CCES Discussion Paper Series
Center for Research on Contemporary Economic Systems

Graduate School of Economics
Hitotsubashi University

CCES Discussion Paper Series, No.65
April 2017

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Who wishes to be an entrepreneur and who prepares for that? Evidence from statistical micro data in Japan over 30 years

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Abstract
Entrepreneurial process has been attracting much attention thus far, but no detailed empirical studies have been conducted on the determinants of the willingness to and the preparation for business start-up with a representative large sample. Especially in Japan, where start-up ratio and the number of people who wish to start their own business have decreased for decades, empirical analyses from a long term perspective are essential to consider why entrepreneurship in Japan experiences such a long-run downturn. However, previous empirical studies use one-shot dataset, and lack such a long term perspective. This paper aims to fill this gap using statistical micro data from the Employment Status Survey in Japan in seven survey cohorts for 30 years. We estimate what types of individuals wish to start up own business and prepare for that considering age, generation, gender, family status, education, income, occupation and employment types, firm size, job tenure, and industry. We find that the determinants of the willingness to and the preparation for business start-up are partially different and that household head dummy has positive, while female dummy, firm size and job tenure have negative effects on both willingness to and preparation for self-employment in all survey cohorts. We also find that the age effect on entrepreneurial process changes over time, with the peak of the willingness to start-up shifting towards older generation.

Keywords: willingness, preparation, start-up, entrepreneurship, micro data, Japan

* Acknowledgments:
This research was supported by the Joint Usage and Research Center, Institute of Economic Research, Hitotsubashi University. An early version of this paper was presented at Joint Research Meeting at Hitotsubashi University, March 15, 2017 and at the Tokyo Workshop on Entrepreneurship and Innovation, March 17, 2017. We thank the participants of these workshops for their helpful comments and suggestions.

1. Introduction

Since the 1980s, entrepreneurship has attracted much attention from academia and practitioners for its contribution to innovation, economic growth and employment. However, in Japan, start-up ratio of new business has been lower than closing ratio and at the lowest level among the OECD countries since the 1990s. Recent start-up ratio in Japan, measured as the ratio of new establishments with employees to existing establishments with employees, remain around 5%, which is considerably lower than the levels in other advanced countries (Figure 1)[1]. Moreover, according to the *Employment Status Survey* (Statistics Bureau) in Japan, the people who wish to start up own business reduced by half from 1.67 million in 1997 to 0.84 million in 2012. During the same period, the people who moved to self-employers within one year before the survey also reduced from approximately 0.29 to 0.22 million (Figure 2). Considering this trend, Japanese government announced its policy goal to increase start-up ratio in Japan to a similar level to that in the US and the UK (Headquarters for Japan's Economic Revitalization 2013).

Using Global Entrepreneurship Monitor (GEM) micro data of G7 countries, a recent study (Suzuki 2013) shows that in Japan, the propensity of people to proceed from the willingness to start up own business to the preparation for that and finally to business foundation is clearly higher than that in other advanced countries. This result suggests that a major reason for fewer start-ups in Japan may not be the difficulty to achieve business start-up, but rather a quite low level of willingness to start-up. Therefore, in order to promote entrepreneurship appropriately, it is important to examine not only the determinants of start-ups (what type of people is more likely to start up own business than others), but also those of willingness to and preparation for start-up (what type of people is more likely to have willingness to start up a business and prepare for that than others).

Previous studies have addressed the determinants of new firm formation mostly using regional data, but also individual data. However, no empirical studies have been conducted to date on the determinants of both willingness to and preparation for start-up using representative large-scale micro data. Thus, this paper aims to empirically investigate personal determinants of the willingness to and the preparation for business start-up in Japan using statistical micro data.

Another specific feature for Japanese entrepreneurship is a quite high ratio of senior entrepreneurs over 60 among founders. According to the latest Employment Status Survey in 2012, one-third of new firm founders are over 60, and the ratio of senior

[1] We show the start-up ratio with this measurement because of the availability of annual statistical data and the best comparability with the US and the UK data.

entrepreneurs has been increasing over time. In contrast, the ratio of young founders has been decreasing (Figure 3). Thus, we will check how the willingness to and preparation for business start-up differ across age groups and how this pattern may change over time. Our sample including a variety of age groups from teenagers to those above 75 and covering seven survey waves over 30 years from 1982 to 2012 enables us to investigate the changing patterns of the determinants of the willingness to and preparation for business start-up in Japan, considering both the age and cohort effects.

The remainder of this paper is organized as follows. Section 2 provides a brief overview of previous literature. Section 3 explains the data source and the sample for the empirical estimations. Section 4 presents basic statistics of our sample in detail and the estimation models and variables. Section 5 demonstrates and discusses estimation results for the entire sample, different age groups, men and women, and those with and without occupation. Section 6 concludes this paper suggesting some limitations and future research agenda.

2. Literature Review

Individual occupation choice between employee and self-employment based on the comparison of expected income or utility has long been discussed (Johnson 1978, Jovanovic 1979, Miller 1984, Evans and Jovanovic 1989), but empirical studies using large-scale individual data have been relatively scarce because of data constraints. Rather, most studies have been conducted using aggregated regional data and focusing on regional factors (for example, Harada 2005, Masuda 2006, Okamuro and Kobayashi 2006, Okamuro 2008, and Ikeuchi and Okamuro 2011 for Japan). Specifically, using prefecture-level data from the Employment Status Survey (which we use in this paper), Harada (2005) and Masuda (2006) analyze the effect of regional factors on the ratio of potential entrepreneurs (who wish to start up own business).

Yet, some previous studies use individual data to analyze personal factors for start-up. Early studies examine the effect of age on the propensity of start-up and find an inversely U-shaped relationship (Rees and Shah 1986; Evans and Leighton 1989; Blanchflower and Meyer 1994; Holz-Eakin et al. 1994): Using American or Australian data, these studies find a common trend that the propensity to start-up a business reaches its peak when the people are at the end of their thirties. With regard to other factors, Evans and Jovanovic (1989) show positive effect of employment experience on start-up, while Ardagna and Lusardi (2008) (2009) investigate the effect of gender and higher education using GEM data. Moreover, Van der Sluis et al. (2008) demonstrate the self-selection effect of higher educated people on self-evaluation of their managerial ability. Finally,

Astebro and Bernhardt (2005) confirm the effects of entrepreneurial capability measured as the experiences of working at the own family's firm and running the own business, and the family tradition as business owners. However, these studies focus on the personal factors of realized start-up, and not those of willingness and preparation of start-up.

Katz (1990) proposes a 'three hurdles model' of the business start-up process, identifying three hurdles for self-employment: aspiring, preparing, and entering. The aspiring hurdle reflects the stated intention to become self-employed, while the preparing hurdle consists of actual and various preparation for entry into self-employment. However, as far as we know, thus far there are only a few studies that empirically examine the individual factors to overcome these hurdles. Among them, Van Praag and Van Ophem (1995) is the first empirical study on the willingness (aspiration) to start up own business. Focusing on the young American between 14 and 23, they find negative effects of age and marriage on the willingness to entrepreneurship, by using official survey data. However, they limit the sample to very young people mostly in education and do not address the preparation for entrepreneurship.

Delmar and Davidsson (2000) is the first empirical study on the determinants of nascent entrepreneurs (defined as those who are trying to start a new independent firm) based on a large random sample. From among randomly selected 50,000 individuals aged between 16 and 70 in Sweden, they identify 405 nascent entrepreneurs by telephone interviews and matched them with a randomly selected control group of 608 individuals. The results of logistic estimations confirm the importance of age (youth), gender difference (male), education, positive impression from role models, employment status (self-employed), and management experience, but no effects of marital status, number of children in the household, and the length of employment. However, they do not consider the willingness to start-up and may suffer from a serious accessibility and response biases because of telephone interviews.

