
$Being\ manager_{it}$	Dummy	equal to one if individual i is a manager at his/her current main job, and 0 otherwise.
$Employment\ size\ at\ working\ place_{it}$	Ordered	Number of people employed at the working place of individual i *at time t*. 1: 1-2 people, 2: 3-9 people, 3: 10-24 people. 4: 25-49 people, 5: 50-99 people, 6: 100-199 people, 7: 200-499 people, 8: 500-999 people, 9: 1000 or more.
$Working\ hours\ in\ a\ normal\ week_{it}$	Continuous	Number of hours worked at current main job per week
$Job\ satisfaction_{it}$	Ordered	Overall satisfaction with the current main job ranges from 1 to 7. 1: Not satisfied at all, 4: Neutral, 7: Completely satisfied.

$Net\ payment\ per\ month_{it}$	Continuous	Usual net payment per month of current main job.
$Nonsalary\ income_{it}$	Continuous	The difference between total monthly personal income and total monthly labor income.
$Subjective\ financial\ situation_{it}$	Ordered	Current financial situation of individual *i at time t*. 1: finding it very difficult, 2: finding it quite difficult, 3: just about getting by, 4: doing alright, 5: living comfortably.
$Own\ house_{it}$	Dummy	equal to one if individual *i own his own house at time t*, and 0 otherwise.
$Household\ income_{it}$	Continuous	The difference between total monthly household income and total monthly personal income.
$Number\ of\ employed\ members_{it}$	Continuous	Number of employed individuals at the family of individual *I at time t*.
$Number\ of\ kids_{it}$	Continuous	Number of children at the family of individual *i at time t*.
$Secondary\_job\_hrs_{it}$	Continuous	Number of hours worked at secondary self-employed job per month of hybrid entrepreneur *i at time t*.
$Region\ dummy_{it}$	Dummy	Government Office Regions include: North East, North West, Yorkshire & Humber, East Midlands, West Midlands, East of England, London, South East, South West, Wales and Scotland. (one of them is dropped to represent the reference group)
$Year\ dummy_{t}$	Dummy	A series of year dummies built by the author include: year1991, year1992, year1993, year1994, year1995, year1996, year1997, year1998, year1999, year2000, year2001, year2002, year2003, year2004, year2005, year2006, year2007, year2008, year2009, year2010 year2011, year2012, year2013, year2014, year2015 and year2016. (one of them is dropped to represent the reference group)

Appendix 3.2 – Figures

Table 3.1 Descriptive table of hybrid entry and no entry for both males and females

Gender	Males			Females		
	Hybird Entry	No Entry	Diff (1) vs (2)	Hybird Entry	No Entry	Diff (4) vs (5)
Variables	(1)	(2)	(3)	(4)	(5)	(6)
Demographic characteristics						
Age	37.74	39.97	-2.23***	38.15	39.92	-1.77***
Married (0 = no; 1 = yes)	0.71	0.74	-0.03***	0.65	0.70	-0.05**
Self-rated health level	3.90	3.86	0.04	3.84	3.82	0.02
Education level (0 = no; 1 = yes)						
Degree	0.29	0.24	0.05***	0.38	0.25	0.013***
Other higher degree	0.11	0.11	0	0.11	0.13	-0.02
A Level	0.26	0.26	0	0.21	0.22	-0.01
GCSE	0.19	0.23	-0.04***	0.21	0.25	-0.04**
Other qualification	0.08	0.09	0.01	0.05	0.08	-0.03**
Desire_business	0.32	0.18	0.14***	0.28	0.12	0.16***
Current job						
Permanent job (0 = no; 1 = yes)	0.94	0.96	-0.02***	0.91	0.95	-0.04***
Fulltime job (0 = no; 1= yes)	0.92	0.94	-0.02***	0.57	0.67	-0.1***
Being manager (0 = no, 1= yes)	0.44	0.42	-0.02	0.33	0.35	-0.02
Employment size at working place	4.71	5.25	-0.53***	4.60	4.96	-0.36***
Working hours in a normal week	37.47	38.05	-0.58**	27.65	30.27	-2.62***
Job satisfaction	5.22	5.24	-0.02***	5.32	5.42	-0.10*
Net payment per month (£1,000)	1.82	1.90	-0.08**	1.27	1.33	-0.06*
Other financial information						
Non-salary income (£1,000)	0.13	0.11	0.02**	0.26	0.22	0.04***
Subjective financial situation	3.87	3.96	-0.09***	3.77	3.94	-0.17***
Family information						
Own house (0 = no; 1 = yes)	0.75	0.79	-0.04***	0.74	0.79	-0.05**
Household income (£1,000)	1.96	2.00	-0.04	2.64	2.64	0
Number of employed members	1.95	1.98	-0.03	2.00	2.00	0
Number of kids	0.75	0.73	0.02	0.83	0.70	0.13***
Observations	673	48,957		580	57,045	

*p<0.1; **p<0.05; ***p<0.01
Note: Since the variable *Desire_business* is only available in waves 2,4,6,8 of Understanding Society and wave 8-18 of BHPS, the result of this descriptive table is based on the data of these waves.
Source: Understanding society waves 2,4,6,8(2010,2012,2014,2016) and Harmonised BHPS waves 8-18 (1998-2008).

Table 3.2 Random-effect Probit and fixed-effect linear probability regressions (Hybrid Entry (1) and No Entry (0))

Gender	Males				Females			
	RE Probit	Delta SE	FE LPM	Robust SE	RE Probit	Delta SE	FE LPM	Robust SE
Variables	(1)		(2)		(3)		(4)	
Demographic characteristics								
Age	0.001**	0.000	0.001	0.002	0.001*	0.000	-0.002	0.002
Age square/1000	-0.015***	0.005	-0.013	0.009	-0.007*	0.004	-0.017**	0.008
Married (0 = no; 1 = yes)	-0.002	0.002	-0.004	0.004	-0.002*	0.001	0.000	0.003
Self-rated health level	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Education level (0 = no; 1 = yes)								
Degree	0.007**	0.003	0.013	0.015	0.014***	0.003	0.001	0.009
Other higher degree	0.003	0.003	0.003	0.014	0.006**	0.003	0.008	0.009
A Level	0.001	0.003	0.001	0.010	0.006**	0.003	-0.004	0.007
GCSE	-0.002	0.003	-0.008	0.010	0.004	0.003	-0.003	0.007
Other qualification	-0.002	0.003	-0.005	0.007	0.001	0.003	0.006	0.008
Desire_business	0.010***	0.001	0.006**	0.003	0.010***	0.001	0.010***	0.003
Current job								
Permanent job (0 = no; 1 = yes)	-0.006**	0.003	-0.017***	0.005	-0.003	0.002	0.000	0.003
Fulltime job (0 = no; 1= yes)	-0.003	0.004	-0.003	0.006	0.001	0.002	0.002	0.002
Being manager (0 = no, 1= yes)	0.001	0.001	0.000	0.002	0.000	0.001	-0.001	0.002
Employment size at working place	-0.001***	0.000	-0.001	0.001	-0.001***	0.0002	0.000	0.000
Working hours in a normal week	0.000	0.000	0.000	0.000	-0.0004***	0.0001	-0.0003***	0.0001
Job satisfaction	0.000	0.000	0.000	0.001	0.000	0.000	-0.001	0.000

	(1)	Delta-SE	(2)	Robust SE	(3)	Delta-SE	(4)	Robust SE
Net payment per month (£1,000)	-0.002*	0.001	-0.001	0.002	0.000	0.001	-0.003	0.002
Other financial information								
Non-salary income (£1,000)	0.004**	0.002	-0.001	0.003	0.001	0.001	0.000	0.002
Subjective financial situation	-0.001	0.001	0.000	0.001	-0.002***	0.001	-0.002***	0.001
Family information								
Own house (0 = no; 1 = yes)	-0.001	0.002	-0.001	0.004	-0.001	0.001	0.000	0.003
Household income (£1,000)	0.000	0.000	-0.002***	0.001	0.000	0.000	0.000	0.000
Number of employed members	0.001	0.001	0.002	0.001	0.001	0.001	0.000	0.001
Number of kids	0.000	0.001	0.002	0.001	0.000	0.001	0.000	0.001
Region dummy	YES		YES		YES		YES	
Year dummy	YES		YES		YES		YES	
Observations	49,630		49,630		57,625		57,625	

*p<0.1; **p<0.05; ***p<0.01

Note:

1. Since the variable *Desire_business* is only available in waves 2,4,6,8 of Understanding Society and wave 8-18 of BHPS, the result of this regression table is based on the data of these waves.

2. Column (1) and (3) show the average marginal effect of RE-Probit. Delta-SE represent delta-method standard error. Robust SE represents robust standard error.

Source: Understanding society waves 2.,4,6,8(2010,2012,2014,2016) and Harmonised BHPS waves 8-18 (1998-2008).

Table 3.3 Match job occupation code after hybrid entry for both males and females

T	T+1	T+1	T+1	T+1	T+1
Paid workers at time T	Numbers that make hybrid entry at T+1	Job occupation code of secondary self-employed job at time T+1 is the same as that of paid job at time T	Job occupation code of secondary self-employed job at time T+1 is the same as that of primary job at time T+1	Job occupation code of secondary self-employed job at time T+1, primary job at time T+1 and paid job at time T are the same	Job occupation code of secondary self-employed job at time T+1 is neither the same as that of primary job at time T+1 nor that of paid job at time T
Gender	(1)	(2)	(3)	(4)	(5)
Males	1373*	303 (22%)	293 (21%)	263 (19%)	1040 (76%)
Females	1383*	298 (22%)	291 (21%)	264 (19%)	1058 (77%)

Note:

1. The actual number of hybrid entry made by males and females are 1,521 and 1,486, respectively. However, only 1,373 male hybrid entrepreneurs and 1,383 female hybrid entrepreneurs provide job occupation code information.

2. The value in brackets is the proportion of this number in total number of hybrid entry (for example, 303/1373=22%).

3. JobSOC90 is used for match in BHPS waves 1-17 and JobSOC00 is used for match in BHPS wave 18 and Understanding society wave 1-9. The reason why we replace JobSOC90 to JobSOC00 from BHPS wave 18 onward is that JobSOC90 is only available in BHPS while JobSOC00 is available from BHPS wave 11 onwards until Understanding Society wave 9.

4. JobSOC90 represent Standard Occupation Code 1990. JobSOC00 represent Standard Occupation Code 2000.

Source: Understanding society waves 1-9(2009-2018) and Harmonised BHPS waves 1-18 (1991-2008).

Table 3.4 Random effect Probit regressions (Self-employment Entry (1) and No Entry (0))

	Self-employment entry preferred to no entry					
Gender	Males			Females		
Variables	(1)	(2)	(3)	(4)	(5)	(6)
Hybrid_entrepreneur	0.026***	0.015***	0.014***	0.015***	0.009***	0.009***
	(0.002)	(0.003)	(0.003)	(0.001)	(0.002)	(0.002)
Secondary_job_earnings (£1,000)		0.002			0.007***	
		(0.003)			(0.002)	
Secondary_job_ratio			0.006			0.009***
			(0.004)			(0.002)
Secondary_job_hrs	NO	YES	YES	NO	YES	YES
Demographic characteristics	YES	YES	YES	YES	YES	YES
Education level (0 = no; 1 = yes)	YES	YES	YES	YES	YES	YES
Desire_business	YES	YES	YES	YES	YES	YES
Current main job	YES	YES	YES	YES	YES	YES
Other financial information	YES	YES	YES	YES	YES	YES
Family information	YES	YES	YES	YES	YES	YES
Region dummy	YES	YES	YES	YES	YES	YES
Year dummy	YES	YES	YES	YES	YES	YES
Observations	53,295	53,047	53,055	61,398	61,211	61,208

*p<0.1; **p<0.05; ***p<0.01

Note:

1. Since the variable *Desire_business* is only available in waves 2,4,6,8 of Understanding Society and wave 8-18 of BHPS, the result of this regression table is based on the data of these waves.

2. Column (1) and (6) show the average marginal effect of RE-Probit. Delta-method standard error are showed in the parentheses.

3. For brevity and making our key findings prominent, we fold the coefficient of those control variables. "YES" in this table means this variable or this variables group (in Bold) is included into the regression as the control variable(s). "NO" means this variable or this variables group (in Bold) is not included into the regression.

Source: Understanding society waves 2.,4,6,8(2010,2012,2014,2016) and Harmonised BHPS waves 8-18 (1998-2008).

Table 3.5   Fixed-effect linear probability model regressions (Self-employment Entry (1) and No Entry (0))

	Self-employment entry preferred to no entry					
Gender		**Males**			**Females**	
Variables	(1)	(2)	(3)	(4)	(5)	(6)
Hybrid_entrepreneur	0.018**	0.003	0.003	0.015**	0.000	-0.002
	(0.006)	(0.008)	(0.008)	(0.006)	(0.008)	(0.008)
Secondary_job_earnings (£1,000)		0.011			0.035**	
		(0.011)			(0.016)	
Secondary_job_ratio			0.020			0.055***
			(0.015)			(0.017)
Secondary_job_hrs	NO	YES	YES	NO	YES	YES
Demographic characteristics	YES	YES	YES	YES	YES	YES
Education level (0 = no; 1 = yes)	YES	YES	YES	YES	YES	YES
Desire_business	YES	YES	YES	YES	YES	YES
Current main job	YES	YES	YES	YES	YES	YES
Other financial information	YES	YES	YES	YES	YES	YES
Family information	YES	YES	YES	YES	YES	YES
Region dummy	YES	YES	YES	YES	YES	YES
Year dummy	YES	YES	YES	YES	YES	YES
Observations	53,295	53,047	53,055	61,398	61,211	61,208

*$p<0.1$; **$p<0.05$; ***$p<0.01$

Note:

1. Since the variable *Desire_business* is only available in waves 2,4,6,8 of Understanding Society and wave 8-18 of BHPS, the result of this regression table is based on the data of these waves.

2. Robust standard errors are showed in the parentheses.

3. For brevity and making our key findings prominent, we fold the coefficient of those control variables. "YES" in this table means this variable or this variables group (in Bold) is included into the regression as the control variable(s). "NO" means this variable or this variables group (in Bold) is not included into the regression.

Source: Understanding society waves 2.,4,6,8(2010,2012,2014,2016) and Harmonised BHPS waves 8-18 (1998-2008).

Table 3.6 Match job occupation code after self-employment entry for males

Type		T	T	T+1	T+1				
		Numbers at time T	Whether Job occupation code of secondary self-employed job is the same as that of primary job	Numbers that transition into full-time self-employment at time T+1	Job occupation code of self-employed job at time T+1 is the same as that of secondary self-employed job (for hybrid entrepreneur)/main job (for paid workers) at time T	(2)/(1)	(3)/(1)	(3)/(2)	(4)/(3)
Type		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Hybrid entrepreneurs	3698*		807 (same)	54	45	21.8%	1.5%	6.7%	83.3%
			2891 (different)	197	81	78.2%	5.3%	6.8%	41.1%
			3698(sum)	251(sum)	126(sum)	100.0%	**6.8%**	6.8%	**50.2%**
Paid workers	95871*			1653	814		1.7%		49.2%

Note:

1. The actual number of male hybrid entrepreneurs and male paid workers in our sample is 5,012 and 127,658 respectively. However, only 3,698 hybrid entrepreneurs and 95,871 paid workers provide the job occupation code information.