Rotefoss and Kolvereid (2005) provides the first empirical analysis that combines individual and regional factors to estimate the determinants of aspiring, nascent, and fledgling (new) entrepreneurs in Norway. They identified 203 nascent entrepreneurs in 1996 (defined as those who were trying to establish or take over a business in 1996, or those who have started or acquired a business since 1995) through telephone calls on 9,500 random sample of adult Norwegian individuals, and followed them up until 1999. Regarding aspiring entrepreneurs, they do not report the exact number in their initial sample, but they defined and identified them just as those who prefer self-employment. The results of logistic estimations suggest that entrepreneurial experience is the only factor that increases all propensities to aspiring, nascent, and real business founders. Their analysis, however, is not free from accessibility and response biases. Moreover, personal

factors considered in the estimations are limited to age, gender, ethnicity, higher education, and entrepreneurial experience.

Frank et al. (2007) examine different impacts of personal factors on start-up intention, start-up realization, and business success based on four related empirical studies of their own. Each included study targets different types of individuals in Austria. Specifically, the studies on the degree of start-up intention target 417 secondary school students and 777 university/college students, respectively. They find that the impact of personal traits (such as 'need for achievement') of (potential) founders is large on start-up intention, but decrease with start-up stages. However, they do not show the full estimation models and results, so that it is not clear which variables they use (such as age and gender) and what effect each variable has. Moreover, the results of the studies on start-up intention cannot be generalized because they focus on young people in education.

To sum up, previous empirical studies on potential or nascent entrepreneurs have their limits due to data availability. Rotefoss and Kolvereid (2005) is the only study that addresses both the willingness to and preparation for self-employment with a representative large sample, although their nascent entrepreneurs are, by definition, not limited to those who are preparing for start-up. However, their sample may have accessibility and response biases due to survey methodology. Moreover, personal factors they use are limited to some variables for the lack of information on the family (household) structure and the current occupation. Finally, previous studies are based on a survey that was conducted only once, and thus do not examine the changes in the determinants of entrepreneurial process over time.

Therefore, in this paper we aim to overcome these limitations by 1) using representative micro data from public statistics, 2) considering a wide range of individual and household factors, and 3) investigating the changes in the effects of these factors over 30 years considering both the age and cohort effects. Indeed, our most important contribution to the literature is that we use statistical micro data from several surveys over 30 years. In short, our research questions are as follows: 1) What are the individual determinants of the willingness to and the preparation for business start-up over 30 years? 2) To what extent and how did these determinants change over time during these 30 years? Regarding the second one, we pay special attention to age and cohort effects.

3. Data Source and Sample

3.1 Employment Status Survey

We use individual micro data from the Employment Status Survey of the Statistical Bureau in the Ministry of Internal Affaires and Telecommunications in Japan in seven

survey cohorts from 1982 to 2012 for empirical estimations. This is one of the most important statistical surveys in Japan and conducted every three years since 1956 and every five years since 1982 in order to investigate the situation of working and non-working population in the whole country. In this survey, the target households are sampled in two steps. In the first step, approximately 32,000 enumeration districts (which are much narrower than municipalities and comprises around 50 households each) are randomly sampled from all enumeration districts of the Population Census. In the second step, approximately 470,000 households are randomly sampled from these districts. The survey sample comprises all members of these households 15 years old or more, which amounts to approximately one million individuals including both working and non-working population[2]. In this paper, we target approximately 3.8 million employees from among working people that exclude those who wish to quit the job by pooling individual data from the surveys from 1982 to 2012. It is noteworthy that we cannot construct a panel dataset from this survey data because the sample districts and households change at every survey.

Survey questionnaire include the following items that are common to working and non-working people: sex, age, marital status, education, household structure, domicile location, employment status, and individual and household annual income. Moreover, regarding working population, they investigate the current job (sector, status, tenure, firm size, and working days and hours) and the job career including the first and previous jobs, and the willingness to change jobs and the preparation for that[3].

3.2 Identification of the willingness to start up and the preparation for that

Among the sample individuals of approximately 3.8 million people, we identify those who wish to start up own business and those who prepare for that in the following way (Figure 4). We first select working people. Then, we classify the former into 1) those who look for a new job, 2) those who wish to continue the current job, and 3) those who wish to retire from working, according to the answers to the question "Do you wish to continue your current job?". By excluding the last group 3) and also the self-employed, our sample is limited to employees and company executives in the categories 1) and 2). Thus, we obtain for our sample approximately 3.8 million individuals of 15 years old and more from seven survey cohorts.

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[2] This description of the sampling and survey procedures is based on those of the most recent survey in 2012, but basically they did not change over time except for slight changes in the numbers of enumeration districts and target households.

[3] See the following website for further details on this statistics: http://www.stat.go.jp/english/data/shugyou/index.htm.

In the next step, according to the answers to the question "In which status do you wish to work?", our sample individuals are classified into those who wish to start up own business by themselves and other categories[4]. People in the former group (2.8%; approximately 95,000) are further classified into those who seriously prepare for start-up (0.7%; approximately 25,000) and who do not, according to the answers to the question "Do you prepare for your own business?"[5]. In this way, sample individuals are divided into those who wish to start up own business and those who do not on the one hand, and into those who prepare for a new business and those who do not on the other.

3.3 Sample statistics and the trends over 30 years

Table 1 shows basic statistics of our sample individuals for each survey cohort from 1982 to 2012 and in total. As shown in Figure 1, which demonstrates estimated population, the number of those who wish to start up own business decreased from 17,766 in 1982 to 6,935 in 2012 (which is not in Table 1), and so their ratio to the sample of working people from 4.1% in 1982 to 1.5% in 2012. However, the ratio of those who prepare for their own business remain quite stable during the same period (0.7% in 1982; 0.8% in 2012), so the difference between the ratios of willingness and preparation has decreased considerably.

Sample composition also changed during this period. Average age increased for more than 5 years from 39.8 in 1982 to 45.3 in 2012. The number of preschool children per household decreased from 0.33 to 0.18. Also the composition of occupation changed: the ratio of working people in technical and professional occupation increased from 8.3% to 14.5%, while those in managerial positions decreased from 4.7% to 2.3%. With regard to educational attainment, those with university degrees doubled from 11.9% to 23.9%. Regarding job status, the ratio of regular workers decreased from 66.5% to 56.2%, while the ratio of part-time and other non-regular workers drastically increased from 12.8% to 34.7%. Workers moved from small to larger firms, so that the average firm size in which they work increased from 209 to 263 employees.

4. Estimation Models and Variables

[4] Other categories of this question item include regular (full-time) employee, part-time employee, dispatched worker from temporary employment agencies (since 2002), contract worker (since 2007), take over one's own family business (since 2007), and pieceworker at home.

[5] In this survey, preparation is limited to the "preparation of capital, material, equipment etc. to start a business".

We target working people to empirically investigate what types of individuals tend to wish to start up own business and to prepare for that. For this purpose, we separately estimate two linear probability models that have the dummy variables for the willingness to and the preparation for business start-up as dependent variables, respectively, and individual, household, and current job characteristics as independent variables. We estimate this model for the entire (pooled) sample covering all survey cohorts and for each survey year from 1982 to 2012.

First, we estimate the determinants of the willingness to start-up by using the dummy variable for the willingness as the dependent variable. Independent variables comprise personal characteristics (age, generation, gender, education, marital status, household head), household characteristics (household income and the number of pre-school children), and current job characteristics (firm size, industry, job status, job tenure, occupation type, and personal income). Second, we estimate the determinants of preparation for start-up with the same sample. The dependent variable here is the dummy for the preparation for start-up. We use the same independent variables as those in the first estimation. We estimate this model for the entire sample covering all survey cohorts and for each survey year. These models can be described as follows:

Willingness = f (personal, household, and current job characteristics)
Preparation = f (personal, household, and current job characteristics)

Let us explain the independent variables in more detail. As personal factors, we use age group dummies (15-19, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75 and more, using those in 20-24 as baseline reference) and generation dummies (those who were born before 1930, 1930-34, 1935-39, 1940-44, 1945-49, 1950-54, 1955-59, 1960-64, 1970-74, 1975-79, 1980-84, 1985-89, and 1990 or later, using those born during 1965-69 as the baseline reference) in order to consider both age and generation effects. We also control for gender differences with the female dummy variable and the effects of marital status with a dummy variable that takes one if the individual is married and zero otherwise.

According to Georgellis and Wall (2005), if there is another paid worker in the same household, the individual is more likely to start up a business for non-pecuniary reasons. If an individual is a household head, he or she may or may not have another paid worker in the same household. However, if an individual is not a household head, it usually suggests that there is another individual in the household who is a paid worker. Therefore, we use the household head dummy to control for the effect of another paid worker in the household.

Among the individual characteristics, educational attainment is often used in the previous studies as a proxy for personal capability. We used the dummy variables for education attainment (university, junior college, and high school, with junior high school as the baseline reference).

Household characteristics include the number of preschool children and the annual household income in natural logarithm[6]. We assume that especially the women with pre-school children may prefer self-employment to paid employment because the former allows them more flexible work. The annual household income is regarded here as a proxy for start-up capital. In most of the cases, start-up capital comes mainly from the founders and their family members or friends. In the survey, annual household income is categorized into 14 groups, but we replace these categorical values by the median value of each category. The maximum is 25 million yen for the highest category of more than 20 million yen.

As the variables for the current job, we use professional occupation[7] and managerial position dummies, working status dummies for full-time employees, executives, co-workers of self-employed, and pieceworkers at home (we regard part-time and other non-regular employees as the baseline reference), and sector dummies. We assume that these variables for the current job may affect both willingness to and preparation for start-up.

Moreover, we use job tenure (years in the current job), annual personal income in natural logarithm[8], and firm size. Annual personal income is categorized into 16 groups in the survey, but we again replace the categorical values by the medians in each category. For the highest category, over 15 million yen, we calculate 20 million yen. Moreover, we include the interactive term of household and personal income in order to check substitution effect between them. Firm size is available only as employment size dummies, but we calculate firm size by medians in each size category and use it alternatively. Previous studies (Parker 2009, Tsuchiya 2010) show that employees in small firms are more likely to start up own business than those in large firms for several reasons.

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[6] Annual household income is categorized into the following 14 groups: less than 1, from 1 to 2, from 2 to 3, from 3 to 4, from 4 to 5, from 5 to 6, from 6 to 7, from 7 to 8, from 8 to 9, from 9 to 10, from 10 to 12.5, from 12.5 to 15, from 15 to 20, and 20 million yen and more.

[7] Here we follow the definitions by the "International Standard Occupation Classification" by the International Labor Organization. Professional occupations include scientists, engineers, teachers, medical doctors and nurses, lawyers, accountants, artists, etc.

[8] Annual personal income is categorized into the following 17 groups in the survey: none, less than 0.5, from 0.5 to 1, from 1 to 1.5, from 1.5 to 2, from 2 to 2.5, from 2.5 to 3, from 3 to 4, from 4 to 5, from 5 to 6, from 6 to 7, from 7 to 8, from 8 to 9, from 9 to 10, from 10 to 12.5, from 12.5 to 15, and 15 and more million yen.

Therefore, we use firm size variable to control for the effects of firm size of the current job.

The combination of independent variables is partially different between the full (pooled) sample estimation and those of each survey cohort. In the full sample estimation, we use both age group and generation dummies, female, household head and marital status dummies, educational attainment dummies, the number of preschool children, personal income, household income, and the interactive term of these income levels, occupation (professional and managerial) and employment status (regular workers, executives etc.) dummies, firm size, public sector dummy, and job tenure. Finally, we control for the survey year with year dummies (1982 as the baseline reference). We include both age group and generation (cohort) dummies in the full sample estimation in order to examine the cohort effects on start-up orientation by controlling for age effects. We exclude generation dummies and survey year dummies from the sub-sample estimations for each survey cohort: the former are highly correlated with age group dummies.

5. Empirical Results and Discussion

In this section, we present and discuss the estimation results of the determinants of the willingness to and the preparation for business start-up. We show the results on the determinants of the willingness to and the preparation for start-up separately, and for the pooled sample and for each survey wave.

5.1 Results on the willingness to start-up

Table 2 shows the estimation results on the willingness to start-up using linear probability model and the pooled sample of seven survey waves. Specification (1) includes only survey year dummies and age group dummies, Specification (2) includes additionally generation dummies, and Specification (3) includes also all other variables.

First of all, the coefficients of survey year dummies (all negative and significant) indicate that, as compared to 1982, willingness to start-up has distinctly decreased since 2002 with a large gap between 1997 and 2002. This gap is evident even after controlling for various individual factors. Second, the results of age groups suggest that, as compared to the youth from 20 to 24 years old, the willingness to start up is highest at the late twenties and early thirties, after controlling for generation and other individual factors. Third, those who were born in the second half of the 1950s (and the cohorts around this generation) show the highest willingness to start-up, even after controlling for age and other individual factors. This suggests a specific cohort effect of this generation.

Fourth, regarding other personal and household factors, female dummy has negative and significant effect, while household head dummy, marriage dummy, the number of preschool children, and educational attainment have positive and significant effects on the willingness to start-up. Both household and individual income has positive and significant effects, but their interactive term has negative and significant effect. It suggests that individual and household income levels are substitutive for the willingness to start-up.

Finally, regarding job characteristics, we find that neither professional nor managerial positions induces willingness to start-up. Moreover, as compared to part-time and non-regular workers, full-time workers are significantly less willing to start up business. Firm size, public sector dummy, and job tenure have all negative and significant effects on the willingness.

In sum, for the pooled sample we find that 1) working people in their youth and who were born in the second half of the 1950s are more willing to start-up than any other age groups and generations, 2) working women are less willing to start-up than working men, 3) to have a family promotes willingness to start-up (marriage, preschool children), 4) higher education increases willingness to start-up, 5) higher income induces willingness to start-up, while household and personal incomes are substitutive, 6) people in professional and managerial positions are less willing to start-up than those in other positions, 7) full-time workers are less willing to start-up than part-time workers, 8) job tenure is negatively correlated with the willingness to start-up, and 9) employees in small firms are more willing to start-up than those in large firms.

Table 3 shows the estimation results on the willingness to start-up using linear probability model and the sub-samples of each survey cohort from 1982 to 2012. Estimation results of each survey year is presented in each specification. We report the estimation results focusing on their changes over time.

First, regarding age effect, we find that from 1982 to 1997, workers in their youth (in the late twenties and early thirties) were more willing to start-up than older people, while the peak shifted to older ages after 2002. Second, female dummy has a negative and significant coefficient in each survey year, but the coefficient becomes smaller with time. Third, the positive effect of higher education (including junior colleges) on the willingness becomes smaller over time and eventually insignificant in 2012. Fourth, after 2002, the coefficients of personal income become smaller (though significant), while those of household income become negative and significant. Fifth, the effects of professional occupation and executives turn from negative to positive and significant after 2007 and after 2002, respectively. The effects of firm size, public sector, and job tenure

remain basically the same during the period of 30 years, but overall, the coefficients of current job variables become smaller over time, especially after 2002.

5.2 Results on the preparation for start-up

Table 4 shows the estimation results on the preparation for start-up using linear probability model and the pooled sample of seven survey waves. Specification (1) includes only survey year dummies and age group dummies, Specification (2) includes additionally generation dummies, and Specification (3) includes also all other variables.

First of all, in contrast to the results on the willingness to start-up, the coefficients of survey year dummies are mostly insignificant after controlling for individual factors. These results suggest that the probability of preparing for start-up did not change significantly during the observation period. Second, the results of age groups suggest that people in the early thirties (30-34 years old) have the highest propensity of preparation for start-up, which remains constant over time. Third, those who were born in the early 1970s show the highest propensity of preparation for start-up, after controlling for age and other individual factors. This suggests again a specific cohort effect, although the most "entrepreneurial" generation is younger than in the analysis of willingness.

Fourth, regarding other personal and household factors, female dummy and marriage dummy have negative and significant effects, while household head dummy and educational attainment have positive and significant effects on the preparation for start-up. Individual income has a positive and significant effect, but household income has no significant effect, while their interactive term has a negative and significant effect.

Finally, regarding job characteristics, we find that both professional and managerial positions enhance preparation for start-up. Moreover, as compared to part-time and non-regular workers, the level of preparation for start-up is significantly lower for full-time workers, but significantly higher for executives. Firm size, public sector dummy, and job tenure have all negative and significant effects on the preparation.