2. JobSOC90 is used for match in BHPS waves 1-17 and JobSOC00 is used for match in BHPS wave 18 and Understanding society wave 1-9. The reason why we replace JobSOC90 to JobSOC00 from BHPS wave 18 onward is that JobSOC90 is only available in BHPS while JobSOC00 is available from BHPS wave 11 onwards until Understanding Society wave 9.

3. JobSOC90 represent Standard Occupation Code 1990. JobSOC00 represent Standard Occupation Code 2000.

Source: Understanding society waves 1-9 (2009-2018) and Harmonised BHPS waves 1-18 (1991-2008).

Table 3.7 Match job occupation code after self-employment entry for females

Type	T	T	T+1	T+1				
	Numbers at time T	Whether Job occupation code of secondary self-employed job is the same as that of primary job	Numbers that transition into full-time self-employment at time T+1	Job occupation code of self-employed job at time T+1 is the same as that of secondary self-employed job (for hybrid entrepreneur)/main job (for paid workers) at time T	(2)/(1)	(3)/(1)	(3)/(2)	(4)/(3)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Hybrid entrepreneurs	3370*	755 (same)	43	42	22.4%	1.3%	5.7%	97.7%
		2615 (different)	171	84	77.6%	5.1%	6.5%	49.1%
		3370(sum)	214(sum)	126(sum)	100.0%	**6.4%**	6.4%	**58.9%**
Paid workers	111,103		972	452		0.9%		46.5%

Note:
1. The actual number of female hybrid entrepreneurs and female paid workers in our sample is 4,585 and 148,485, respectively. However, only 3,370 hybrid entrepreneurs and 111,103 paid workers provide the job occupation code information.
2. JobSOC90 is used for match in BHPS waves 1-17 and JobSOC00 is used for match in BHPS wave 18 and Understanding society wave 1-9. The reason why we replace JobSOC90 to JobSOC00 from BHPS wave 18 onward is that JobSOC90 is only available in BHPS while JobSOC00 is available from BHPS wave 11 onwards until Understanding Society wave 9.
3. JobSOC90 represent Standard Occupation Code 1990. JobSOC00 represent Standard Occupation Code 2000.
Source: Understanding society waves 1-9 (2009-2018) and Harmonised BHPS waves 1-18 (1991-2008).

Table 3.8 Random effect Probit regressions (Self-employment Entry (1) and No Entry (0))

	Self-employment entry preferred to no entry					
Gender	**Males**			**Females**		
Variables	(1)	(2)	(3)	(4)	(5)	(6)
Hybrid_entrepreneur*Desire_business	0.067***			0.059***		
	(0.012)			(0.012)		
Hybrid_entrepreneur*(1-Desire_business)	0.037***			0.023***		
	(0.006)			(0.004)		
Secondary_job_earnings*Desire_business		-0.0001			0.030***	
		(0.009)			(0.010)	
Secondary_job_earnings *(1-Desire_business)		0.003			0.005**	
		(0.003)			(0.002)	
Secondary_job_ratio*Desire_business			0.012			0.030***
			(0.011)			(0.008)
Secondary_job_ratio*(1-Desire_business)			0.005			0.006***
			(0.004)			(0.002)
Secondary_job_hrs	NO	YES	YES	NO	YES	YES
Demographic characteristics	YES	YES	YES	YES	YES	YES
Education level (0 = no; 1 = yes)	YES	YES	YES	YES	YES	YES
Desire_business	YES	YES	YES	YES	YES	YES
Hybrid_entrepreneur	NO	YES	YES	NO	YES	YES
Current main job	YES	YES	YES	YES	YES	YES
Other financial information	YES	YES	YES	YES	YES	YES
Family information	YES	YES	YES	YES	YES	YES
Region dummy	YES	YES	YES	YES	YES	YES
Year dummy	YES	YES	YES	YES	YES	YES
Observations	53,295	53,047	53,055	61,398	61,211	61,208

*p<0.1; **p<0.05; ***p<0.01
Note:
1. Since the variable *Desire_business* is only available in waves 2,4,6,8 of Understanding Society and wave 8-18 of BHPS, the result of this regression table is based on the data of these waves.
2. Column (1) and (6) show the average marginal effect of RE-Probit. Delta-method standard error are showed in the parentheses.
3. For brevity and making our key findings prominent, we fold the coefficient of those control variables. "YES" in this table means this variable or this variables group (in Bold) is included into the regression as the control variable(s). "NO" means this variable or this variables group (in Bold) is not included into the regression.
Source: Understanding society waves 2.,4,6,8(2010,2012,2014,2016) and Harmonised BHPS waves 8-18 (1998-2008).

Table 3.9 Fixed-effect linear probability model regressions (Self-employment Entry (1) and No Entry (0))

	Self-employment entry preferred to no entry					
Gender	**Males**			**Females**		
Variables	(1)	(2)	(3)	(4)	(5)	(6)
Hybrid_entrepreneur*Desire_business	0.034***			0.039***		
	(0.013)			(0.015)		
Hybrid_entrepreneur*(1-Desire_business)	0.010			0.006		
	(0.007)			(0.007)		
Secondary_job_earnings*Desire_business		0.033			0.172***	
		(0.024)			(0.051)	
Secondary_job_earnings *(1-Desire_business)		0.001			0.015	
		(0.011)			(0.014)	
Secondary_job_ratio*Desire_business			0.054			0.143***
			(0.035)			(0.041)
Secondary_job_ratio*(1-Desire_business)			0.003			0.025
			(0.013)			(0.016)
Secondary_job_hrs	NO	YES	YES	NO	YES	YES
Demographic characteristics	YES	YES	YES	YES	YES	YES
Education level (0 = no; 1 = yes)	YES	YES	YES	YES	YES	YES
Desire_business	YES	YES	YES	YES	YES	YES
Hybrid_entrepreneur	NO	YES	YES	NO	YES	YES
Current main job	YES	YES	YES	YES	YES	YES
Other financial information	YES	YES	YES	YES	YES	YES
Family information	YES	YES	YES	YES	YES	YES
Region dummy	YES	YES	YES	YES	YES	YES
Year dummy	YES	YES	YES	YES	YES	YES
Observations	53,295	53,047	53,055	61,398	61,211	61,208

*p<0.1; **p<0.05; ***p<0.01

Note:

1. Since the variable *Desire_business* is only available in waves 2,4,6,8 of Understanding Society and wave 8-18 of BHPS, the result of this regression table is based on the data of these waves.

2. Robust standard errors are showed in the parentheses.

3. For brevity and making our key findings prominent, we fold the coefficient of those control variables. "YES" in this table means this variable or this variables group (in Bold) is included into the regression as the control variable(s). "NO" means this variable or this variables group (in Bold) is not included into the regression.

Source: Understanding society waves 2.,4,6,8(2010,2012,2014,2016) and Harmonised BHPS waves 8-18 (1998-2008).

*Table 3.*10 Full-sample random-effect Probit and fixed-effect linear probability regressions (Hybrid Entry (1) and No Entry (0))

Gender	Males				Females			
	RE Probit	Delta SE	FE LPM	Robust SE	RE Probit	Delta SE	FE LPM	Robust SE
Variables	(1)		(2)		(3)		(4)	
Demographic characteristics								
Age	0.0012***	0.0004	0.0007	0.0018	0.0003	0.0003	-0.0015	0.0015
Age square/1000	-0.0178***	0.0048	-0.0190**	0.0077	-0.0058	0.0037	-0.0140**	0.0070
Married (0 = no; 1 = yes)	-0.0007	0.0015	-0.0048	0.0027	-0.0013	0.0011	-0.0015	0.0023
Self-rated health level	0.0006	0.0006	0.0010	0.0007	0.0007	0.0005	0.0005	0.0006
Education level (0 = no; 1 = yes)								
Degree	0.0116***	0.0031	0.0208**	0.0105	0.0192***	0.0027	0.0063	0.0063
Other higher degree	0.0083**	0.0033	0.0193	0.0119	0.0111***	0.0027	0.0081	0.0068
A Level	0.0045	0.0029	0.0116	0.0079	0.0106***	0.0026	0.0011	0.0048
GCSE	0.0022	0.0029	0.0107	0.0077	0.0080***	0.0025	-0.0010	0.0046
Other qualification	0.0003	0.0034	0.0058	0.0071	0.0063**	0.0029	0.0068	0.0054
Desire_business	NO		NO		NO		NO	
Current main job								
Permanent job (0 = no; 1 = yes)	-0.0105***	0.0022	-0.0152***	0.0040	-0.0044***	0.0015	-0.0035	0.0024
Fulltime job (0 = no; 1= yes)	-0.0046	0.0032	-0.0020	0.0043	-0.0023	0.0017	-0.0024	0.0020
Being manager (0 = no, 1= yes)	-0.0005	0.0012	-0.0001	0.0017	0.0003	0.0010	-0.0007	0.0014
Employment size at working place	-0.0013***	0.0003	-0.0002	0.0004	-0.0008***	0.0002	0.0001	0.0003
Working hours in a normal week	-0.0001	0.0001	-0.0001	0.0001	-0.0003***	0.0001	-0.0003**	0.0001
Job satisfaction	-0.0006	0.0004	-0.0002	0.0004	-0.0009***	0.0003	-0.0006*	0.0004

	(1)	Delta-SE	(2)	Robust SE	(3)	Delta-SE	(4)	Robust SE
Net payment per month (£1,000)	-0.0011	0.0009	-0.0013	0.0014	0.0007	0.0009	-0.0037**	0.0016
Other financial information								
Non-salary income (£1,000)	0.0063***	0.0018	0.0016	0.0029	0.0020	0.0012	0.0020	0.0020
Subjective financial situation	-0.0005	0.0006	0.0005	0.0008	-0.0018***	0.0005	-0.0021***	0.0007
Family information								
Own house (0 = no; 1 = yes)	0.0001	0.0014	0.0001	0.0027	-0.0002	0.0011	0.0003	0.0025
Household income (£1,000)	-0.0001	0.0004	-0.0010**	0.0006	-0.0003	0.0003	-0.0002	0.0004
Number of employed members	0.0005	0.0009	0.0018*	0.0011	0.0005	0.0007	0.0003	0.0009
Number of kids	-0.0003	0.0006	0.0015	0.0010	-0.0005	0.0006	-0.0006	0.0010
Region dummy	YES		YES		YES		YES	
Year dummy	YES		YES		YES		YES	
Observations	84,582		84,582		98,460		98,460	

*p<0.1; **p<0.05; ***p<0.01

Note:

1. Since the variable *Desire_business* is not included in the regression models showed by this table, the result of this regression table is based on the full waves of data of BHPS and Understanding Society.

2. Column (1) and (3) show the average marginal effect of RE-Probit. Delta-SE represents delta-method standard error. Robust SE represents robust standard error.

3. For brevity and making our key findings prominent, we fold the coefficient of those control variables. "YES" in this table means this variable or this variables group (in Bold) is included into the regression as the control variable(s). "NO" means this variable or this variables group (in Bold) is not included into the regression.

Source: Understanding society waves 1-9(2009-2018) and Harmonised BHPS waves 1-18 (1991-2008).

Table 3. 11   Full-sample random-effect Probit regressions (Self-employment Entry (1) and No Entry (0))

	Self-employment entry preferred to no entry					
Gender	Males			Females		
Variables	(1)	(2)	(3)	(4)	(5)	(6)
Hybrid_entrepreneur	0.028***	0.017***	0.016***	0.019***	0.012***	0.012***
	(0.002)	(0.003)	(0.003)	(0.001)	(0.002)	(0.002)
Secondary_job_earnings (£1,000)		0.004*			0.006***	
		(0.002)			(0.002)	
Secondary_job_ratio			0.009***			0.010***
			(0.003)			(0.002)
Secondary_job_hrs	NO	YES	YES	NO	YES	YES
Demographic characteristics	YES	YES	YES	YES	YES	YES
Education level (0 = no; 1 = yes)	YES	YES	YES	YES	YES	YES
Desire_business	NO	NO	NO	NO	NO	NO
Current main job	YES	YES	YES	YES	YES	YES
Other financial information	YES	YES	YES	YES	YES	YES
Family information	YES	YES	YES	YES	YES	YES
Region dummy	YES	YES	YES	YES	YES	YES
Year dummy	YES	YES	YES	YES	YES	YES
Observations	90,905	90,470	90,487	105,122	104,773	104,769

*p<0.1; **p<0.05; ***p<0.01
Note:
1. Since the variable *Desire_business* is not included in the regression models showed by this table, the result of this regression table is based on the full waves of data of BHPS and Understanding Society.
2. Column (1) and (6) show the average marginal effect of RE-Probit. Delta-method standard error are showed in the parentheses.
3. For brevity and making our key findings prominent, we fold the coefficient of those control variables. "YES" in this table means this variable or this variables group (in Bold) is included into the regression as the control variable(s). "NO" means this variable or this variables group (in Bold) is not included into the regression.
Source: Understanding society waves 1-9(2009-2018) and Harmonised BHPS waves 1-18 (1991-2008).

Table 3.12 Full-sample fixed-effect linear probability model regressions (Self-employment Entry (1) and No Entry (0))

	Self-employment entry preferred to no entry					
Gender	Males			Females		
Variables	(1)	(2)	(3)	(4)	(5)	(6)
Hybrid_entrepreneur	0.023***	0.007	0.007	0.024***	-0.0003	-0.001
	(0.005)	(0.006)	(0.006)	(0.005)	(0.006)	(0.006)
Secondary_job_earnings (£1,000)		0.018**			0.042***	
		(0.009)			(0.016)	
Secondary_job_ratio			0.026**			0.068***
			(0.013)			(0.015)
Secondary_job_hrs	NO	YES	YES	NO	YES	YES
Demographic characteristics	YES	YES	YES	YES	YES	YES
Education level (0 = no; 1 = yes)	YES	YES	YES	YES	YES	YES
Desire_business	NO	NO	NO	NO	NO	NO
Current main job	YES	YES	YES	YES	YES	YES
Other financial information	YES	YES	YES	YES	YES	YES
Family information	YES	YES	YES	YES	YES	YES
Region dummy	YES	YES	YES	YES	YES	YES
Year dummy	YES	YES	YES	YES	YES	YES
Observations	90,905	90,470	90,487	105,122	104,773	104,769

*p<0.1; **p<0.05; ***p<0.01
Note:
1. Since the variable *Desire_business* is not included in the regression models showed by this table, the result of this regression table is based on the full waves of data of BHPS and Understanding Society.
2. Robust standard errors are showed in the parentheses.
3. For brevity and making our key findings prominent, we fold the coefficient of those control variables. "YES" in this table means this variable or this variables group (in Bold) is included into the regression as the control variable(s). "NO" means this variable or this variables group (in Bold) is not included into the regression.
Source: Understanding society waves 1-9(2009-2018) and Harmonised BHPS waves 1-18 (1991-2008).