In sum, for the pooled sample we find that 1) working people in their early thirties and who were born in the early 1970s are more likely to prepare for start-up than any other age groups and generations, 2) working women are less likely to prepare for start-up than working men, 3) unlike the willingness, marriage hinders preparation for start-up, 4) higher education enhances preparation for start-up, 5) the probability of preparation for start-up increases with individual income, but not with household income, 6) unlike the willingness, people in professional and managerial positions have higher propensity to start-up than those in other positions, 7) full-time workers are less likely, whereas executives are more likely, to prepare for start-up than part-time workers, 8) job tenure is

negatively correlated with the preparation for start-up, and 9) employees in small firms are more likely to prepare for start-up than those in large firms.

Table 5 shows the estimation results on the preparation for start-up using linear probability model and the sub-samples of each survey cohort from 1982 to 2012. Estimation results of each survey year is presented in each specification. We report the estimation results focusing on their changes over time.

First, regarding age effect, we find that workers in their early thirties show the highest probability of preparation for start-up among all age groups over time, but the peak ages seem to extend to the forties after 2002. Second, female dummy has a negative and significant coefficient in each survey year, but the coefficient becomes larger after 2002. Third, the positive effect of higher education on the preparation becomes smaller over time. Fourth, the coefficients of executives turn from negative to positive and significant after 2002. The effects of firm size, public sector, and job tenure remain basically the same during the period of 30 years. As a whole, changes in the effects of individual variables on the preparation are smaller than those on the willingness over 30 years, reflecting the relative stability of the propensity of preparation for start-up.

6. Concluding Remarks

Using statistical micro data of approximately 3.8 million individuals from the Employment Status Survey in Japan from 1982 to 2012, we investigated what types of individuals are willing to start up own business and prepare for that, and explored the changes in the determinants of willingness and preparation during these 30 years. It is a major contribution of this paper that we investigated the determinants of both willingness to and preparation for start-up for a long term, using statistical micro data for 30 years.

We found significant effects of various personal, household, and current job characteristics on both the willingness to and preparation for start-up. Some variables have similar effects on both willingness and preparation, which are quite stable over time: female dummy (negative), household head dummy (positive), higher education (positive), firm size (negative), public sector (negative) and job tenure (negative).

Regarding age and generation (cohort) effects, we found that the propensity of both willingness and preparation is higher among the young people (until the early thirties) than older age groups. However, over time, especially after 2002, the “best” age for the potential entrepreneurship becomes older. Specific generations, those who were born in the late 1950s and in the early 1970s, show higher propensity of willingness and preparation, respectively, than other generations over time, after controlling for age and other individual factors.

Based on these estimation results, we may give some response to the fundamental question of why the number of people who wish to start up own business decreased over time, especially after 2002 survey. An important reason may be that the "entrepreneurial" generation of the late 1950s became older and passed by the "best" ages for start-up. Another reason is that the effects of several individual factors (such as family status, higher education, household income, firm size and job tenure) on the willingness to start-up became smaller and partially insignificant over time, especially after 2002. However, why the effects of these individual factors weakened or became insignificant after 2002 remains as a new research question.

What policy implication may we derive from our findings? In order to enhance the willingness to entrepreneurship (self-employment), two different approaches would be possible. First, to focus the policy support more clearly on those groups that have lower willingness than others: women, older people, those with lower education and income, people in professional and managerial positions, full-time workers and executives, workers with short job tenure, etc. Second, to focus the policy support on those with higher but decreasing probability to wish to start up new business, such as those with high education, high personal income, and longer job tenure.

These policy implications, however, rely on basic assumptions that there are bottlenecks that prevent people from revealing their wishes for and preparing for start-up and that it is good both for the individuals and the entire society to get rid of such barriers. Otherwise, any active policy means inappropriate policy intervention into free and rational decision-making of individuals.

Acknowledgements:

This paper is a part of the outcomes from the research project at the Institute of Economic Research (IER) at Hitotsubashi University, Japan. The authors are grateful to the IER for supporting this project and to the Statistics Bureau of the Ministry of Internal Affairs and Communications for providing micro data of the Employment Status Survey. Needless to say, the authors' opinions mentioned in this paper do not necessarily represent those of IER or their affiliations. Any errors and omissions are the authors' own responsibility.

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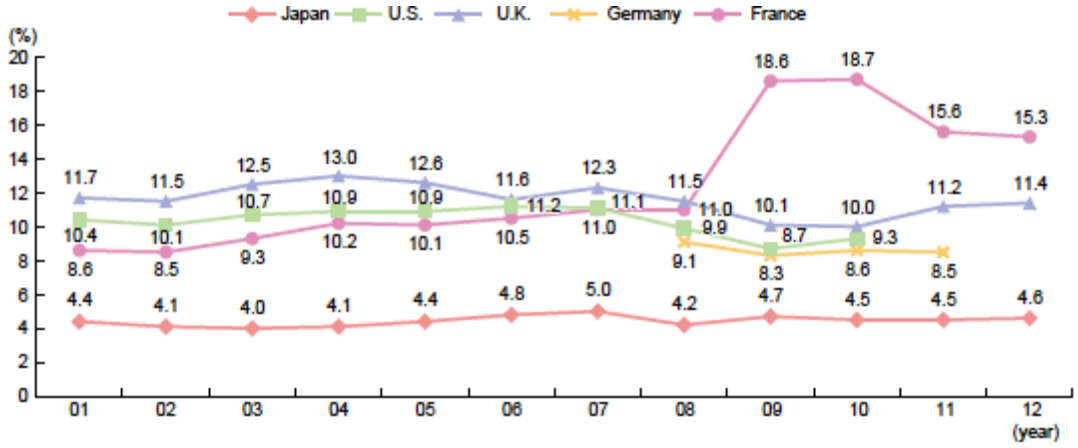
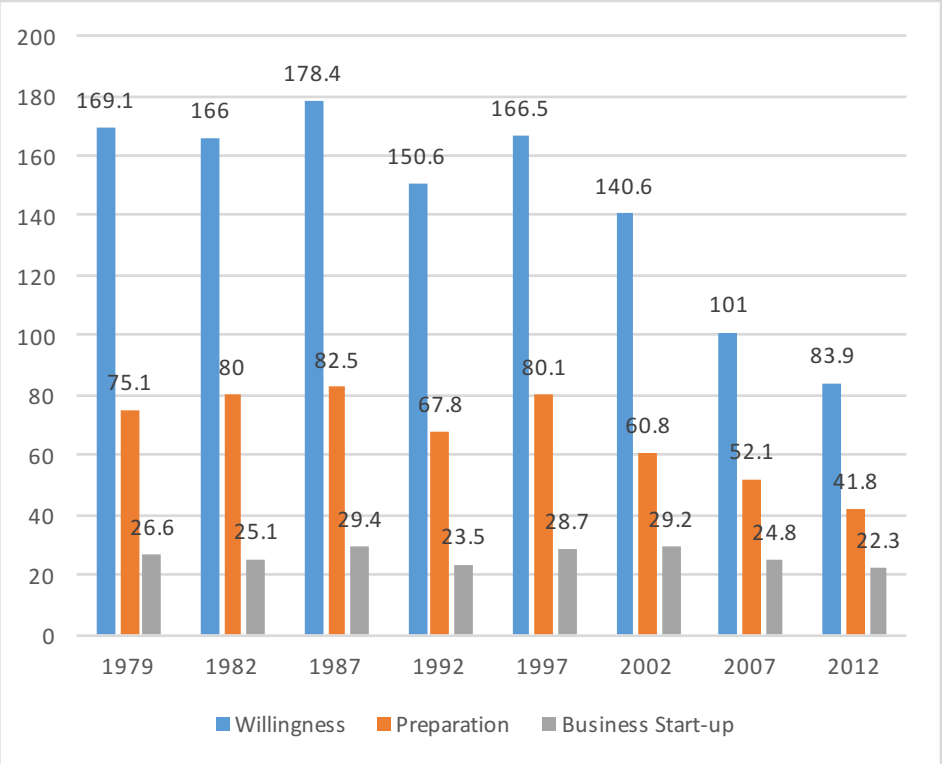
Figure 1: Business entry ratio (%) in international comparison



Source: Small and Medium Enterprise Agency (2014), p. 187, Figure 3-2-7.

Figure 2: Number of people who are willing to and preparing for start up own business, and founded own business during the previous year

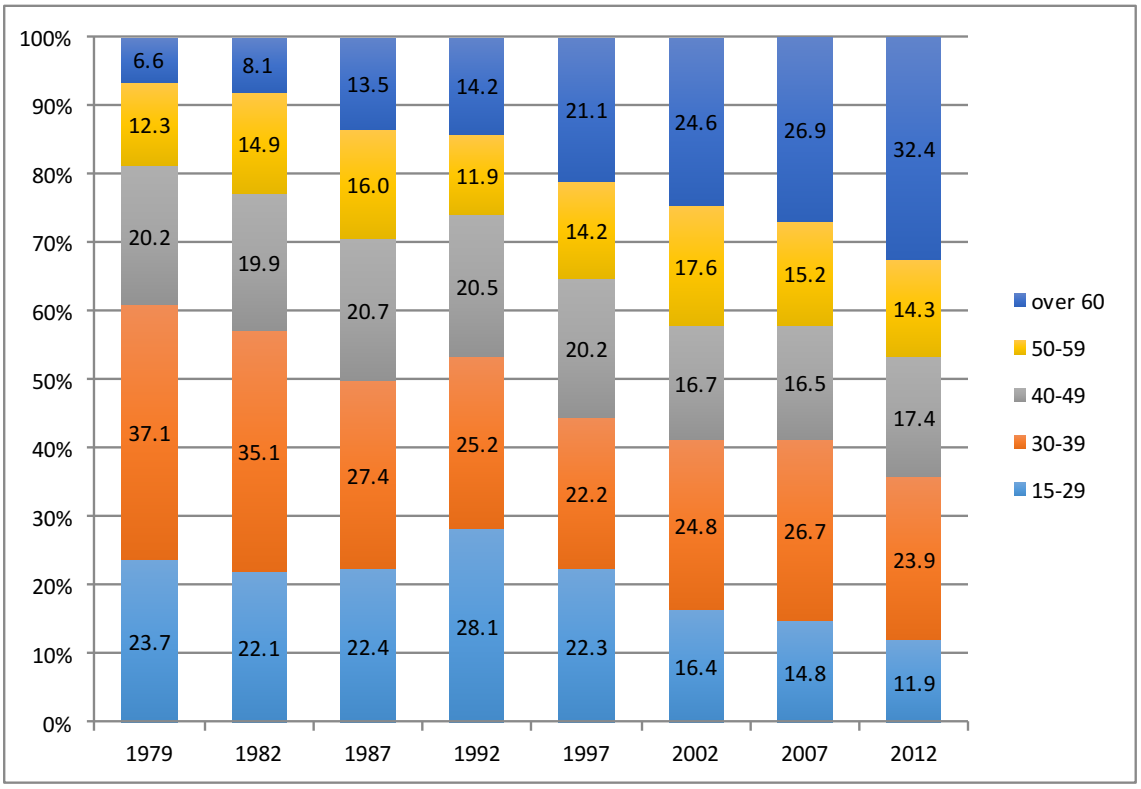


Unit: 10,000 people

Source: Small and Medium Enterprise Agency (2014), p. 182, Figure 3-2-1 with original editing.

Original source: Ministry of Internal Affaires and Communications (MIC), Employment Status Survey, 1979-2012.

Figure 3: Age structure (%) of new business founders (self-employers)



Source: Small and Medium Enterprise Agency (2014), p. 184, Figure 3-2-4 with original editing.

Original source: MIC, Employment Status Survey, 1979-2012.

Figure 4: Classification of sample individuals in the Employment Status Survey

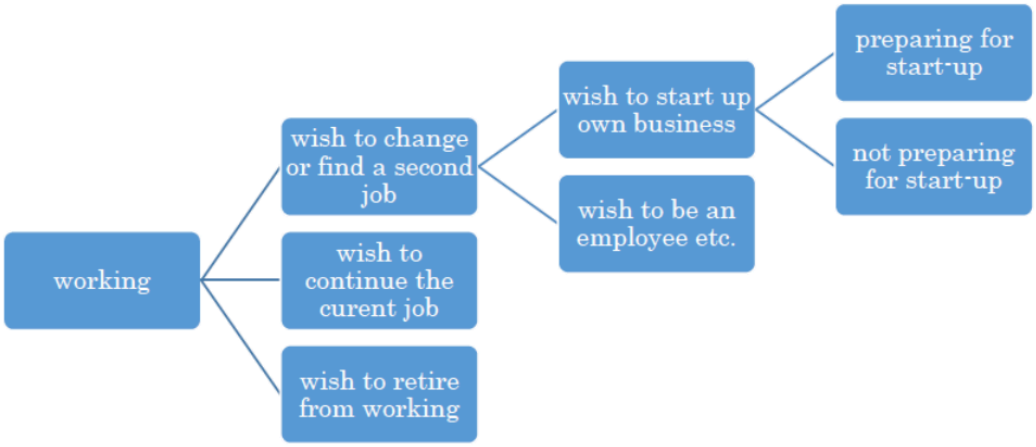


Table 1: Basic statistics (mean values / percentages) of sample individuals
(working people excluding self-employed and those who wish to retire)

survey year		1982	1987	1992	1997	2002	2007	2012	total
sample size (in thousand)		437	432	565	541	482	481	468	3,407
those who wish to start up own business		4.1%	3.9%	3.1%	3.3%	1.9%	1.8%	1.5%	2.8%
those who prepare for starting up own busines		0.7%	0.7%	0.6%	0.7%	0.8%	0.9%	0.8%	0.7%
age		39.8	40.7	41.8	42.1	43.2	44.4	45.3	42.5
female workers		43.3%	43.7%	44.8%	44.1%	45.0%	45.9%	46.6%	44.8%
household heads		46.9%	45.6%	45.1%	47.3%	45.9%	45.3%	46.1%	46.0%
married (%)		78.3%	77.8%	75.3%	73.3%	67.3%	74.4%	74.3%	74.3%
number of preschool children in household		0.306	0.270	0.205	0.180	0.186	0.174	0.180	0.212
annual household income *		413	492	621	652	615	604	566	572
annual personal income *		194	229	282	299	288	278	266	265
technical / professional occupation		9.3%	10.6%	11.6%	12.4%	12.9%	13.5%	14.5%	12.1%
managerial occupation		4.7%	3.9%	3.9%	3.7%	3.4%	2.9%	2.3%	3.6%
public sector		11.3%	10.8%	10.1%	10.1%	10.6%	9.7%	9.6%	10.3%
job tenure (years)		12.7	13.1	13.3	13.5	12.8	13.2	13.4	13.2
firm size of current employment		210	212	225	230	223	247	263	230
education (%)	compulsory education	33.8	28.1	23.8	19.1	16.4	12.5	9.8	20.3
	senior high school	47.2	49.8	50.5	50.1	49.1	45.9	49.3	48.9
	junior college	7.1	8.4	10.6	12.9	15.1	20.3	17.1	13.1
	university	11.9	13.7	15.2	17.9	19.5	21.4	23.9	17.7
job status (%)	part-time, non-regular	12.8	15.3	17.2	19.9	26.7	31.2	34.7	22.5
	full-time	66.5	66.1	65.6	65.2	59.3	57.6	56.2	62.4
	executives	5.2	5.4	6.5	6.3	6.5	6.5	5.8	6.1
	support to self-employment	13.2	11.4	9.1	7.6	6.8	4.3	3.0	7.8
	piecework at home	2.3	2.0	1.6	1.1	0.7	0.5	0.4	1.2

* in 10,000 yen

Table 2: Determinants of willingness to start-up in all survey cohorts (pooled data): Linear probability model