Table 3.13 Hybrid-sample random-effect Probit regressions (Self-employment Entry (1) and No Entry (0))

	Self-employment entry preferred to no entry					
Gender	**Males**			**Females**		
Variables	(1)	(2)	(3)	(4)	(5)	(6)
Age	0.001	0.001	0.001	0.0004	-0.0005	0.0004
	(0.004)	(0.004)	(0.004)	(0.003)	(0.003)	(0.003)
Age square/1000	-0.007	-0.01	-0.012	-0.003	0.005	-0.004
	(0.044)	(0.044)	(0.044)	(0.037)	(0.037)	(0.038)
Secondary_job_earnings	0.016**			0.038***		
	(0.007)			(0.009)		
Secondary_job_ratio		0.017**			0.039***	
		(0.009)			(0.007)	
Secondary_job_diff			0.018**			0.052***
			(0.008)			(0.010)
Secondary_job_hrs	YES	YES	YES	YES	YES	YES
Demographic characteristics	YES	YES	YES	YES	YES	YES
Education level (0 = no; 1 = yes)	YES	YES	YES	YES	YES	YES
Desire_business	NO	NO	NO	NO	NO	NO
Hybrid_entrepreneur	NO	NO	NO	NO	NO	NO
Main job	YES	YES	YES	YES	YES	YES
Other financial information	YES	YES	YES	YES	YES	YES
Family information	YES	YES	YES	YES	YES	YES
Region dummy	YES	YES	YES	YES	YES	YES
Year dummy	YES	YES	YES	YES	YES	YES
Observations	3,188	3,205	3,154	2,859	2,855	2,840

*p<0.1; **p<0.05; ***p<0.01

Note:

1. Since the variable Desire_business is not included in the regression models showed by this table, the result of this regression table is based on the full waves of data but only include hybrid entrepreneurs.

2. Column (1) and (6) show the average marginal effect of RE-Probit. Delta-method standard error are showed in the parentheses.

3. For brevity and making our key findings prominent, we fold the coefficient of those control variables. "YES" in this table means this variable or this variables group (in Bold) is included into the regression as the control variable(s). "NO" means this variable or this variables group (in Bold) is not included into the regression.

Source: Understanding society waves 1-9(2009-2018) and Harmonised BHPS waves 1-18 (1991-2008).

Table 3.14 Hybrid-sample fixed-effect linear probability model regressions (Self-employment Entry (1) and No Entry (0))

	Self-employment entry preferred to no entry					
Gender	**Males**			**Females**		
Variables	(1)	(2)	(3)	(4)	(5)	(6)
Age	0.016	0.016	0.018	-0.02	-0.018	-0.017
	(0.022)	(0.022)	(0.022)	(0.023)	(0.022)	(0.023)
Age square/1000	0.046	0.047	0.035	-0.005	-0.024	-0.017
	(0.09)	(0.09)	(0.089)	(0.139)	(0.139)	(0.14)
Secondary_job_earnings	0.005			0.031		
	(0.008)			(0.022)		
Secondary_job_ratio		0.014			0.021	
		(0.011)			(0.019)	
Secondary_job_diff			0.009			0.051*
			(0.010)			(0.029)
Secondary_job_hrs	YES	YES	YES	YES	YES	YES
Demographic characteristics	YES	YES	YES	YES	YES	YES
Education level (0 = no; 1 = yes)	YES	YES	YES	YES	YES	YES
Desire_business	NO	NO	NO	NO	NO	NO
Hybrid_entrepreneur	NO	NO	NO	NO	NO	NO
Main job	YES	YES	YES	YES	YES	YES
Other financial information	YES	YES	YES	YES	YES	YES
Family information	YES	YES	YES	YES	YES	YES
Region dummy	YES	YES	YES	YES	YES	YES
Year dummy	YES	YES	YES	YES	YES	YES
Observations	3,188	3,205	3,154	2,859	2,855	2,840

*p<0.1; **p<0.05; ***p<0.01

Note:

1. Since the variable Desire_business is not included in the regression models showed by this table, the result of this regression table is based on the full waves of data but only include hybrid entrepreneurs.

2. Robust standard errors are showed in the parentheses.

3. For brevity and making our key findings prominent, we fold the coefficient of those control variables. "YES" in this table means this variable or this variables group (in Bold) is included into the regression as the control variable(s). "NO" means this variable or this variables group (in Bold) is not included into the regression.

Source: Understanding society waves 1-9(2009-2018) and Harmonised BHPS waves 1-18 (1991-2008).

Chapter Four: Are Entrepreneurs more Likely to be Optimistic and Overoptimistic than Employed Workers in Russia?

4.1 Introduction

Previous studies show that optimism can influence the performance of entrepreneurs. Moderate optimism can enhance the performance of entrepreneurs,[86]while overoptimism is detrimental to the performance of entrepreneurs.[87] However, a certain level of overoptimism could be necessary for entry into entrepreneurship.[88]

In recent years, the empirical research on entrepreneurship and optimism has mainly focused on developed countries. Bengtsson and Ekeblom (2014) find that, in Sweden, entrepreneurs are more optimistic than non-entrepreneurs. Koudstall et al. (2015) find that, in the Netherlands, entrepreneurs are more optimistic than managers and employed workers.

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[86] Crane and Crane (2007) find that dispositional optimism correlates to entrepreneurial success and recognize that optimism training is needed to improve the success rate of entrepreneurial activities and to ensure the future of entrepreneurship. Lindblom et al. (2020) find that the optimism of entrepreneurs is positively associated with entrepreneurial success and negatively associated with their intentions to exit entrepreneurship by using life satisfaction as the mediator. Dai et al. (2017) find that optimistic entrepreneurs often have improved credit accessibility and can obtain a lower cost of financing. Chen et al. (2017) find that entrepreneurial optimism positively influences the performance of the new ventures, by using the social network size as the mediators. Aidis et al. (2008) measure the optimism and realism for 133 owners-managers and find that entrepreneurial optimists perform significantly better in the probit earned from their business than pessimists.

[87] Hmieleski and Baron (2009) show that entrepreneurs who are highly optimistic will overextend the false forecast of their business project, which negatively affects the growth of their ventures. Moreover, in their subsequent research, Baron and Hmieleski (2012) show that there is a curvilinear relationship between the entrepreneurs' optimism and their performance and up to an inflection point, this relationship is positive, while it will turn negative when it moves beyond the infection point. Similarly, Puri and Robinson (2007) show that moderate optimists display prudent financial habits, while extreme optimists display hazardous ones. Additionally, Kappes and Sharot (2015) demonstrate that when faced with difficulties, moderate optimistic entrepreneurs work harder, deal with the stress more effectively and learn from errors and mistakes quicker than their non-optimistic colleagues, while highly optimistic entrepreneurs might persist with unpromising endeavours for a longer period of time, wasting valuable resources.

[88] A selection of studies show that overoptimistic individuals are more likely to become entrepreneurs than others (Meza and Southey, 1996; Dawson and Henley, 2012).

Few studies put their emphasis on developing countries.[89] Russia is one of the major developing countries in the world. This study will investigate whether Russian entrepreneurs are more likely to be optimistic and overoptimistic than employed workers.

Since the implosion of the Soviet Union in 1991, the economy of Russia fell apart and had experienced a tough time during the following decade. The economy of Russia gradually back to normal after Putin became the president of Russia in 2000. However, the economy of Russia does not show a decent growth thereafter. It is therefore worth checking whether entrepreneurs in Russia are optimistic during the recent two decades. Because the optimism of entrepreneurs can affect their performance, given that the gross domestic product reflects the combined performance of all enterprises within a country, figuring out the answer to this question can help us to learn the circumstance of Russia economy from a new perspective.[90]

Furthermore, As showed by Figure 4.1,[91] compared with that in other major developing countries in Asia – India and China, the environment of doing business in Russia has experienced a greater improvement in the last decade. This evidence sets a good foundation for my research in Russia.

In this paper, we will examine the following three questions:

1. Are entrepreneurs more likely to be optimistic than employed workers in Russia?

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[89] We only find one relevant study conducted by Dung and Trang (2015) in Vietnam.

[90] Extant reasons used to explain the current situation of Russian economy include irrational industrial structure, vast capital flight, a severely corrupt government and a large proportion of the economy being controlled by the Russia Mafia (Dzarasov, 2013).

[91] Figure 4.1 shows the rank of the ease of doing the business in 190 countries all over the world. The lower the rank, the better the environment of doing the business in that country.

2. Is transitioning into entrepreneurship from employment more likely to increase one's level of optimism, than remaining employed?

3. Are entrepreneurs more likely to be overoptimistic than employed workers in Russia?

The rest of this study will be arranged as follows: previous literature relevant to our topic will be reviewed in the subsequent section. The contribution and hypotheses of this study will be given in the third and fourth sections, respectively. I In the fifth section, we will introduce the methods used to research the questions detailed in the introduction. In the sixth section, we will describe the data used in this study. In the seventh section, we will present the results. In the eighth section, we will compare and discuss our results and the results acquired by the previous studies. In the final section, we conclude and put forward the policy implications of our study.

4.2 Literature Review

In this section, we first review previous studies which examine the relationship between entrepreneurship and optimism. Subsequently, we will review existing literature which investigates the relationship between those who have recently become entrepreneurs and optimism. Following this, we will review literature which examines the relationship between being an entrepreneur and overoptimism and we finish with a summary of this section.

4.2.1 Entrepreneurship and optimism
4.2.1.1 Optimism is associated with entrepreneurship

Krueger et al. (2000) examine whether entrepreneurial intention can be explained by using Shapero's (1982) model of the "Entrepreneurial Event" (SEE) in the U.S. In the SEE, the intention to start a business is influenced by three factors – perceived desirability, perceived feasibility and the propensity to act upon opportunities. As defined by Shapero (1982), perceived desirability is the personal attractiveness of starting a business, while perceived feasibility is the degree to which individuals feel personally capable of starting a business. Propensity to act, in this study, represents "learned optimism" which is measured based on Seligman (1990).[92] The perceived desirability is measured by the following question: "On a scale from 0 to 100, how desirable is it for you to start your own business?" The perceived feasibility is measured by another question: "On a scale from 0 to 100, how practical is it for you to start your own business?" The intention to start a business is measured by the question: "Estimate the probability you will start your own business in the next 5 years?" The

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[92] Seligman (1990) measures the optimism of individuals by asking them questions relevant to their daily life (positive or negative events). The respondents need to decide the reason for each event. For example, when a negative event happened, the respondent needs to attribute it to personal or impersonal, permanent or temporary, pervasive or specific cause.

sample used in this study includes 57 male and 40 female senior university business students, currently facing important career decisions. The final result of this study demonstrates that Shapero's (1982) model can effectively explain and simulate entrepreneurial intention, since all three factors are positively significant at 5%, and the adjusted R-square of this model is equal to 0.408. However, this study does not demonstrate the control variables, making the result less convincing.

Dung and Trang (2015) investigate whether psychological capital (self-efficacy, optimism, hope and resilience) can influence the entrepreneurial intention of individuals in Vietnam. A sample of 327 undergraduate students in Ho Chi Minh City was surveyed in this study. The authors find that optimism is not associated with entrepreneurial intention, while the remaining three psychological capitals are significantly associated with entrepreneurial intention. This study does not illustrate the method used to measure both the entrepreneurial intention and psychological capital. Furthermore, the fact that the model constructed in this study only considers four types of psychological capital may contribute to a biased result. Furthermore, the sample used in this study is also not representative, as only the students in Ho Chi Minh city are included, thus limiting the applicability of this result to the country as a whole.

4.2.1.2 Entrepreneurship is associated with optimism

Koudstall et al. (2015) examines whether entrepreneurs in the Netherlands are more optimistic than managers and employed workers. The data used in this paper is taken from an online survey designed by the author and conducted in the Netherlands in 2014. The sample used in this study includes 875 entrepreneurs, 516 managers and 667 employees. Two

well-defined survey measures of optimism - dispositional optimism and attributional style, [93]

In this paper, dispositional optimism is measured by 10 questions in which 6 of them are associated with future expectations and the remaining four are filler items. There are five optional answers for each question (ranging from strongly disagree to strongly agree). The attributional style is measured by 32 questions, which examine the general attitude of respondents towards a series of occasions or situations (positive events and negative events) that happened in their life. The result of this paper is that, on average, entrepreneurs and managers are more optimistic than employed workers in their dispositional optimism. Furthermore, the authors find that entrepreneurs are more optimistic than both managers and employed workers in their attributional style when negative events occur.

Bengtsson and Ekeblom (2014) research entrepreneurial optimism in Sweden. The data used in this study is taken from monthly surveys, conducted by the Swedish National Institute of Economic Research (NIER), during the period between January 1996 and September 2009. In this paper, optimism in relation to the present and optimism in relation to the future are both measured by a survey, which asks respondents to provide their present perceptions and expectations of different aspects of Sweden's macro-economic situation, including economic conditions, unemployment and inflation. There are three optional answers for each (better, stay about the same or worse). The authors argue that an individual's beliefs about nationwide economic conditions have no correlation with an individual's own life or work situation. Therefore, compared with the measures that prevail in the existing literature, which uses an individual's beliefs about their personal future economic conditions, the optimism measurement in this study is more accurate. The result of this study demonstrates that

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[93] The measurement of dispositional optimism is based on the studies of Scheier and Carver (1985) and Scheier et al. (1994). The measurement of attributional style is based on the study of Seligman (2000).

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entrepreneurs are more optimistic than non-entrepreneurs. Moreover, entrepreneurs are less likely than non-entrepreneurs to make forecasting errors, when comparing their optimism in relation to the present with their optimism in relation to the future.

4.2.2 New entrepreneurs and optimism
4.2.2.1 New entrepreneurs are optimistic

Bager and Schott (2004) investigates the growth expectation by entrepreneurs in new firms, young businesses (max 3.5 years old) and mature firms in Denmark. The data used in this study is from the annual surveys undertaken by the Global Entrepreneurship Monitor Project in Denmark from 2000 to 2003. The authors find that entrepreneurs in nascent firms expect that their firm will grow significantly in the next five years. Specifically, this paper shows that only 19% of new entrepreneurs expect that their firm will be a one-person firm (themselves), while 21% and 30% of them expect their firm will consist of 5-9 people and 10-99 people in next five years, respectively. The median expected size of a firm created by new entrepreneurs is five people (including themselves) in five years. Contrastingly, in terms of young businesses and mature firms, the present median size of both of these types of firms is two people (the owner and themselves) and the entrepreneurs of these two types of firms expect that the size of their firm will not change in the following five years. Subsequently, the authors investigate the optimism of the entrepreneurs in the three type of firms and find that 71% of new entrepreneurs are optimistic, while this number is 57% and 54% in young businesses and mature firms.

4.2.2.2 New entrepreneurs are overoptimistic

Cassar (2010) shows that new entrepreneurs in the U.S. are overoptimistic when predicting the sales and number of employees that their firm will have at the end of the first full year of operation. The data used in this study is from the Panel Study of Entrepreneurial Dynamics (PSED) over the period between 2004 to 2007.[94] After screening, the final sample used by this study is considerably limited – only 386 respondents are included. The sales and employment overoptimism in this study are measured using two ratios. These two ratios are calculated by dividing the difference between predicted and actual sales/employment size by the sum of predicted and actual sales/employment size. The descriptive statistic in this study shows that both sales and employment optimism are positive and statistically significant. Subsequently, the author estimates two GMM models. The dependent variable of the first and second GMM models is sales and employment overoptimism, respectively. The independent variable of both GMM models is formal business planning and financial projections. [95] The control variables of both GMM models include education, gender, industry experience, product development, promotion, raw inputs, capital inputs and money received. The estimation result of this study demonstrates that financial projections are positively associated with sales overoptimism.

Odermatt et al. (2017) finds that new entrepreneurs are overoptimistic when predicting their overall future well-being in Germany. The data used in this study is from the German Socio-Economic Panel (SOEP) from the period between 1991 to 2013. In this study, both current life satisfaction and predicted life satisfaction of individuals are measured by using two questions

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[94] The period of PSED used by this study is gauged by us as it is not mentioned in this study.
[95] Both independent variables are dummy equal to one if the business plan of the entrepreneurial activities and/or financial projection towards the financial statements of the enterprise is made.

– "How satisfied are you with your life, all things considered?" and "How do you think you will feel in five years' time?". The calculation of individual overoptimism in this study is novel. Rather than directly subtracting the actual life satisfaction from predicted life satisfaction to acquire the overoptimism, the authors of this study estimate two models. The dependent variable in the first model is the actual life satisfaction and in the second model, it is the predicted life satisfaction.[96] The independent variable is a series of dummies for each year following their transition to entrepreneurship. For example, one year after becoming an entrepreneur, two years after, until six or more years after becoming an entrepreneur is reached. The control variables include individual demographic information, year of schooling, German nationality, number of children in the household and household size. Subsequently, the overoptimism of new entrepreneurs is calculated by subtracting the coefficient of the variable – five years after becoming entrepreneurs in the first model from the coefficient of the variable – one year after becoming entrepreneurs in the second model. The average overoptimism of new entrepreneurs in this study is 0.497, which is statistically significant. Therefore, the authors demonstrate that new entrepreneurs are overoptimistic in terms of predicting their future life satisfaction. The potential reason why new entrepreneurs are overoptimistic, found by this study, is that new entrepreneurs are not satisfied with their leisure time since becoming entrepreneurs. Although the measurement of overoptimism in this study is novel, the authors do not provide any evidence to demonstrate its advantages.

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[96] Life satisfaction and predicted life satisfaction in this study are ordered variables ranging from 1 (least satisfied) to 10 (most satisfied).

4.2.3 Entrepreneurship and overoptimism
4.2.3.1 Overoptimism is associated with entrepreneurship

Meza and Southey (1996) constructed a model to explain why those who are excessively optimistic make up a significant proportion of those who have recently transitioned into entrepreneurship. I In the model built in this study, the expected gross return of a business is positively correlated with the optimism of nascent entrepreneurs. The nascent entrepreneurs will invest in a project if their expected gross return is at least equal to their investment. The project can require more initial capital than the amount which nascent entrepreneurs currently possess. In this scenario, the bank can provide the loan to fund the project, however it is a requirement that the capital owned and invested by nascent entrepreneurs into such project reaches a certain proportion. Only by setting this requirement can the bank break even, regardless of whether the project is ultimately successful or not. Based on the setting in this model, using the loan acquired from the bank to fund their project is a more rational approach for nascent entrepreneurs. In this model, the optimism of nascent entrepreneurs plays a vital role in deciding whether a project will proceed. If the nascent entrepreneurs are less optimistic, they will expect less gross return to be acquired from this project. If the expected gross return of a project is below the required initial investment, this project will not be proceed, even if the banks are willing to provide the loan to fund this project. However, if the optimism level of a nascent entrepreneur is sufficiently high, they will choose to proceed with a project, even if the expected gross return of this project is only equal to the initial investment. In this scenario, even if the banks do not provide a loan for this project, the nascent entrepreneur will use their own financial assets to fund this project, however the project will proceed at an inefficiently low rate.

Dawson and Henley (2012) find that overoptimistic individuals are more likely to enter self-employment than others in the UK. The data used in this study is from the British Household Panel Survey from the period between 1991 to 2008. Overoptimism of individuals is measured by a forecasted error, calculated by subtracting the actual financial situation in time t from the predicted financial situation for time t made at time t-1.[97] The forecasted financial situation is measured by the question: "Looking ahead, how do you think you yourself will be financially a year from now; better than you are now, worse than you are now, or about the same?" The actual financial situation is measured by the question: "Would you say that you yourself are better off, worse off or about the same, financially, than you were a year ago?" In both questions, the authors use a three-point scale to represent the answers – better than you are now (1), worse than you are now (-1) and about the same (0). Therefore, the forecasted error of the financial situations of individuals ranges from -2 to 2. The positive forecasted error means that the individuals are moderately optimistic (1) or highly optimistic (2), while the negative forecasted error means the individuals are moderately pessimistic (-1) or highly pessimistic (-2). The result of this study shows that 1.48% of those individuals who are moderately or highly optimistic about their financial future will enter into self-employment, while 1.18% of those who are moderately or highly pessimistic will become entrepreneurs. Therefore, the authors conclude that overoptimism is associated with a greater likelihood of entering into self-employment. Three comments can be made on this study. Firstly, rather than researching whether overoptimism affects entry into entrepreneurship, this study researches the association between the entry into self-employment and the predicted error of one's financial situation. We argue that the

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[97] In this study, the individuals are not self-employed in time t-1, but become self-employed in time t.

overoptimism needs to be calculated for each individual before they enter self-employment. Secondly, this study does not show that the difference between 1.48% and 1.18% is statistically significant. Thirdly, this study only uses bivariate analysis, which does not consider the selection bias of individuals. This can cause a potential bias in the results acquired by this study.

4.2.3.2 Entrepreneurship is associated with overoptimism

Landier and Thesmar (2008) find that there exists a stable group of entrepreneurs who are overoptimistic in France. The data used in this study consists of the merging of two sources available from the French statistical office (INSEE). The first source of data is a survey on entrepreneurs collected in 1994 and 1998 by the INSEE. The second source of data is the Tax Files, providing the detailed accounting information at the firm level, from the period between 1994 and 2003. The overoptimism is measured by two forecasted errors. The first forecasted error is development forecasted error, calculated by subtracting the actual sales growth rate from the one expected. The second forecasted error is hiring expectation bias calculated by subtracting the actual increased number of employees from the expected increase in the number of employees. The result of this study shows that around 20% of entrepreneurs in France are overoptimistic towards the sales and size growth of their firms. In order to establish the determinants of overoptimism of entrepreneurs in France, a baseline model is built by this study. The dependent variable is the forecasted error relating to development. The independent variables include education level dummies, whether age is greater than 38, gender, previous entrepreneurial experience, experience in industry, whether becoming an entrepreneur is due to a new idea, whether becoming entrepreneur is

due to autonomy and whether the enterprise is newly established rather than existing firms acquired by the entrepreneurs. The estimation result shows that higher education, previous entrepreneurial experience, new ideas, autonomy and newly established enterprises are all positively associated with the overoptimism of entrepreneurs.

Dawson et al. (2014) find that self-employment is positively associated with overoptimism in the UK. The data used in this study is from the British Household Panel Survey (BHPS) from the period between 1991 to 2008. Specifically, this study constructs an ordered probit model. The dependent variable is overoptimism - the forecasted error calculated by subtracting the actual financial situation in time t from the predicted financial situation for time t made at time t-1. The forecasted financial situation is measured by the question: "Looking ahead, how do you think you yourself will be financially a year from now; better than you are now, worse than you are now, or about the same?" The actual financial situation is measured by the question "Would you say that you yourself are better off, worse off or about the same financially than you were a year ago?" In both questions, the authors use a three-point scale to represent the answers – better than you are now (1), worse than you are now (-1) and about the same (0). Therefore, the dependent variable ranges from -2 to 2. The independent variables include a variety of employment status dummies – Nevers,[98] Futures, Switchers In, Selfs, Switchers Out, Pasts. Specifically, Nevers are those paid employees who never become self-employed. Futures are those paid employees who currently in paid employment but will become self-employed later. Switchers In are those paid employees who will become self-employed in the next year. Selfs are those self-employed who will keep their position for a further year at least. Switchers Out are those self-employed who are in their final year of self-

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[98] Nevers will act as the reference group in this ordered probit model.

employment. Pasts are those paid employees who have been self-employed in the past. The control variables include age, gender, marital status and education level dummies. The estimation result shows that Selfs are positively associated with overoptimism, i.e., those that are self-employed are more likely to be overoptimic than the paid employees.

4.2.4 Summary of Literature review

Firstly, in terms of the relationship between being an entrepreneur and optimism, previous literature demonstrates that optimistic individuals are more likely to become entrepreneurs than pessimistic individuals, while entrepreneurs are also found to be more optimistic than the employees. Secondly, in relation to new entrepreneurs, previous studies find that new entrepreneurs are more optimistic than their colleagues in young and mature enterprises. New entrepreneurs are also found to be overoptimistic. Lastly, in terms of the relationship between being an entrepreneur and overoptimism, previous studies find that overoptimistic individuals are more likely to become entrepreneurs than others, while entrepreneurs are also found to be more overoptimistic than employees.

However, extant studies mainly focus on developed countries, with few conducting the relevant research in developing countries. This study will contribute to the literature by researching the relationship between entrepreneurship and the likelihood of optimism in Russia. Furthermore, no previous studies investigate the effect of transitioning into entrepreneurship on the likelihood of increasing levels of optimism. This study will contribute to the literature by examining the likelihood that individual optimism is enhanced by transitioning into entrepreneurship from being employed.

4.3 Contribution

We contribute to the literature by providing the first study on the relationship between entrepreneurship and the likelihood of optimism and overoptimism in Russia. Specifically, the contribution of this study consists of six aspects:

(1) we examine, compared with paid employees, whether entrepreneurs are more likely to be optimistic.

(2) we examine, compared with remaining in employment for two consecutive years, whether becoming an entrepreneur between time t and t+1 is more likely to increase an individual's level of optimism.

(3) we examine, compared with paid employees, whether entrepreneurs are more likely to be overoptimistic.

4.4 Hypotheses

As Koudstall et al. (2015) and Bengtsson and Ekeblom (2014) find that entrepreneurs are more optimistic than employees, we make our first hypothesis:

H1 *In Russia, compared with paid employees, entrepreneurs are more likely to be optimistic.*

As Bager and Schott (2004) find that new entrepreneurs are more optimistic than those who have been entrepreneurs for a long period of time and Cassar (2010) and Odermatt et al. (2017) find that new entrepreneurs are also overoptimistic, becoming an entrepreneur is likely to be associated with increased optimism. Therefore, we make our second hypothesis:

H2 *Compared with remaining in employment for two consecutive years, becoming an entrepreneur between year t and year t+1 is more likely to increase an individual's level of optimism.*

As Landier and Thesmar (2008) and Dawson et al. (2014) find that entrepreneurs are more overoptimistic than paid employees, we make our third hypothesis:

H3 *Compared the paid employees, entrepreneurs are more likely to be overoptimistic.*

4.5 Methods

In this section, we will first demonstrate the approach used to measure optimism, and any change in levels of optimism and overoptimism. Subsequently, we will introduce the baseline models used to examine our hypotheses.

4.5.1 Measurement of optimism, optimism enhancement and overoptimism

As in previous studies (Koudstall et al., 2015; Bengtsson and Ekeblom, 2014), we focus on, and measure, the dispositional optimism of individuals, defined as generalized expectancies for experiencing positive outcomes (Scheier et al., 2001). As we use the Russia Longitudinal Monitoring Survey (RLMS) in this study, the following question of RLMS will be used to measure the optimism of individuals:

1. Do you think that in the next 12 months you and your family will live better than today or worse?

You will live much better 5

You will live somewhat better 4

Nothing will change 3

You will live somewhat worse 2

You will live much worse 1

(Source: RLMS, rounds 9 to 26)

Therefore, the optimism of individuals is measured using a five-point scale, which ranges from 1 to 5. In this study, individuals are **optimistic** if they answer the above question with a 4 or

5. Individuals are **neutral** if they answer the above question with a 3. Individuals are **pessimistic** if they answer the above question with a 1 or 2.

Subsequently, based on above question, we can measure the change in levels of optimism. Based on the answer given by individuals in time t and $t+1$ to above question, we can calculate the change in their level of their optimism by subtracting their answer in time t from that in time $t+1$:

ΔOptimism $((t+1)-t)$ = -4, -3, -2, -1, 0, 1, 2, 3, 4

In this study, individuals **become more optimistic** from time t to time t+1 if ΔOptimism $((t+1)-t)$ equal to 1, 2, 3 or 4. individuals **keep neutral** from time t to time t+1 if ΔOptimism $((t+1)-t)$ equal to 0. individuals **become less optimistic** from time t to time t+1 if ΔOptimism $((t+1)-t)$ equal to -1, -2, -3 or -4.

Furthermore, as in previous studies (Cassar, 2010; Odermatt et al., 2017; Dawson and Henley, 2012; Landier and Thesmar, 2008; Dawson et al., 2014), we measure the overoptimism of individuals by calculating their forecasted error. A question in RLMS asks individuals to rate their feeling towards their financial situation over the past year:

2. Tell me, please, how has the financial position of your family changed in the last 12 months?
Greatly improved 5
Slightly improved 4
Has not changed 3
Slightly worsened 2
Greatly worsened 1

(Source: RLMS, round 9 to 26)

Therefore, based on the answer given by individuals to question 1 in time t and the answer given by individuals to question 2 in time t+1, we can calculate their forecasted error by subtracting their answer given to question 2 in time t+1 from that given to question 1 in time *t*:

Forecasted error= -4, -3, -2, -1, 0, 1, 2, 3, 4

In this study, individuals are **overoptimistic** if their forecasted error is equal to 1, 2, 3, or 4. Individuals are **neutral** if their forecasted error is equal to 0. Individuals are **over pessimistic** if their forecasted error is equal to -4, -3, -2 or -1.

Moreover, as in the study by Guariglia and Kim (2006), which uses the following question in RLMS to distinguish the entrepreneurs from others, this study will also use this question to identify the entrepreneurs in RLMS:

3. In your opinion, are you doing entrepreneurial activities at this job?
Yes 1
No 2
(Source: RLMS, rounds 9 to 26)

In this study, when asked about the current situation of their primary job, the respondents who answer 1 to this question are classified as entrepreneurs.

4.5.2 Baseline model

4.5.2.1 Baseline model 1

To test the hypothesis H1a, we utilize the following baseline equation based on Koudstall et

al.(2015):

$$\Pr\left(Optimistic_{\text{ij,t}} = 1\right) = \beta_0 + \beta_1 Entrepreneur_{it} + \boldsymbol{\beta_x X_{it}} + v_i + v_j + v_t + \varepsilon_{ijt} \quad (1)$$

where the dependent variable is a dummy equal to one, if the individual *i* is **optimistic** in time

t and equal to zero if the individual *i* is **neutral** or **pessimistic** in time *t.*

Our key explanatory variable is:

$Entrepreneur_{it}$, which is a dummy equal to one, if the individual *i* is an entrepreneur at time

t and equal to zero if the individual *i* is a paid employee at time *t*.

In line with the hypotheses H1, we expect β_1 in equation (1) to be positive and significant.

X_{it} **are other control variables.**[99]

v_i is the individual heterogeneity effect.

v_j is the regional effect.

v_t is the time effect.

ε_{ijt} is the stochastic error.

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[99] The detail of control variables is illustrated in the Appendix A– Control variables.

4.5.2.2 Baseline model 2

To test the hypothesis H2a, we utilize the following baseline equation based on Kautonen et al. (2017):

$$\Pr\left(More\_optimistic_{\text{ij,t+1}} = 1\right) = \beta_0 + \beta_1 Become\_entrepreneur_{i,t+1} + \boldsymbol{\beta_x X_{it}} +$$

$$\boldsymbol{\beta_y \Delta X_{i,t+1}} + v_i + v_j + v_t + \varepsilon_{ijt} \tag{2}$$

where the dependent variable is a dummy equal to one, if the individual i **becomes more optimistic** from time t to time t +1 and equal to zero if the individual i **keeps neutral** or **becomes less pessimistic** from time t to time t +1.

Our key explanatory variable is:

$Become\_entrepreneur_{i,t+1}$, which is a dummy equal to one if the individual i is a paid employee in time t but becomes an entrepreneur in time t+1.

In line with the hypotheses H2, we expect β_1 in equation (2) to be positive and significant.