		[1] 82-12	[2] 82-12	[3] 82-12
survey year	1982*			
	1987	-0.00159***	-0.00361***	-0.00345***
		[0.000368]	[0.000410]	[0.000422]
	1992	-0.00838***	-0.0114***	-0.0106***
		[0.000359]	[0.000512]	[0.000534]
	1997	-0.00542***	-0.00870***	-0.00826***
		[0.000357]	[0.000653]	[0.000682]
	2002	-0.0220***	-0.0250***	-0.0250***
		[0.000359]	[0.000811]	[0.000851]
	2007	-0.0218***	-0.0241***	-0.0249***
		[0.000358]	[0.000978]	[0.00102]
	2012	-0.0245***	-0.0257***	-0.0255***
		[0.000358]	[0.00114]	[0.00120]
age groups	15-19	-0.0126***	-0.0115***	-0.0119***
		[0.000674]	[0.000682]	[0.000964]
	20-24*			
	25-29	0.0129***	0.0111***	0.00887***
		[0.000406]	[0.000442]	[0.000483]
	30-34	0.0163***	0.0122***	0.00792***
		[0.000405]	[0.000549]	[0.000606]
	35-39	0.00959***	0.00404***	0.00137*
		[0.000401]	[0.000682]	[0.000742]
	40-44	0.00212***	-0.00410***	-0.00460***
		[0.000400]	[0.000832]	[0.000895]
	45-49	-0.00612***	-0.0115***	-0.0104***
		[0.000404]	[0.000996]	[0.00106]
	50-54	-0.0129***	-0.0163***	-0.0148***
		[0.000412]	[0.00116]	[0.00123]
	55-59	-0.0176***	-0.0185***	-0.0185***
		[0.000431]	[0.00134]	[0.00141]
	60-64	-0.0210***	-0.0192***	-0.0237***
		[0.000499]	[0.00153]	[0.00161]
	65-69	-0.0246***	-0.0187***	-0.0237***
		[0.000632]	[0.00173]	[0.00181]
	70-74	-0.0273***	-0.0176***	-0.0203***
		[0.000877]	[0.00198]	[0.00207]
	75 and more	-0.0276***	-0.0136***	-0.0154***
		[0.00108]	[0.00225]	[0.00235]
generations	born before 1924		-0.0277***	-0.0257***
			[0.00172]	[0.00178]
	born 1925-30		-0.0210***	-0.0208***
			[0.00142]	[0.00148]
	born 1930-34		-0.0157***	-0.0162***
			[0.00121]	[0.00127]
	born 1935-39		-0.0107***	-0.0116***
			[0.00103]	[0.00108]
	born 1940-44		-0.00703***	-0.00800***
			[0.000845]	[0.000883]
	born 1945-49		-0.00203***	-0.00318***
			[0.000670]	[0.000699]
	born 1950-54		-0.000612	-0.00126**
			[0.000547]	[0.000569]
	born 1955-59		0.00172***	0.00119**
			[0.000449]	[0.000466]
	born 1960-64*			
	born 1965-69		-0.000825*	-0.000839*
			[0.000458]	[0.000481]
	born 1970-74		-0.00818***	-0.00833***
			[0.000563]	[0.000594]
	born 1975-79		-0.0145***	-0.0157***
			[0.000721]	[0.000768]
	born 1980-84		-0.0150***	-0.0169***
			[0.000916]	[0.000986]
	born after 1985		-0.0180***	-0.0204***
			[0.00113]	[0.00121]

female				−0.0239***
				[0.000284]
household head				0.0150***
				[0.000297]
married				0.00266***
				[0.000312]
# of preschool children				0.00175***
				[0.000211]
education	compulsory*			
	seniro high school			0.00429***
				[0.000293]
	junior college			0.00854***
				[0.000403]
	university			0.00768***
				[0.000382]
household income (log)				0.000692***
				[0.000227]
personal income (log)				0.00851***
				[0.000348]
household * personal income				−0.00110***
				[0.0000551]
professional occupation				−0.00190***
				[0.000370]
managerial occupation				−0.00202***
				[0.000600]
job status	part−time*			
	full−time			−0.00159***
				[0.000315]
	executives			−0.00131**
				[0.000562]
	support to self−e.			0.00046
				[0.000575]
	pieceworker			−0.0134***
				[0.00108]
firm size (log)				−0.00328***
				[0.0000565]
public sector				−0.0316***
				[0.000579]
job tenure				−0.00457***
				[0.000127]
constant		0.0448***	0.0557***	0.0641***
		[0.000383]	[0.000488]	[0.00162]
sector dummies		No	No	Yes
sample size		3,406,340	3,406,340	3,148,552

Standard errors in brackets; level of significance: * p<.1, ** p<.05, *** p<.01.

Table 3: Determinants of willingness to start-up in each survey cohort: Linear probability model