$\boldsymbol{X_{it}}$ **are other control variables at time t.**[100]

$\boldsymbol{\Delta X_{i,t+1}}$ **are the change of other control variables from time t to time t+1.**[101]

v_i is the individual heterogeneity effect.

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[100] The detail of control variables is illustrated in the Appendix A– Control variables.
[101] The detail of control variables is illustrated in the Appendix A– Control variables.

v_j is the regional effect.

v_t is the time effect.

ε_{ijt} is the stochastic error.

4.5.2.3 Baseline model 3

To test the hypothesis H3a, we utilize the following baseline equation based on Kautonen et al. (2017) and Dawson et al. (2014):

$$\Pr\left(Overoptimistic_{ij,t+1} = 1\right) = \beta_0 + \beta_1 Keep\_entrepreneur_{i,t+1} + \boldsymbol{\beta_x X_{it}} + \boldsymbol{\beta_y \Delta X_{i,t+1}} +$$

$$v_i + v_j + v_t + \varepsilon_{ijt} \qquad\qquad (3)$$

where the dependent variable is a dummy equal to one, if the individual *i* is **overoptimistic** based on their forecasted error calculated between time *t* and time *t* +1 and equal to zero if the individual *i* **keeps neutral** or **becomes over pessimistic** between time *t* and time *t* +1.

Our key explanatory variable is:

$Keep\_entrepreneur_{i,t+1}$, which is a dummy equal to one, if the individual *i* is an entrepreneur in both time *t* and *t*+1 and equal to zero if the individual *i* is a paid employee in both time *t* and *t*+1.

In line with the hypotheses H3, we expect β_1 in equation (3) to be positive and significant.

$\boldsymbol{X_{it}}$ are other control variables at time t.[102]

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[102] The detail of control variables is illustrated in the Appendix A– Control variables.

$\boldsymbol{\Delta X_{i,t+1}}$ are the changes in other control variables from time t to time t+1.[103]

v_i is the individual heterogeneity effect.

v_j is the regional effect.

v_t is the time effect.

ε_{ijt} is the stochastic error.

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[103] The detail of control variables is illustrated in the Appendix A– Control variables.

4.5.2.4 Estimation method

Koudstall et al. (2015) and Bengtsson and Ekeblom (2014) use an ordered probit model to estimate, similar to our baseline model 1, since the dependent variable of the model built in their studies is an ordered optimism variable.[104] Kautonen et al. (2017) uses ordinary least square to estimate, similar to our baseline model 2, because the dependent variable in that study is also an ordered life quality variable, constructed by the author from 19 life relevant items.[105] Dawson et al. (2014) use ordered probit model to estimate, similar to our baseline model 3, since the dependent variable of the model built in that study is an ordered overoptimism variable. [106] In our study, we transform the ordered optimism, ordered optimism enhancement and ordered overoptimism into three dummies. Therefore, we use a random effect probit model to estimate our baseline models 1, 2 and 3. Furthermore, in order to remove individual heterogeneity, we also use a fixed effect linear probability model to estimate our baseline models 1, 2 and 3. Moreover, to test the robustness of our main result, we change the dummy dependent variable of the three baseline models to a corresponding ordered dependent variable and use a random effect ordered probit model to estimate three baseline models again.

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[104] The ordered optimism variable is similar to the optimism in our study.
[105] Kautonen et al. (2017) investigate the effect of becoming an entrepreneur on the increase in life quality.
[106] The ordered overoptimism variable is the forecasted error which is, as before, similar to the one built in our study.

4.6 Data

In this study, we use the Russia Longitudinal Monitoring Survey, rounds 9 to 27, from the period between 2000 to 2018. The RLMS is a series of nationally representative surveys designed to monitor the effects of Russian reforms on the health and economic welfare of households and individuals in the Russian Federation. The RLMS data have been collected annually (with 1997 and 1999 excluded) since 1994. Considering Russia's complex economic situation, which has spanned the last decade of the nineteenth century,[107] this study uses this database from the year 2000 onwards. The sample used in our study are those working individuals, aged between 16 and 65 years old. Two income type variables (total labour income and household income) are expressed in 2018 Russian rubles. All outliners are deleted from the sample.

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[107] Without taking the data during this period into consideration, our main result can avoid suffering from potential biases due to the effect of unobservable factors.

4.7 Result

4.7.1 Entrepreneurs are more likely to be optimistic in Russia

4.7.1.1 Bivariate analysis

Table 4.1 shows the mean of our variables across optimistic and non-optimistic individuals in our sample in column (1) and (2), respectively.

5.9% of optimistic individuals are entrepreneurs while 3.1% of non-optimistic individuals are entrepreneurs. As shown in column (3) of table 4.1, the difference between these two numbers is statistically significant. This demonstrates that entrepreneurs prefer to "enter" the optimistic group.

Furthermore, we also find that individuals who are male, young, single, healthier, better educated, working more hours per week, have a higher salary, do not own a house, have a wealthier family, are living in urban areas, and are working in non-state enterprises are more likely to enter the optimistic group.

4.7.1.2 Multivariate analysis

We conduct a multivariate analysis to verify our hypothesis H1. Column (1) and (2) of table 4.2 show the result of RE-Probit and FE-LPM for equation (1) respectively.

As shown by the result of the RE-probit model in column (1), entrepreneurs are positively significant and are 6.9% more likely than paid employees to be optimistic. This demonstrates that hypothesis H1 is satisfied. After removing the individual heterogeneity, the result of FE-LPM in column (2) of table 4.2 shows that entrepreneurs are still positively significant and are 4.3% more likely than the paid employees to be optimistic. Therefore, hypothesis H1 is confirmed.

4.7.2 Those who becoming entrepreneurs in Russia are more likely to become more optimistic

4.7.2.1 Bivariate analysis

Table 4.3 shows the mean of our variables across individuals who become more optimistic and those who remain neutral or become less optimistic from time t to t+1. The variable mean of these two groups are shown in column (1) and (2), respectively.

From time t to time t+1, 2.1% of individuals become more optimistic while transitioning into entrepreneurship and 1.6% of individuals who remain neutral or become less optimistic while transitioning into entrepreneurship. As shown in column (3) in table 4.3, the difference between these two numbers is statistically significant. This demonstrates that individuals who transition into entrepreneurship from paid employment tend to become more optimistic, rather than remain neutral or become less optimistic.

4.7.2.2 Multivariate analysis

We conduct a multivariate analysis in order to verify our hypothesis H2. Column (1) and (2) of table 4.4 show the result of RE-Probit and FE-LPM for equation (2), respectively.

As shown by the result of RE-probit model in column (1), becoming an entrepreneur is positively significant and 3.4% of them are more likely than paid employees to become more optimistic. This demonstrates that hypothesis H2 is satisfied. After removing the individual heterogeneity, the result of FE-LPM in column (2) of table 4.4 shows that becoming an entrepreneur is still positively significant and are7.1% more likely than the paid employees to become more optimistic. Therefore, hypothesis H2 is confirmed.

4.7.3 Entrepreneurs are more likely to be overoptimistic in Russia (weak)
4.7.3.1 Bivariate analysis

Table 4.5 shows the mean of our variables across individuals who are overoptimistic and those who are neutral or over pessimistic from time t to t+1. The variable mean of these two groups are shown in column (1) and (2), respectively.

From time t to time t+1, 2.4% of individuals are overoptimistic while remaining entrepreneurs and 1.6% of individuals are neutral or over pessimistic while remaining entrepreneurs. As shown in column (3) in table 4.5, the difference between these two numbers is statistically significant. This demonstrates that individuals who remain entrepreneurs tend to be overoptimistic, rather than neutral or over pessimistic.

4.7.3.2 Multivariate analysis

We conduct a multivariate analysis in order to verify our hypothesis H3. Columns (1) and (2) of table 4.6 show the result of RE-Probit and FE-LPM for equation (3), respectively.

As shown by the result of RE-probit model in column (1), remaining an entrepreneur is positively significant and are 5% more likely than paid employees to be overoptimistic. This demonstrates that hypothesis H3 is satisfied. After removing the individual heterogeneity, the result of FE-LPM in column (2) of table 4.6 shows that remaining an entrepreneur is no longer positively significant. Therefore, hypothesis H3 is only weakly satisfied.

4.7.4 Robustness test

4.7.4.1 Changing the dummy dependent variable of our baseline models to ordered ones

As we illustrate in the estimation method section, previous studies directly use ordered optimism and overoptimism as the dependent variable in the models built in their studies. In our study, we change the ordered optimism and overoptimism to dummy variables, i.e., either optimistic or not optimistic; either overoptimistic or not overoptimistic. Therefore, the estimation method used by previous studies is ordered probit rather than probit, which is used in our study. In order to verify whether there is a difference between using a dummy dependent variable and using an ordered dependent variable to examine the relationship between entrepreneurship and optimism, in addition to checking the robustness of our main result, we change the dependent variable of our baseline models from dummy to ordered ones. We use a random effect ordered probit model to estimate all three baseline models and all three modified equations. In order to remove individual heterogeneity, we also use a fixed effect linear OLS model to estimate all six equations.

Firstly, tables 4.7 and 4.8 show the result of verifying hypothesis H1 by using a random effect ordered probit model and a fixed effect linear OLS model, respectively. Column (1) of table 4.7 shows that hypothesis H1 is satisfied, as entrepreneurs are positively significant when optimism equals 4 and 5. This means entrepreneurs are more likely to be optimistic than the employees. Even if the individual heterogeneity is removed, column (1) of table 4.8 shows that hypothesis H1 is still satisfied, as entrepreneurs are also positively significant

Secondly, table 4.9 and 4.10 show the result of verifying hypotheses H2 by using a random effect ordered probit model and a fixed effect linear OLS model, respectively. Column (1) of table 4.9 shows that hypothesis H2 is satisfied, as becoming an entrepreneur is positively

significant when the change of optimism equals 1, 2, 3 and 4. This means those becoming entrepreneurs are more likely to become more optimistic than the employees. However, after removing the individual heterogeneity, column (1) of table 4.10 shows that hypothesis H2 is no longer satisfied, as becoming an entrepreneur is not significant.

Thirdly, table 4.11 and 4.12 show the result of verifying hypothesis H3 by using a random effect ordered probit model and a fixed effect linear OLS model, respectively. Column (1) of table 4.11 shows that hypothesis H3 is satisfied, as those remaining entrepreneurs are positively significant when the optimism bias equal 1, 2, 3 and 4. This means those remaining entrepreneurs are more likely to be overoptimistic than the employees. However, after removing the individual heterogeneity, column (1) of table 4.12 shows that hypothesis H3 is no longer satisfied, as those remaining entrepreneurs are not significant.

To summarize, after changing the dependent variable of our three baseline models and three modified equations from dummy to ordered ones, we use a random effect probit model and a fixed effect linear OLS model to re-verify our hypotheses. The result shows that H1 is strongly satisfied; H2 is weakly satisfied; H3 is weakly satisfied; Our main results provide us with close to the same conclusion for the verification of hypotheses. Therefore, our main result is robust.

4.7.4.2 Adding the lag of the dependent variable as the additional control variable into our baseline models

As reviewed in our literature review section, previous studies find that optimistic and overoptimistic individuals are more likely to become entrepreneurs (Krueger et al., 2000; Dawson and Henley, 2012). Moreover, previous research also demonstrates that optimism

tends to remain relatively stable for individuals over time, situation, and context (Schulman, Keith, & Seligman,1993). For our baseline models 1 and 3, we need to add the lag of the dependent variable as an additional control variable. Otherwise, the estimation of our key independent variable – being an entrepreneur and remaining an entrepreneur, are likely to be biased. For our baseline model 2, Kautonen et al. (2017) and Aickin (2009) and Plewis (1985) all recommend adding the baseline dependent variable as an additional control variable into the model.108 Therefore, we add a dummy denoting whether individuals are optimistic at time t into our baseline model 2.

Subsequently, equations (1) and (3) are estimated by systematic GMM and equations (2) is estimated by a fixed effect linear probability model. All results are shown in table 4.13. Columns (1) of table 4.13 verify hypotheses H1. Columns (3) of table 4.13 verify hypotheses H2. Columns (2) of table 4.13 verify hypotheses H3. Column (1) of table 4.13 shows that hypothesis H1 is satisfied, as entrepreneur is positively significant. Column (2) of table 4.13 shows that hypothesis H2 is satisfied, as becoming an entrepreneur is positively significant. Columns (3) show that hypotheses H3 is not satisfied.

In summary, after adding additional control variables into our baseline model, we re-verify our hypotheses and acquire close to the same conclusion that was acquired by our main result. Therefore, our main result is robust.

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108 "In studies of change, one should include the baseline value in the analysis. (Aickin, 2009)"

4.7.4.3 Changing the measurement of the key variables in our baseline models

To further verify the robustness of the main result of Chapter 4, I add a further requirement to the measurement of being an entrepreneur.

Apart from providing the affirmative answer for the question: "In your opinion, are you doing entrepreneurial activities at this job?", individuals who are measured as an entrepreneur also need to provide the affirmative answer for the question: "Are you personally an owner or co-owner of the enterprise where you work?". Therefore, it means individuals who are defined as entrepreneurs now are not only doing the entrepreneurial activities but also need to be an owner or co-owner of the enterprise they work.

The definition of becoming an entrepreneur is updated automatically as the definition of being an entrepreneur is updated.109

In terms of the measurement of the over optimism, only those individuals with a forecasting error of 3-4 are classified as overoptimistic now.

Subsequently, based on the updated definition of being entrepreneurs, I re-estimate the baseline model 1 by using RE-probit and FE-LPM to verify the hypothesis 1 of Chapter 4. Column (1) and (2) of table 4.14 show the result of RE-Probit and FE-LPM for equation (1) respectively.

As shown by the result of the RE-probit model in column (1), entrepreneurs are positively significant and are 12.3% more likely than paid employees to be optimistic. This demonstrates that hypothesis H1 is satisfied. After removing the individual heterogeneity, the result of FE-

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109 Since the definition of becoming an entrepreneur is that an individual who is a paid employee in time t but being an entrepreneur in time $t+1$.

LPM in column (2) of table 4.2 shows that entrepreneurs are still positively significant and are 10.4% more likely than the paid employees to be optimistic. Therefore, hypothesis H1 is still confirmed.

Then, based on the updated definition of becoming an entrepreneur, I re-estimate the baseline model 2 by using RE-probit and FE-LPM to verify the hypothesis 2 of Chapter 4. Column (1) and (2) of table 4.15 show the result of RE-Probit and FE-LPM for equation (2) respectively.

As shown by the result of RE-probit model in column (1), becoming an entrepreneur is positively significant and 7.5% of them are more likely than paid employees to become more optimistic. This demonstrates that hypothesis H2 is satisfied. After removing the individual heterogeneity, the result of FE-LPM in column (2) of table 4.16 shows that becoming an entrepreneur is still positively significant and are 14.7% more likely than the paid employees to become more optimistic. Therefore, hypothesis H2 is still confirmed.

Finally, based on the updated definition of overoptimism, I re-estimate the baseline model 3 by using RE-probit and FE-LPM to verify the hypothesis 3 of Chapter 4. Column (1) and (2) of table 4.16 show the result of RE-Probit and FE-LPM for equation (3) respectively.

As shown by the result of RE-probit model in column (1), remaining an entrepreneur is positively significant and are 1.3% more likely than paid employees to be overoptimistic. This demonstrates that hypothesis H3 is satisfied. After removing the individual heterogeneity, the result of FE-LPM in column (2) of table 4.16 shows that remaining an entrepreneur is no longer positively significant. Therefore, hypothesis H3 is still only weakly satisfied.