		[1] 1982	[2] 1987	[3] 1992	[4] 1997	[5] 2002	[6] 2007	[7] 2012
age groups	15-19	-0.0206***	-0.0174***	-0.0155***	-0.0131***	-0.0128***	-0.00810***	-0.00883***
		[0.00282]	[0.00279]	[0.00226]	[0.00289]	[0.00274]	[0.00206]	[0.00210]
	20-24*							
	25-29	0.00999***	0.0108***	0.0141***	0.0150***	0.00983***	0.00901***	0.00792***
		[0.00145]	[0.00142]	[0.00110]	[0.00116]	[0.00109]	[0.00105]	[0.00106]
	30-34	0.0107***	0.00605***	0.0118***	0.0163***	0.0162***	0.0124***	0.0137***
		[0.00157]	[0.00158]	[0.00126]	[0.00131]	[0.00114]	[0.00107]	[0.00109]
	35-39	0.00201	0.000885	0.000379	0.0109***	0.0155***	0.0138***	0.0103***
		[0.00170]	[0.00160]	[0.00131]	[0.00138]	[0.00120]	[0.00111]	[0.00109]
	40-44	-0.00790***	-0.00856***	-0.00590***	-0.000553	0.0132***	0.0127***	0.0141***
		[0.00179]	[0.00172]	[0.00132]	[0.00143]	[0.00123]	[0.00117]	[0.00113]
	45-49	-0.0162***	-0.0184***	-0.0157***	-0.00671***	0.00819***	0.00948***	0.00882***
		[0.00186]	[0.00180]	[0.00141]	[0.00144]	[0.00127]	[0.00122]	[0.00118]
	50-54	-0.0242***	-0.0260***	-0.0229***	-0.0173***	0.00504***	0.00250**	0.00492***
		[0.00193]	[0.00187]	[0.00147]	[0.00153]	[0.00127]	[0.00126]	[0.00123]
	55-59	-0.0352***	-0.0335***	-0.0302***	-0.0250***	0.0000861	-0.00337***	0.000917
		[0.00205]	[0.00196]	[0.00154]	[0.00159]	[0.00134]	[0.00126]	[0.00126]
	60-64	-0.0413***	-0.0429***	-0.0384***	-0.0357***	-0.00595***	-0.0111***	-0.00729***
		[0.00240]	[0.00225]	[0.00169]	[0.00177]	[0.00149]	[0.00140]	[0.00130]
	65-69	-0.0424***	-0.0429***	-0.0414***	-0.0415***	-0.0121***	-0.0168***	-0.0104***
		[0.00284]	[0.00280]	[0.00203]	[0.00207]	[0.00174]	[0.00164]	[0.00156]
	70-74	-0.0439***	-0.0434***	-0.0375***	-0.0400***	-0.0152***	-0.0179***	-0.0149***
		[0.00378]	[0.00360]	[0.00279]	[0.00270]	[0.00221]	[0.00210]	[0.00197]
	75 and more	-0.0443***	-0.0435***	-0.0422***	-0.0392***	-0.0152***	-0.0187***	-0.0142***
		[0.00485]	[0.00449]	[0.00329]	[0.00339]	[0.00260]	[0.00248]	[0.00236]
female		-0.0329***	-0.0335***	-0.0277***	-0.0281***	-0.0192***	-0.0163***	-0.0118***
		[0.000979]	[0.000947]	[0.000740]	[0.000780]	[0.000648]	[0.000603]	[0.000568]
household head		0.0249***	0.0209***	0.0164***	0.0180***	0.00824***	0.00942***	0.00862***
		[0.00102]	[0.000987]	[0.000781]	[0.000825]	[0.000660]	[0.000633]	[0.000596]
married		0.00821***	0.00567***	0.00118	0.00605***	0.00162***	-0.000217	-0.000298
		[0.00117]	[0.00113]	[0.000887]	[0.000881]	[0.000604]	[0.000660]	[0.000605]
# of preschool children		0.00116*	0.00213***	0.00305***	0.00256***	0.000387	0.000705	0.00200***
		[0.000597]	[0.000611]	[0.000543]	[0.000609]	[0.000507]	[0.000513]	[0.000479]
education	compulsory*							
	seniro high school	0.00978***	0.00953***	0.00455***	0.00263***	0.00311***	-0.000434	-0.00191**
		[0.000812]	[0.000835]	[0.000700]	[0.000790]	[0.000722]	[0.000772]	[0.000820]
	junior college	0.0172***	0.0151***	0.00958***	0.00650***	0.00496***	0.00340***	-0.000421
		[0.00148]	[0.00138]	[0.00105]	[0.00109]	[0.000928]	[0.000891]	[0.000951]
	university	0.0156***	0.0150***	0.00847***	0.00738***	0.00462***	0.00192**	-0.000459
		[0.00126]	[0.00122]	[0.000975]	[0.00103]	[0.000890]	[0.000890]	[0.000912]
household income (log)		0.00169**	0.00121*	0.00223***	0.00128*	-0.00121**	0.000349	-0.000721*
		[0.000669]	[0.000720]	[0.000675]	[0.000685]	[0.000569]	[0.000498]	[0.000435]
personal income (log)		0.0136***	0.0116***	0.0115***	0.0133***	0.00345***	0.00463***	0.00223***
		[0.00106]	[0.00111]	[0.00101]	[0.00107]	[0.000851]	[0.000756]	[0.000676]
household * personal income		-0.00178***	-0.00161***	-0.00152***	-0.00152***	-0.000547***	-0.000626***	-0.000199*
		[0.000175]	[0.000180]	[0.000158]	[0.000162]	[0.000134]	[0.000120]	[0.000107]
professional occupation		-0.00739***	-0.00750***	-0.00239**	-0.00152	-0.00148*	0.00229***	0.00117*
		[0.00148]	[0.00131]	[0.000985]	[0.00100]	[0.000810]	[0.000757]	[0.000679]
managerial occupation		-0.00778***	-0.00478**	-0.00335**	-0.00164	-0.00388***	0.00214	0.00247
		[0.00177]	[0.00187]	[0.00147]	[0.00159]	[0.00136]	[0.00141]	[0.00157]
job status	part-time*							
	full-time	-0.00139	0.00132	-0.000837	-0.00448***	-0.00130*	-0.00194***	-0.000765
		[0.00117]	[0.00109]	[0.000851]	[0.000913]	[0.000716]	[0.000641]	[0.000612]
	executives	-0.0140***	-0.00471**	-0.00333**	-0.00810***	0.00812***	0.00959***	0.00782***
		[0.00200]	[0.00192]	[0.00143]	[0.00154]	[0.00123]	[0.00118]	[0.00120]
	support to self-e.	-0.0103***	-0.00203	0.00248*	0.0162***	0.00971***	0.00755***	0.0101***
		[0.00169]	[0.00166]	[0.00137]	[0.00200]	[0.00133]	[0.00159]	[0.00186]
	pieceworker	-0.0195***	-0.0172***	-0.00536**	-0.0035	-0.00854***	-0.0111***	-0.00186
		[0.00271]	[0.00282]	[0.00242]	[0.00302]	[0.00325]	[0.00358]	[0.00398]
firm size (log)		-0.00574***	-0.00496***	-0.00289***	-0.00295***	-0.00186***	-0.00236***	-0.00206***
		[0.000195]	[0.000189]	[0.000147]	[0.000155]	[0.000129]	[0.000120]	[0.000115]
public sector		-0.0466***	-0.0428***	-0.0292***	-0.0332***	-0.0188***	-0.0206***	-0.0176***
		[0.00192]	[0.00191]	[0.00153]	[0.00155]	[0.00135]	[0.00127]	[0.00123]
job tenure		-0.00856***	-0.00739***	-0.00417***	-0.00578***	-0.00305***	-0.00285***	-0.00333***
		[0.000453]	[0.000440]	[0.000333]	[0.000360]	[0.000278]	[0.000258]	[0.000245]
constant		0.0659***	0.0644***	0.0421***	0.0383***	0.0320***	0.0244***	0.0262***
		[0.00449]	[0.00485]	[0.00458]	[0.00481]	[0.00399]	[0.00357]	[0.00322]
sector dummies		Yes	Yes	Yes	Yes	Yes	Yes	Yes
sample size		416,636	413,735	537,727	513,015	416,564	434,869	416,006

Standard errors in brackets; level of significance: * p<.1, ** p<.05, *** p<.01.

Table 4: Determinants of preparation for start-up in all survey cohorts (pooled data): Linear probability model

		[1] 82-12	[2] 82-12	[3] 82-12
survey year	1982*			
	1987	0.0000885	-0.000319	-0.000500**
		[0.000198]	[0.000221]	[0.000224]
	1992	-0.000411**	-0.00117***	-0.00121***
		[0.000193]	[0.000276]	[0.000284]
	1997	0.000914***	-0.000116	-0.00038
		[0.000193]	[0.000352]	[0.000363]
	2002	0.00212***	0.000817*	-0.000173
		[0.000193]	[0.000438]	[0.000452]
	2007	0.00359***	0.00211***	0.000704
		[0.000193]	[0.000528]	[0.000544]
	2012	0.00232***	0.000739	-0.0000802
		[0.000193]	[0.000617]	[0.000637]
age groups	15-19	-0.00415***	-0.00413***	-0.00425***
		[0.000363]	[0.000368]	[0.000512]
	20-24*			
	25-29	0.00294***	0.00297***	0.00323***
		[0.000219]	[0.000238]	[0.000257]
	30-34	0.00367***	0.00383***	0.00479***
		[0.000218]	[0.000296]	[0.000322]
	35-39	0.00138***	0.00182***	0.00354***
		[0.000216]	[0.000368]	[0.000394]
	40-44	-0.000094	0.000635	0.00308***
		[0.000216]	[0.000449]	[0.000476]
	45-49	-0.00167***	-0.00053	0.00235***
		[0.000218]	[0.000537]	[0.000564]
	50-54	-0.00330***	-0.00167***	0.00157**
		[0.000222]	[0.000628]	[0.000654]
	55-59	-0.00405***	-0.00204***	0.000834
		[0.000232]	[0.000723]	[0.000749]
	60-64	-0.00518***	-0.00287***	-0.00243***
		[0.000269]	[0.000826]	[0.000853]
	65-69	-0.00669***	-0.00416***	-0.00423***
		[0.000340]	[0.000936]	[0.000964]
	70-74	-0.00827***	-0.00560***	-0.00518***
		[0.000472]	[0.00107]	[0.00110]
	75 and more	-0.00832***	-0.00552***	-0.00489***
		[0.000582]	[0.00122]	[0.00125]
generations	born before 1924		-0.00275***	-0.00148
			[0.000925]	[0.000948]
	born 1925-30		-0.00299***	-0.00230***
			[0.000766]	[0.000785]
	born 1930-34		-0.00316***	-0.00246***
			[0.000655]	[0.000672]
	born 1935-39		-0.00236***	-0.00166***
			[0.000556]	[0.000571]
	born 1940-44		-0.00231***	-0.00162***
			[0.000456]	[0.000469]
	born 1945-49		-0.00187***	-0.00146***
			[0.000361]	[0.000371]
	born 1950-54		-0.00145***	-0.00102***
			[0.000295]	[0.000302]
	born 1955-59		-0.000476**	-0.000378
			[0.000242]	[0.000248]
	born 1960-64*			
	born 1965-69		0.000716***	0.000602**
			[0.000247]	[0.000256]
	born 1970-74		-0.0000769	-0.0000393
			[0.000303]	[0.000316]
	born 1975-79		-0.000281	-0.00119***
			[0.000389]	[0.000408]
	born 1980-84		0.0000233	-0.00101*
			[0.000494]	[0.000524]
	born after 1985		-0.00163***	-0.00354***
			[0.000611]	[0.000642]

female				−0.00607***
				[0.000151]
household head				0.00474***
				[0.000158]
married				−0.00170***
				[0.000166]
# of preschool children				0.0000486
				[0.000112]
education	compulsory*			
	seniro high school			0.00194***
				[0.000156]
	junior college			0.00458***
				[0.000214]
	university			0.00540***
				[0.000203]
household income (log)				−0.000165
				[0.000121]
personal income (log)				0.000960***
				[0.000185]
household * personal income				−0.000118***
				[0.0000293]
professional occupation				0.000552***
				[0.000196]
managerial occupation				0.00112***
				[0.000319]
job status	part−time*			
	full−time			−0.00342***
				[0.000167]
	executives			0.00167***
				[0.000298]
	support to self−e.			−0.00109***
				[0.000306]
	pieceworker			−0.00484***
				[0.000573]
firm size (log)				−0.00113***
				[0.0000300]
public sector				−0.0102***
				[0.000308]
job tenure				−0.00230***
				[0.0000673]
constant		0.00811***	0.00925***	0.0183***
		[0.000206]	[0.000263]	[0.000863]
sector dummies		No	No	Yes
sample size		3,406,340	3,406,340	3,148,552

Standard errors in brackets; level of significance: * p<.1, ** p<.05, *** p<.01.