Obviously, although more strict definitions of being an entrepreneur and over optimism are used, the main results of Chapter 4 do not change. Therefore, the main results of Chapter 4 are robust to the definition of key variables – being an entrepreneur, becoming an entrepreneur and over optimism.

4.7.4.4 Verifying the effect of optimism and overoptimism on entry into entrepreneurship – "reverse" causality check

As previous studies show that optimistic and overoptimistic individuals are more likely to become entrepreneurs (Krueger et al., 2000; Dawson and Henley, 2012), in order to verify whether this phenomenon can be witnessed in Russia, we regress entry into entrepreneurship on a dummy denoting whether an individual is optimistic and a dummy denoting whether an individual is overoptimistic, respectively. The result is shown in table 4.17. As shown by columns (1) and (2) of table 4.17, neither being optimistic nor overoptimistic is associated with entry into entrepreneurship. This evidence further strengthens the robustness of our main result.

Furthermore, I also apply the updated definition of becoming the entrepreneurs and over optimism and repeat the regressions showed in table 4.17. As shown by columns (1) and (2) of table 4.18, even if the updated definitions of becoming entrepreneurs and over optimism are used, neither being optimistic nor overoptimistic is associated with entry into entrepreneurship. This evidence further shows that "reverse" causality does not exist in Russia.

4.8 Discussion

Similar to extant studies conducted in developed countries, which show that there is a positive association between entrepreneurship and optimism (Koudstall et al., 2015; Bengtsson and Ekeblom, 2014), I find that entrepreneurs are more likely to be optimistic than paid employees in Russia. Specifically, Koudstall et al. (2015) find that entrepreneurs in the Netherlands are more optimistic than employed workers in their dispositional optimism while more optimistic than both managers and employed workers in their attributional style when negative events occur. Bengtsson and Ekeblom (2014) find that entrepreneurs are more optimistic than non-entrepreneurs in Sweden in terms of providing their present perceptions and expectations of different aspects of Sweden's macro-economic situation. In my study, I find that entrepreneurs are 6.9% more likely than paid employees to provide the affirmative answer for the question "Do you think that in the next 12 months you and your family will live better than today or worse?" in Russia.

Moreover, given the fact that few extant studies explain why entrepreneurs are more optimistic than employees, this study provides a potential explanation. As shown by the main result of this study, the behaviour related to transitioning into entrepreneurship can itself increase the optimism of individuals. specifically, becoming an entrepreneur is 3.4 percentage point more likely than paid employees to become more optimistic. To be more concrete, compared with the individuals who keep as paid employees in time t and time t+1, individuals who are paid employee in time t but become entrepreneurs in time t+1 are 3.4 percentage point more likely to give the improved answer to the question "Do you think that in the next 12 months you and your family will live better than today or worse?". For example, if the individuals who are paid employee in time t but become entrepreneurs in time t+1 reply this

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question with the answer "nothing will change" at time t, then the probability that they reply this question with the answer "you will live somewhat better" at time t+1 is 3.4 percentage point higher than those who are paid employees in both time t and time t+1. At the same time, Bager and Schott (2004) find that entrepreneurs in nascent firms expect that their firm will grow more significantly in the next five years than those in young and mature firms in Denmark. Future relevant studies may need to take this evidence that transitioning into entrepreneurship can itself increase the optimism of individuals into consideration when researching the potential determinants of entrepreneurial optimism.

Furthermore, in contrast with previous studies in developed countries, which show that entrepreneurship is positively associated with overoptimism (Landier and Thesmar, 2008; Dawson et al., 2014), I only find a weak association between entrepreneurship and overoptimism in Russia. This evidence is interesting, as it means that Russian entrepreneurs are rational in terms of predicting their future financial situation. Specifically, Landier and Thesmar (2008) find that there exists a stable group (20%) of entrepreneurs who are overoptimistic in France since they tend to overestimate the sales and size growth of their firms. Dawson et al. (2014) find that self-employment is positively associated with overoptimism in the UK since the self-employed tend to provide a more affirmative answer than they should be for the question "Looking ahead, how do you think you yourself will be financially a year from now; better than you are now, worse than you are now, or about the same?". In this study, although the result from RE-probit model shows that remaining an entrepreneur is positively significant and are 5 percentage point more likely than paid employees to be overoptimistic, this association is no longer significant in the FE-LPM model.

Additionally, in contrast with previous studies, which show that optimism and overoptimism can influence entry into entrepreneurship in developed countries (Krueger et al., 2000; Dawson and Henley, 2012), this study does not witness this phenomenon in Russia. Specifically, based on the Shapero's (1982) model of the "Entrepreneurial Event" (SEE), Krueger et al. (2000) find that "learned optimism" is positively associated with the intention to start a business in the US. Dawson and Henley (2012) find that overoptimistic individuals are more likely to enter self-employment than others in the UK, showing that the number of those individuals who are overoptimistic about their financial future is 0.3 percentage point higher than that of others to enter into self-employment. In this study, I regress entry into entrepreneurship on a dummy denoting whether an individual is optimistic and a dummy denoting whether an individual is overoptimistic respectively, finding that neither being optimistic nor overoptimistic is associated with entry into entrepreneurship.

Although our study has answered whether entrepreneurs are more likely to be optimistic or overoptimistic than employees, it has not provided explanations as to why this is the case. Future studies can fill this gap by investigating the reasons for this phenomenon. This will improve our understanding of the association between entrepreneurship and optimism.

4.9 Conclusion and policy implication

This study investigates the association between entrepreneurship and optimism. We find that entrepreneurs are more likely to be optimistic than employees. Moreover, those becoming entrepreneurs are more likely to become more optimistic than those who remain employed. This study does not find a significant association between entrepreneurship and overoptimism. Policies aimed at improving the business environment will be beneficial to maintain the optimism of entrepreneurs. This is important since extant literature has found that optimistic entrepreneurs will perform better than their colleagues who are non-optimistic (Crane and Crane, 2007; Lindblom et al., 2020).

Appendix 4.1 – Control variables

Variable name	Variable type	Description
Age_{it}	Continuous	the age of the individual i at time t.
$Age\ square/1000_{it}$	Continuous	The squared age divided by 1000.
$Married_{it}$	Dummy	equal to one if individual i is married or living as couple at time t, and 0 otherwise.
$Selfrated\ health\ level_{it}$	Dummy	Self-rated health level by individual i at time t. 1: good or very good. 0: normal, poor or very poor health condition.
BMI_{it}	Continuous	Body Mass Index of individual i at time t.
$Year\ of\ study_{it}$	Continuous	Number of educated years of individual i at time t.
$Total\ working\ hours\ per\ week_{it}$	Continuous	Total number of working hours per week of individual i at time t.
$Ttotal\ labour\ income\ per\ month_{it}$	Continuous	Total monthly labour income of individual i at time t.
$Own\ house_{it}$	Dummy	equal to one if individual i is owns a house at time t, and 0 otherwise.
$Household\ income_{it}$	Dummy	Total monthly household income with total monthly labour income excluded of individual i at time t.
$Area_{it}$	Dummy	equal to one if individual i is living in rural area at time t.
$Region\ dummy_{it}$	Dummy	Government Office Regions include: Moscow/St.Petersbug, Northern/Northwestern, Central/Central Black Earth, Volga-Vaytski/Volga Basin, Urals, Northern Caucasus, Western Siberia, Eastern Seberia/Far East. (one of them is dropped to represent the reference group)
$Year\ dummy_{t}$	Dummy	A series of year dummies built by the author include: year2001, year2002, year2003, year2004, year2005, year2006, year2007, year2008, year2009, year2010, year2011, year2012, year2013, year2014, year2015, year2016, year 2017 and year 2018.

Appendix 4.2 – Figures

Figure 4.1 Ease of doing business index for main developing countries in Asia
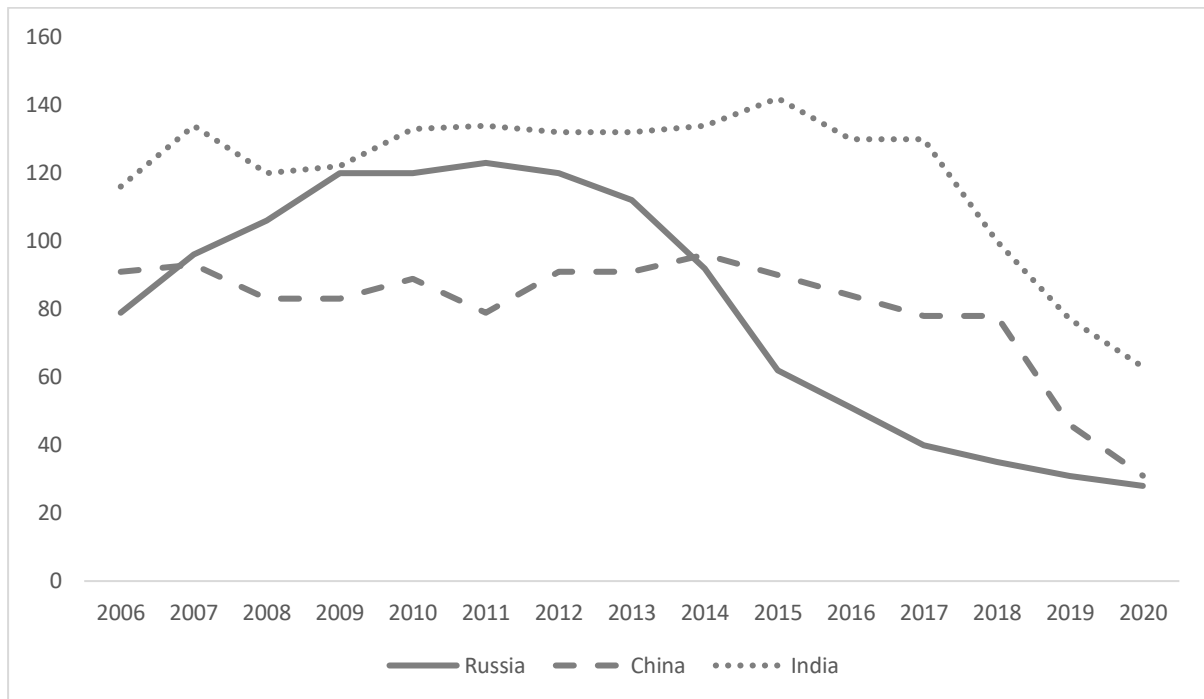
(Source: The World Bank)

Table 4. 1 Descriptive table of optimistic and neutral or pessimistic individuals

Variables	Optimistic	Neutral or pessimistic	Difference (1) vs (2)
	(1)	(2)	(3)
Entrepreneurship			
Entrepreneur in the main job (0 = no; 1 = yes)	0.059	0.031	0.028***
Demographic characteristics			
Gender (woman = 0, man = 1)	0.487	0.436	0.051***
Age	35.256	41.646	-6.39***
Married (0 = no; 1 = yes)	0.596	0.618	-0.022***
Self-rated health level	0.508	0.349	0.159***
BMI	25.156	26.251	-1.095***
Education level			
Year of study	17.664	17.346	0.318***
Job (Main job and Secondary job)			
Total working hours per week	44.716	43.571	1.145***
Total labour income per month (100,000 roubles)	0.261	0.221	0.04***
Family information			
Own house (0 = no; 1 = yes)	0.867	0.909	-0.042***
Household income (100,000 roubles)	0.4	0.341	0.059***
Area			
Rural area (0 = no; 1 = yes)	0.19	0.204	-0.014***
SOE			
Work in state-owned enterprises (0 = no; 1 = yes)	0.461	0.549	-0.088***
Observations	25,832	49,487	

*$p<0.1$; **$p<0.05$; ***$p<0.01$

Note: Self-rated health level is a dummy variable equal 1 if individual think him/herself has good or very good health and equal 0 if has normal or poor or very poor health.

Source: RLMS, round 9 to 27.

Table 4.2 Random-effect Probit and fixed-effect linear probability regressions (Optimistic (1) and Non-optimistic (0))

	Individuals are Optimistic			
Variables	**RE Probit** (1)	**Delta SE**	**FE LPM** (2)	**Robust SE**
Entrepreneurship				
Entrepreneur	0.069***	0.009	0.043***	0.013
Demographic characteristics				
Gender (woman = 0, man = 1)	0.01**	0.005		
Age	-0.02***	0.001	-0.01	0.008
Age square/1000	0.134***	0.016	0.24***	0.028
Married (0 = no; 1 = yes)	0.008*	0.004	0.008	0.008
Self-rated health level	0.049***	0.004	0.029***	0.005
BMI	-0.001**	0.0005	-0.0001	0.001
Education level				
Year of study	0.004***	0.001	0.0003	0.001
Job (Main job and Secondary job)				
Total working hours per week	0.001***	0.0002	0.001***	0.0002
Total labour income per month (100,000 roubles)	0.218***	0.014	0.174***	0.022
Family information				
Own house (0 = no; 1 = yes)	-0.03***	0.006	0.002	0.01
Household income (100,000 roubles)	0.071***	0.006	0.06***	0.009
Area				
Rural area (0 = no; 1 = yes)	-0.013**	0.006	0.086	0.054
SOE				
Work in state-owned enterprises (0 = no; 1 = yes)	-0.021***	0.004	-0.006	0.006
Region dummies	Yes		No	
Year dummies	Yes		Yes	
Observations	75,319		75,319	

*p<0.1; **p<0.05; ***p<0.01. SE represents robust standard error.
Note: Column (1) show the average marginal effect of RE-Probit. Delta-SE represent delta-method standard error. Robust SE represents robust standard error.
Source: RLMS, round 9 to 26.

Table 4.3 Descriptive table of more optimistic and neutral or less optimistic individuals

Variables	Become more optimistic (1)	Keep neutral or become less optimistic (2)	Difference (1) vs (2) (3)
Entrepreneurship			
Become entrepreneurs in the main job (no = 0, yes = 1)	0.021	0.016	0.005***
Demographic characteristics			
Gender (woman = 0, man = 1)	0.444	0.435	0.009
Age	39.721	39.886	-0.165
Married (0 = no; 1 = yes)	0.637	0.627	0.01*
Self-rated health level	0.376	0.394	-0.018***
BMI	25.97	26.031	-0.061
Education level			
Year of study	17.54	17.475	0.065
Job (Main job and Secondary job)			
Total working hours per week	43.517	43.485	0.032
Total labour income per month (100,000 roubles)	0.22	0.225	-0.005***
Family information			
Own house (0 = no; 1 = yes)	0.905	0.905	0
Household income (100,000 roubles)	0.34	0.346	-0.006
Change			
Δ Total working hours per week $_{((t+1) - t)}$	0.301	-0.139	0.44***
Δ Total labour income per month $_{((t+1) - t)}$	0.019	0.008	0.011***
Δ Household income $_{((t+1) - t)}$	0.019	0.008	0.011***
Δ married $_{((t+1) - t)}$ (base: no change)			
Single at time t and get married at time t+1	0.026	0.024	0.002
Married at time t and get divorced at time t+1	0.02	0.018	0.002
Δ Self-rated health level $_{((t+1) - t)}$ (base: no change)			
Unhealthy or normal at time t and healthy at time t+1	0.122	0.108	0.014***
Healthy at time t and Unhealthy or normal at time t+1	0.107	0.119	-0.012***
Δ Own house $_{((t+1) - t)}$ (base: no change)			
No house at time t and own house at t+1	0.027	0.024	0.003

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Own house at time t and no house at t+1	0.018	0.016	0.002
Area			
Rural area (0 = no; 1 = yes)	0.192	0.215	-0.023***
FSOE			
Work in state-owned enterprises at time t+1 (0 = no; 1 = yes)	0.548	0.563	-0.015***
Observations	8,507	31,899	

*p<0.1; **p<0.05; ***p<0.01

Note: Self-rated health level is a dummy variable equal 1 if individual think him/herself has good or very good health and equal 0 if has normal or poor or very poor health. Household income is the difference between household total income per month and total individual labour income per month.

Source: RLMS, round 9 to 27.

Table 4.4 Random-effect Probit and fixed-effect linear probability regressions (Become more optimistic (1) and keep neutral or become less optimistic (0))

| Variables | Individuals become more optimistic | | | |
| | RE Probit | Delta SE | FE LPM | Robust SE |
	(1)		(2)	
Entrepreneurship				
Become_entrepreneur	0.034**	0.015	0.071***	0.025
Demographic characteristics				
Gender (woman = 0, man = 1)	0.005	0.004		
Age	0.005***	0.001	-0.012	0.01
Age square/1000	-0.057***	0.015	-0.091***	0.036
Married (0 = no; 1 = yes)	0.005	0.004	-0.007	0.013
Self-rated health level	-0.007	0.004	0.001	0.009
BMI	-0.0002	0.0004	-0.001	0.001
Education level				
Year of study	0.001	0.0006	0.001	0.002
Job (Main job and Secondary job)				
Total working hours per week	0.0004*	0.0002	0.0002	0.0004
Total labour income per month (100,000 roubles)	-0.014	0.017	-0.166***	0.037
Family information				
Own house (0 = no; 1 = yes)	0.007	0.008	0.008	0.017
Household income (100,000 roubles)	0.009	0.007	-0.008	0.015
Change				
Δ Total working hours per week ((t+1) - t)	0.001***	0.0002	0.001**	0.0004
Δ Total labour income per month ((t+1) - t)	0.17***	0.022	0.109***	0.031

	(1)	Delta-SE	(3)	Robust SE
Δ Household income ((t+1) - t)	0.032***	0.009	0.032**	0.013
Δ married ((t+1) - t) (base: no change)				
Single at time t and get married at time t+1	0.021	0.013	0.011	0.019
Married at time t and get divorced at time t+1	0.014	0.015	0.015	0.02
Δ Self-rated health level ((t+1) - t) (base: no change)				
Unhealthy or normal at time t and healthy at time t+1	0.015**	0.007	0.016*	0.009
Healthy at time t and Unhealthy or normal at time t+1	-0.014**	0.007	-0.013	0.01
Δ Own house ((t+1) - t) (base: no change)				
No house at time t and own house at t+1	0.026*	0.015	0.035*	0.021
Own house at time t and no house at t+1	0.018	0.016	0.023	0.022
Area				
Rural area (0 = no; 1 = yes)	-0.02***	0.005	-0.092	0.074
FSOE				
Work in state-owned enterprises at time t+1 (0 = no; 1 = yes)	-0.009**	0.004	-0.002	0.009
Region dummies	Yes		No	
Year dummies	Yes		Yes	
Observations	40,406		40,406	

*p<0.1; **p<0.05; ***p<0.01. SE represents robust standard error.
Note: Column (1) and (3) show the average marginal effect of RE-Probit. Delta-SE represent delta-method standard error. Robust SE represents robust standard error.
Source: RLMS, round 9 to 26.

Table 4.5 Descriptive table of overoptimistic and neutral or pessimistic individuals

Variables	Overoptimistic (1)	Neutral or over pessimistic (2)	Difference (1) vs (2) (3)
Entrepreneurship			
Being entrepreneur at time t and t+1 (no = 0, yes = 1)	0.024	0.016	0.008***
Demographic characteristics			
Gender (woman = 0, man = 1)	0.452	0.429	0.023***
Age	37.818	40.804	-2.986***
Married (0 = no; 1 = yes)	0.63	0.627	0.003
Self-rated health level	0.429	0.374	0.055***
BMI	25.721	26.179	-0.458***
Education level			
Year of study	17.581	17.454	0.127***
Job (Main job and Secondary job)			
Total working hours per week	43.776	43.381	0.395***
Total labour income per month (100,000 roubles)	0.248	0.218	0.03***
Family information			
Own house (0 = no; 1 = yes)	0.897	0.908	-0.011***
Household income (100,000 roubles)	0.38	0.331	0.049***
Change			
Δ Total working hours per week ((t+1) - t)	-0.267	0.036	-0.303***
Δ Total labour income per month ((t+1) - t)	-0.005	0.016	-0.021***
Δ Household income ((t+1) - t)	-0.014	0.022	-0.036***
Δ married ((t+1) - t) (base: no change)			
Single at time t and get married at time t+1	0.026	0.023	0.003*
Married at time t and get divorced at time t+1	0.025	0.016	0.009***
Δ Self-rated health level ((t+1) - t) (base: no change)			
Unhealthy or normal at time t and healthy at time t+1	0.112	0.108	0.004
Healthy at time t and Unhealthy or normal at time t+1	0.135	0.111	0.024***

Δ Own house $_{((t+1) - t)}$ **(base: no change)**			
No house at time t and own house at t+1	0.027	0.024	0.003*
Own house at time t and no house at t+1	0.017	0.016	0.001
Area			
Rural area (0 = no; 1 = yes)	0.196	0.216	-0.02***
SOE			
Work in state-owned enterprises (0 = no; 1 = yes)	0.514	0.585	-0.071***
Observations	14,023	32,038	

*p<0.1; **p<0.05; ***p<0.01

Note: Self-rated health level is a dummy variable equal 1 if individual think him/herself has good or very good health and equal 0 if has normal or poor or very poor health. Household income is the difference between household total income per month and total individual labour income per month.

Source: RLMS, round 9 to 27.

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Table 4.6   Random-effect Probit and fixed-effect linear probability regressions (Overptimistic (1) and neutral or pessimistic (0))

Variables	RE Probit (1)	Delta SE	FE LPM (2)	Robust SE
Individuals are overoptimistic				
Entrepreneurship				
Keep_entrepreneur	0.05***	0.016	0.023	0.038
Demographic characteristics				
Gender (woman = 0, man = 1)	0.008	0.005		
Age	0.0004	0.002	0.028***	0.011
Age square/1000	-0.067***	0.019	-0.119***	0.038
Married (0 = no; 1 = yes)	0.01**	0.005	0.019	0.013
Self-rated health level	-0.011*	0.006	0.005	0.009
BMI	-0.00003	0.001	0.004**	0.001
Education level				
Year of study	0.001*	0.001	-0.002	0.002
Job (Main job and Secondary job)				
Total working hours per week	-0.0003	0.0003	-0.001*	0.0004
Total labour income per month (100,000 roubles)	0.039**	0.02	-0.15***	0.04
Family information				
Own house (0 = no; 1 = yes)	-0.003	0.009	0.027	0.017
Household income (100,000 roubles)	0.04***	0.009	-0.02	0.016
Change				
Δ Total working hours per week $_{((t+1) - t)}$	-0.001***	0.0003	-0.001**	0.0003
Δ Total labour income per month $_{((t+1) - t)}$	-0.388***	0.024	-0.487***	0.031
Δ Household income $_{((t+1) - t)}$	-0.093***	0.01	-0.122***	0.013
Δ married $_{((t+1) - t)}$ (base: no change)				
Single at time t and get married at time t+1	-0.004	0.014	-0.005	0.019
Married at time t and get divorced at time t+1	0.084***	0.015	0.069***	0.021

Δ Self-rated health level ((t+1) - t)   (base: no change)

Unhealthy or normal at time t and healthy at time t+1	-0.004	0.007	-0.006	0.009
Healthy at time t and Unhealthy or normal at time t+1	0.038***	0.007	0.021**	0.01

Δ Own house ((t+1) - t)   (base: no change)

No house at time t and own house at t+1	0.002	0.015	0.01	0.02
Own house at time t and no house at t+1	-0.005	0.017	-0.016	0.021

Area

Rural area (0 = no; 1 = yes)	-0.027***	0.006	-0.114	0.07

SOE

Work in state-owned enterprises (0 = no; 1 = yes)	-0.027***	0.005	0.006	0.009

Region dummies	Yes		No	
Year dummies	Yes		Yes	

Observations	46,061		46,061	

*p<0.1; **p<0.05; ***p<0.01. SE represents robust standard error.

Note: Column (1) and (3) show the average marginal effect of RE-Probit. Delta-SE represent delta-method standard error. Robust SE represents robust standard error.

Source: RLMS, round 9 to 26.

Table 4.7 Average marginal effect of Random-effect ordered Probit regression (Optimism = 1, 2, 3, 4, 5)

Variables	dy/dx	Delta SE
	(1)	
Optimism = 1 (least optimistic)		
Entrepreneur	-0.151***	0.002
Optimism = 2		
Entrepreneur	-0.271***	0.003
Optimism = 3		
Entrepreneur	-0.031***	0.003
Optimism = 4		
Entrepreneur	0.056***	0.006
Optimism = 5 (most optimistic)		
Entrepreneur	0.017***	0.002
Observation	75,319	

*p<0.1; **p<0.05; ***p<0.01.
Delta-SE represent delta-method standard error.
Source: RLMS, round 9 to 26

Table 4.8 Fixed-effect linear regressions (Optimism = 1, 2, 3, 4, 5)

	Optimistic Level	
Variables	FE LPM	Robust SE
	(1)	
Entrepreneurship		
Entrepreneur	0.08***	0.02
Demographic characteristics	YES	
Education level	YES	
Job (Main job and Secondary job)	YES	
Family information	YES	
Area	YES	
SOE	YES	
Region dummies	NO	
Year dummies	YES	
Observations	75,319	

*p<0.1; **p<0.05; ***p<0.01.
Note:
1. Robust SE represents robust standard error.
2. For brevity and making our key findings prominent, we fold the coefficient of those control variables. "YES" in this table means this variables group (in Bold) is included into the regression as the control variable(s). "NO" means this variables group (in Bold) is not included into the regression.
Source: RLMS, round 9 to 26.

Table 4.9 Average marginal effect of Random-effect ordered Probit regression (ΔOptimism ((t+1)-t) = -4, -3, -2, -1, 0, 1, 2, 3, 4)

Variables	dy/dx	Delta SE
	(1)	
ΔOptimism ((t+1)-t) = -4		
Become_entrepreneur	-0.0001*	0.0001
ΔOptimism ((t+1)-t) = -3		
Become_entrepreneur	-0.001**	0.0005
ΔOptimism ((t+1)-t) = -2		
Become_entrepreneur	-0.007**	0.003
ΔOptimism ((t+1)-t) = -1		
Become_entrepreneur	-0.023**	0.01
ΔOptimism ((t+1)-t) = 0		
Become_entrepreneur	0.002**	0.001
ΔOptimism ((t+1)-t) = 1		
Become_entrepreneur	0.021**	0.009
ΔOptimism ((t+1)-t) = 2		
Become_entrepreneur	0.007**	0.003
ΔOptimism ((t+1)-t) = 3		

Table 4.10 Fixed-effect linear regressions (ΔOptimism ((t+1)-t) = -4, -3, -2, -1, 0, 1, 2, 3, 4)

	Enhancement of optimistic Level	
	FE LPM	Robust SE
Variables	(1)	
Entrepreneurship		
Become_entrepreneur	0.082	0.054
Demographic characteristics	YES	
Education level	YES	
Job (Main job and Secondary job)	YES	
Family information	YES	
Change	YES	
Δ married $_{((t+1) - t)}$	YES	
Δ Self-rated health level $_{((t+1) - t)}$	YES	
Δ Own house $_{((t+1) - t)}$	YES	
Area	YES	
FSOE	YES	
Region dummies	NO	
Year dummies	YES	
Observations	40,406	

*p<0.1; **p<0.05; ***p<0.01.
Note:

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Become_entrepreneur	0.001**	0.0005
ΔOptimism ((t+1)-t) = 4		
Become_entrepreneur	0.0001*	0.00005
Observation	40,406	

*p<0.1; **p<0.05; ***p<0.01.
Delta-SE represent delta-method standard error.
Source: RLMS, round 9 to 26

1. Robust SE represents robust standard error.
2. For brevity and making our key findings prominent, we fold the coefficient of those control variables. "YES" in this table means this variables group (in Bold) is included into the regression as the control variable(s). "NO" means this variables group (in Bold) is not included into the regression.
Source: RLMS, round 9 to 26.

Table 4.11 Average marginal effect of Random-effect ordered Probit regression (Optimism bias= -4, -3, -2, -1, 0, 1, 2, 3, 4)

Variables	dy/dx	Delta SE
	(1)	
Optimism bias = -4		
Keep_entrepreneur	-0.0001**	0.00004
Optimism bias = -3		
Keep_entrepreneur	-0.002***	0.001
Optimism bias = -2		
Keep_entrepreneur	-0.01***	0.003
Optimism bias = -1		
Keep_entrepreneur	-0.028***	0.008
Optimism bias = 0		
Keep_entrepreneur	-0.008***	0.002
Optimism bias = 1		
Keep_entrepreneur	0.029***	0.008
Optimism bias = 2		
Keep_entrepreneur	0.015***	0.004
Optimism bias = 3		

Table 4.12 Fixed-effect linear regressions (Optimism bias = -4, -3, -2, -1, 0, 1, 2, 3, 4)

	Optimism bias	
	FE LPM	Robust SE
Variables	(1)	
Entrepreneurship		
Keep_entrepreneur	-0.03	0.079
Demographic characteristics	YES	
Education level	YES	
Job (Main job and Secondary job)	YES	
Family information	YES	
Change	YES	
Δ married $_{((t+1)-t)}$	YES	
Δ Self-rated health level $_{((t+1)-t)}$	YES	
Δ Own house $_{((t+1)-t)}$	YES	
Area	YES	
SOE	YES	
Region dummies	NO	
Year dummies	YES	
Observations	46,061	

*p<0.1; **p<0.05; ***p<0.01.
Note:

Keep_entrepreneur	0.003***	0.001
Optimism bias = 4		
Keep_entrepreneur	0.0005***	0.0001
Observation	46,061	

*p<0.1; **p<0.05; ***p<0.01.
Delta-SE represent delta-method standard error.
Source: RLMS, round 9 to 26

1. Robust SE represents robust standard error.
2. For brevity and making our key findings prominent, we fold the coefficient of those control variables. "YES" in this table means this variables group (in Bold) is included into the regression as the control variable(s). "NO" means this variables group (in Bold) is not included into the regression.
Source: RLMS, round 9 to 26.

Table 4.13 System GMM and fixed-effect linear probability regressions

	Optimistic	Become more optimistic	Overoptimistic
	SYS GMM	FE LPM	SYS GMM
Variables	(1)	(2)	(3)
Entrepreneurship			
Entrepreneur	0.042		
	0.022		
Entrepreneurship			
Become_entrepreneur		0.065	
		0.023	
Entrepreneurship			
Keep_entrepreneur			-0.289
			0.558
Whether optimistic at time t	NO	YES	NO
Demographic characteristics	YES	YES	YES
Education level	YES	YES	YES
Job (Main job and Secondary job)	YES	YES	YES
Family information	YES	YES	YES
Change	NO	YES	YES
Δ married $_{((t+1) - t)}$	NO	YES	YES
Δ Self-rated health level $_{((t+1) - t)}$	NO	YES	YES
Δ Own house $_{((t+1) - t)}$	NO	YES	YES
Area	YES	YES	YES
SOE	YES	NO	YES
FSOE	NO	YES	NO
Region dummies	NO	NO	NO
Year dummies	YES	YES	YES
Observations	49,339	40,406	31,825

*p<0.1; **p<0.05; ***p<0.01.
Note:
1. Robust SE represents robust standard error.
2. For brevity and making our key findings prominent, we fold the coefficient of those control variables. "YES" in this table means this variables group (in Bold) is included into the regression as the control variable(s). "NO" means this variables group (in Bold) is not included into the regression.
Source: RLMS, round 9 to 26.

Table 4. 14   Random-effect Probit and fixed-effect linear probability regressions (Optimistic (1) and Non-optimistic (0))

Variables	Individuals are Optimistic			
	RE Probit (1)	Delta SE	FE LPM (2)	Robust SE
Entrepreneurship				
Entrepreneur*	0.123***	0.015	0.104***	0.026
Demographic characteristics				
Gender (woman = 0, man = 1)	0.01*	0.005		
Age	-0.019***	0.001	-0.011	0.008
Age square/1000	0.132***	0.016	0.24***	0.028
Married (0 = no; 1 = yes)	0.008*	0.004	0.009	0.008
Self-rated health level	0.049***	0.004	0.029***	0.005
BMI	-0.001**	0.0005	-0.0002	0.001
Education level				
Year of study	0.004***	0.001	0.0003	0.002
Job (Main job and Secondary job)				
Total working hours per week	0.001***	0.0002	0.001***	0.0002
Total labour income per month (100,000 roubles)	0.214***	0.014	0.172***	0.022
Family information				
Own house (0 = no; 1 = yes)	-0.03***	0.006	0.001	0.01
Household income (100,000 roubles)	0.071***	0.006	0.06***	0.009
Area				
Rural area (0 = no; 1 = yes)	-0.014**	0.006	0.081	0.054
SOE				
Work in state-owned enterprises (0 = no; 1 = yes)	-0.019***	0.004	-0.004	0.006
Region dummies	Yes		No	
Year dummies	Yes		Yes	
Observations	73,404		73,404	

*p<0.1; **p<0.05; ***p<0.01. SE represents robust standard error.
Note: Column (1) show the average marginal effect of RE-Probit. Delta-SE represent delta-method standard error. Robust SE represents robust standard error.
Source: RLMS, round 9 to 26.

Table 4.15 Random-effect Probit and fixed-effect linear probability regressions (Become more optimistic (1) and keep neutral or become less optimistic (0))

Variables	RE Probit (1)	Delta SE	FE LPM (2)	Robust SE
	Individuals become more optimistic			
Entrepreneurship				
Become_entrepreneur*	0.075**	0.035	0.147***	0.064
Demographic characteristics				
Gender (woman = 0, man = 1)	0.004	0.004		
Age	0.004***	0.001	-0.015	0.01
Age square/1000	-0.056***	0.015	-0.094***	0.036
Married (0 = no; 1 = yes)	0.005	0.004	-0.009	0.013
Self-rated health level	-0.008	0.005	0.0002	0.009
BMI	-0.0002	0.0004	-0.001	0.001
Education level				
Year of study	0.001	0.0006	0.001	0.002
Job (Main job and Secondary job)				
Total working hours per week	0.0004*	0.0002	0.0002	0.0004
Total labour income per month (100,000 roubles)	-0.012	0.017	-0.164***	0.038
Family information				
Own house (0 = no; 1 = yes)	0.007	0.008	0.003	0.017
Household income (100,000 roubles)	0.009	0.007	-0.007	0.016
Change				
Δ Total working hours per week $_{((t+1) - t)}$	0.001***	0.0002	0.001**	0.0004
Δ Total labour income per month $_{((t+1) - t)}$	0.17***	0.022	0.11***	0.031
Δ Household income $_{((t+1) - t)}$	0.033***	0.009	0.033**	0.013

Δ married $_{((t+1) - t)}$ **(base: no change)**

	(1)		(3)	
Single at time t and get married at time t+1	0.020	0.014	0.006	0.019
Married at time t and get divorced at time t+1	0.013	0.015	0.017	0.02

Δ Self-rated health level $_{((t+1) - t)}$ **(base: no change)**

Unhealthy or normal at time t and healthy at time t+1	0.015**	0.007	0.015*	0.009
Healthy at time t and Unhealthy or normal at time t+1	-0.013*	0.007	-0.011	0.01

Δ Own house $_{((t+1) - t)}$ **(base: no change)**

No house at time t and own house at t+1	0.026*	0.015	0.033*	0.021
Own house at time t and no house at t+1	0.011	0.016	0.02	0.022

Area

Rural area (0 = no; 1 = yes)	-0.02***	0.005	-0.091	0.073

FSOE

Work in state-owned enterprises at time t+1 (0 = no; 1 = yes)	-0.009**	0.004	-0.001	0.009

Region dummies	Yes		No	
Year dummies	Yes		Yes	
Observations	39,844		39,844	

*p<0.1; **p<0.05; ***p<0.01. SE represents robust standard error.
Note: Column (1) and (3) show the average marginal effect of RE-Probit. Delta-SE represent delta-method standard error. Robust SE represents robust standard error.
Source: RLMS, round 9 to 26.

Table 4.16 Random-effect Probit and fixed-effect linear probability regressions (Overptimistic (1) and neutral or pessimistic (0))

	Individuals are overoptimistic			
	RE Probit	**Delta SE**	**FE LPM**	**Robust SE**
Variables	(1)		(2)	
Entrepreneurship				
Keep_entrepreneur*	0.013**	0.005	0.033	0.027
Demographic characteristics				
Gender (woman = 0, man = 1)	-0.004***	0.002		
Age	0.001	0.0005	0.005	0.004
Age square/1000	-0.018***	0.006	-0.008	0.011
Married (0 = no; 1 = yes)	0.003*	0.002	0.019	0.013
Self-rated health level	-0.008***	0.002	0.002	0.005
BMI	0.00004	0.0002	0.001**	0.001
Education level				
Year of study	-0.0003	0.0002	0.00002	0.0007
Job (Main job and Secondary job)				
Total working hours per week	0.0001	0.0001	0.00004	0.0002
Total labour income per month (100,000 roubles)	-0.002	0.006	-0.045**	0.017
Family information				
Own house (0 = no; 1 = yes)	0.004	0.003	0.002	0.006
Household income (100,000 roubles)	-0.004	0.003	-0.017***	0.006
Change				
Δ Total working hours per week ((t+1) - t)	-0.00004	0.0001	-0.0001	0.0001
Δ Total labour income per month ((t+1) - t)	-0.053***	0.009	-0.085***	0.013
Δ Household income ((t+1) - t)	-0.016***	0.004	-0.024***	0.005
Δ married ((t+1) - t) (base: no change)				
Single at time t and get married at time t+1	0.0001	0.004	-0.004	0.006
Married at time t and get divorced at time t+1	0.007*	0.004	0.006	0.009

Δ Self-rated health level ((t+1) - t) (base: no change)

Unhealthy or normal at time t and healthy at time t+1	-0.002	0.002	-0.0004	0.003
Healthy at time t and Unhealthy or normal at time t+1	0.008***	0.002	0.005	0.003

Δ Own house ((t+1) - t) (base: no change)

No house at time t and own house at t+1	0.001	0.005	-0.004	0.006
Own house at time t and no house at t+1	0.007*	0.004	0.01	0.009

Area

Rural area (0 = no; 1 = yes)	-0.01***	0.002	0.04	0.04

SOE

Work in state-owned enterprises (0 = no; 1 = yes)	-0.005***	0.002	0.006	0.009

Region dummies	Yes		No	
Year dummies	Yes		Yes	
Observations	32,252		32,252	

*p<0.1; **p<0.05; ***p<0.01. SE represents robust standard error.
Note: Column (1) and (3) show the average marginal effect of RE-Probit. Delta-SE represent delta-method standard error. Robust SE represents robust standard error.
Source: RLMS, round 9 to 26.

Table 4.17 Fixed-effect linear regressions (Become entrepreneur (1) and keep employed (0))

Variables	Become entrepreneur			
	FE LPM	Robust SE	FE LPM	Robust SE
	(1)		(2)	
Optimistic	-0.0001	0.0016		
Overoptimistic			-0.001	0.0014
Demographic characteristics	YES		YES	
Education level	YES		YES	
Job (Main job and Secondary job)	YES		YES	
Family information	YES		YES	
Change	NO		NO	
Δ married $_{((t+1) - t)}$	NO		NO	
Δ Self-rated health level $_{((t+1) - t)}$	NO		NO	
Δ Own house $_{((t+1) - t)}$	NO		NO	
Area	YES		YES	
SOE	YES		YES	
Region dummies	NO		NO	
Year dummies	YES		YES	
Observations	52,027		40,590	

*p<0.1; **p<0.05; ***p<0.01.
Note:
1. Robust SE represents robust standard error.
2. For brevity and making our key findings prominent, we fold the coefficient of those control variables. "YES" in this table means this variables group (in Bold) is included into the regression as the control variable(s). "NO" means this variables group (in Bold) is not included into the regression.
Source: RLMS, round 9 to 26.

Table 4. 18 Fixed-effect linear regressions (Become entrepreneur (1) and keep employed (0))

| Variables | Become entrepreneur | | | |
	FE LPM	Robust SE	FE LPM	Robust SE
	(1)		(2)	
Optimistic	-0.001	0.0006		
Overoptimistic			0.002	0.004
Demographic characteristics	YES		YES	
Education level	YES		YES	
Job (Main job and Secondary job)	YES		YES	
Family information	YES		YES	
Change	NO		NO	
Δ married $_{((t+1) - t)}$	NO		NO	
Δ Self-rated health level $_{((t+1) - t)}$	NO		NO	
Δ Own house $_{((t+1) - t)}$	NO		NO	
Area	YES		YES	
SOE	YES		YES	
Region dummies	NO		NO	
Year dummies	YES		YES	
Observations	51,293		28,336	

*p<0.1; **p<0.05; ***p<0.01.
Note:
1. Robust SE represents robust standard error.
2. For brevity and making our key findings prominent, we fold the coefficient of those control variables. "YES" in this table means this variables group (in Bold) is included into the regression as the control variable(s). "NO" means this variables group (in Bold) is not included into the regression.
Source: RLMS, round 9 to 26.

Chapter Five: Conclusion

5.1 Summary of findings

This thesis consists of three empirical studies on entrepreneurship using micro-level survey data from China, the UK and Russia. In particular, I investigate liquidity constraints and entrepreneurship in China, hybrid entrepreneurship in the UK, and the optimism of entrepreneurs in Russia. This thesis contributes to the existing literatures by providing empirical evidence on several important topics which, however, have received little attention.

In Chapter Two, using the 2010, 2012, 2014 and 2016 waves of China Family Panel Survey (CFPS), I study the extent to which individual wealth is positively associated with entrepreneurship entry. As in Wang (2012) and Schmalz et al. (2017) who find that liquidity constraints are the major impediment to the formation of firms in China, I find that both net assets and housing value appreciation are positively associated with entrepreneurial entry. Moreover, I also find that this association is stronger in those provinces characterized by low financial development and in rural areas. These findings indicate that liquidity constraints are binding in China, especially in rural areas and in less financially developed provinces.

In Chapter Three, using the Harmonized BHPS and Understanding Society dataset over the period 1991_2018, I study the phenomenon of hybrid entrepreneurship in the UK for both males and females. I find that, regardless of gender, wishing to set up their own business, financial pressure and the desire for a different job, drive respondents from employment into hybrid entrepreneurship. Furthermore, regardless of gender, only those hybrid entrepreneurs who wish to turn their part-time business into a full-time venture, are more likely to transition into full-time self-employment than paid workers. Additionally, good performance of the

secondary self-employed job will inspire female hybrid entrepreneurs to transition into full-time self-employment, but the precondition is that these female hybrid entrepreneurs wish to turn their part-time business into a full-time venture.

In Chapter Four, using round 5 to 27 of the Russian Longitudinal Monitoring Survey over the period between 2000_2018, I investigate the association between entrepreneurship and optimism. I find that entrepreneurs are associated with greater likelihood of being optimistic than the employed. Moreover, those who become an entrepreneur show a greater likelihood of becoming more optimistic than those who remain in employment for two consecutive years. However, I do not find a strongly significant association between entrepreneurship and overoptimism.

5.2 Policy Implication

This thesis provides the following policy implications:

Chapter Two documents a positive association between liquidity constraints and entrepreneurship in China, especially in rural areas and in less financially developed provinces. This suggests that nascent entrepreneurs may be unable to acquire enough liquidity from financial institutions to fund and set up their own business. This phenomenon is more pervasive in less financial developed areas. Thus, policies aimed at making loans more accessible to those latent entrepreneurs and narrowing the gap of financial development among provinces and between urban and rural areas will be beneficial to the overall entrepreneurial entry rate in China. However, before giving subsidies or loans to prospective entrepreneurs, financial institutions need to consider the adverse selection issue to make sure the subsidies or loans are allocated to those who truly deserve them.

In Chapter Three, I find that for both male and female paid workers in the UK, the desire to set up their own business plays an important role on their decision to become hybrid entrepreneurs and subsequent full-time entry into entrepreneurship. To enhance the entrepreneurial development of the UK, policy makers need to investigate why some paid employees wish to establish their own businesses, while others do not. Once this is known, they can implement a variety of policies to cultivate entrepreneurial awareness of the paid employees. Based on the findings in our study, the overall entrepreneurial activity in the UK will be increased.

In Chapter Four I find that entrepreneurs in Russia are more likely to be optimistic than the employed. Thus, policies aimed at improving the business environment will be beneficial to maintain the optimism of entrepreneurs. This is important since extant literature has found

that optimistic entrepreneurs will perform better than their colleagues who are non-optimistic (Crane and Crane, 2007; Lindblom et al., 2020).

5.3 Suggestions for future research

Regarding Chapter Two, further research could look at the effect of liquidity constraints on the performance of the entrepreneurs in China. Extant literature has found that liquidity constraints exert a noticeable influence on the viability of entrepreneurial enterprises (Holtz-Eakin et al, 1994). The entrepreneurs who receive a greater amount of inheritance are significantly survive longer than those who receive less (Holtz-Eakin et al, 1994). Furthermore, Oliveria and Fortunato (2006) find that the growth of smaller and younger firms is more sensitive to cash holding, suggesting that financial constraints on firm growth is likely to be more severe for small and young firms. Therefore, future studies conducted in China could investigate whether there is a negative association between the growth and survival rate of enterprises and liquidity constraints.

Regarding Chapter Three, future studies could look at the performance of hybrid entrepreneurs who transition into self-employment in the UK. Raffiee and Feng (2004) show that the businesses established by entrepreneurs, who transitioned from hybrid entrepreneur status, are more likely to survive than those established by individuals who entered full-time self-employment directly in the U.S. Furthermore, Folta et al. (2010) illustrate that the enterprises established by hybrid entrepreneurs have higher growth potential than those enterprises built by paid employees in Sweden. Therefore, future studies can investigate whether this phenomenon can be witnessed in the UK as well.

In Chapter Four, I find that entrepreneurs are more likely to be optimistic than the employed in Russia. However, I do not investigate the underlying reasons for this finding. Therefore, future relevant studies can examine why entrepreneurs are associated with a greater likelihood of being optimistic. Additionally, different from extant studies which find that

entrepreneurs are more overoptimistic than the employed (Meza and Southey, 1996; Dawson and Henley, 2012), I do not find a strong association between the entrepreneurship and overoptimism in Russia. Future relevant studies can also examine potential reasons for this difference.

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