Table 5: Determinants of preparation for start-up in each survey cohort: Linear probability model

		[1] 1982	[2] 1987	[3] 1992	[4] 1997	[5] 2002	[6] 2007	[7] 2012
age groups	15-19	-0.00387***	-0.00433***	-0.000776	-0.00282**	-0.00851***	-0.00438***	-0.00791***
		[0.00122]	[0.00121]	[0.00103]	[0.00138]	[0.00181]	[0.00148]	[0.00153]
	20-24*							
	25-29	0.00221***	0.000909	0.00280***	0.00295***	0.00601***	0.00583***	0.00524***
		[0.000627]	[0.000617]	[0.000506]	[0.000555]	[0.000719]	[0.000750]	[0.000768]
	30-34	0.00281***	0.00137**	0.00330***	0.00389***	0.00915***	0.00789***	0.00894***
		[0.000678]	[0.000688]	[0.000577]	[0.000626]	[0.000757]	[0.000767]	[0.000789]
	35-39	0.00136*	0.000106	0.000926	0.00201***	0.00891***	0.00809***	0.00622***
		[0.000733]	[0.000694]	[0.000600]	[0.000662]	[0.000794]	[0.000799]	[0.000794]
	40-44	0.000943	-0.000773	0.0000898	0.000809	0.00828***	0.00779***	0.00679***
		[0.000771]	[0.000747]	[0.000606]	[0.000683]	[0.000818]	[0.000842]	[0.000818]
	45-49	-0.000111	-0.00266***	-0.000946	-0.000711	0.00760***	0.00820***	0.00568***
		[0.000803]	[0.000782]	[0.000648]	[0.000687]	[0.000839]	[0.000878]	[0.000857]
	50-54	-0.00123	-0.00308***	-0.00123*	-0.00246***	0.00662***	0.00585***	0.00411***
		[0.000833]	[0.000813]	[0.000675]	[0.000732]	[0.000840]	[0.000901]	[0.000889]
	55-59	-0.00210**	-0.00437***	-0.00258***	-0.00208***	0.00508***	0.00407***	0.00329***
		[0.000885]	[0.000853]	[0.000704]	[0.000762]	[0.000888]	[0.000903]	[0.000912]
	60-64	-0.00463***	-0.00617***	-0.00524***	-0.00516***	0.00149	-0.000978	-0.00141
		[0.00104]	[0.000977]	[0.000775]	[0.000848]	[0.000985]	[0.00100]	[0.000944]
	65-69	-0.00346***	-0.00641***	-0.00610***	-0.00802***	-0.00222*	-0.00507***	-0.00334***
		[0.00122]	[0.00122]	[0.000930]	[0.000993]	[0.00115]	[0.00117]	[0.00113]
	70-74	-0.00490***	-0.00728***	-0.00626***	-0.00733***	-0.00424***	-0.00619***	-0.00587***
		[0.00163]	[0.00157]	[0.00128]	[0.00129]	[0.00147]	[0.00151]	[0.00143]
	75 and more	-0.00487**	-0.00653***	-0.00683***	-0.00802***	-0.00415**	-0.00629***	-0.00447***
		[0.00209]	[0.00195]	[0.00151]	[0.00162]	[0.00172]	[0.00178]	[0.00171]
female		-0.00441***	-0.00452***	-0.00361***	-0.00457***	-0.00847***	-0.00876***	-0.00739***
		[0.000422]	[0.000412]	[0.000339]	[0.000373]	[0.000429]	[0.000432]	[0.000412]
household head		0.00562***	0.00555***	0.00537***	0.00459***	0.00390***	0.00467***	0.00358***
		[0.000441]	[0.000429]	[0.000358]	[0.000395]	[0.000437]	[0.000454]	[0.000432]
married		0.000685	-0.000228	-0.00210***	-0.000840**	-0.00250***	-0.00302***	-0.00172***
		[0.000507]	[0.000489]	[0.000406]	[0.000421]	[0.000400]	[0.000473]	[0.000439]
# of preschool children		-0.000212	-0.000234	0.00027	0.000144	-0.000147	0.000149	0.000475
		[0.000258]	[0.000265]	[0.000249]	[0.000291]	[0.000336]	[0.000368]	[0.000348]
education	compulsory*							
	seniro high school	0.00367***	0.00241***	0.00167***	0.00198***	0.00160***	0.00064	-0.000598
		[0.000350]	[0.000363]	[0.000321]	[0.000378]	[0.000478]	[0.000554]	[0.000595]
	junior college	0.00747***	0.00479***	0.00505***	0.00468***	0.00340***	0.00429***	0.000877
		[0.000637]	[0.000601]	[0.000483]	[0.000523]	[0.000615]	[0.000639]	[0.000690]
	university	0.00803***	0.00741***	0.00608***	0.00690***	0.00364***	0.00283***	0.00221***
		[0.000544]	[0.000532]	[0.000447]	[0.000494]	[0.000590]	[0.000639]	[0.000662]
household income (log)		0.000552*	0.0000864	0.000112	0.0000537	-0.000762**	-0.000939***	-0.000485
		[0.000288]	[0.000313]	[0.000309]	[0.000328]	[0.000377]	[0.000357]	[0.000316]
personal income (log)		0.000723	0.000517	0.000888*	0.00188***	0.000972*	0.00075	0.000795
		[0.000457]	[0.000482]	[0.000461]	[0.000511]	[0.000563]	[0.000542]	[0.000490]
household * personal income		-0.0000351	-0.0000237	-0.000069	-0.000186**	-0.000166*	-0.0000906	-0.00011
		[0.0000756]	[0.0000781]	[0.0000722]	[0.0000774]	[0.0000887]	[0.0000859]	[0.0000779]
professional occupation		-0.000327	0.000705	0.0000415	0.000967**	0.000864	-0.0000307	0.00105**
		[0.000637]	[0.000571]	[0.000452]	[0.000479]	[0.000537]	[0.000543]	[0.000493]
managerial occupation		-0.000462	0.00229***	0.00120*	0.00249***	0.000717	0.000291	0.00182
		[0.000765]	[0.000813]	[0.000675]	[0.000760]	[0.000901]	[0.00101]	[0.00114]
job status	part-time*							
	full-time	-0.00351***	-0.00359***	-0.00355***	-0.00573***	-0.00394***	-0.00421***	-0.00177***
		[0.000505]	[0.000476]	[0.000390]	[0.000437]	[0.000474]	[0.000460]	[0.000444]
	executives	-0.00289***	-0.000554	-0.00146**	-0.00269***	0.00481***	0.00596***	0.00486***
		[0.000862]	[0.000833]	[0.000657]	[0.000738]	[0.000818]	[0.000844]	[0.000870]
	support to self-e.	-0.00521***	-0.00251***	-0.00179***	0.000944	0.00136	0.00270**	0.00341**
		[0.000729]	[0.000723]	[0.000627]	[0.000959]	[0.000878]	[0.00114]	[0.00135]
	pieceworker	-0.00618***	-0.00610***	-0.00288***	-0.00317**	-0.00532**	-0.00782***	-0.00098
		[0.00117]	[0.00123]	[0.00111]	[0.00144]	[0.00215]	[0.00257]	[0.00289]
firm size (log)		-0.00133***	-0.00109***	-0.000911***	-0.000852***	-0.00104***	-0.00128***	-0.00131***
		[0.0000842]	[0.0000820]	[0.0000672]	[0.0000743]	[0.0000856]	[0.0000862]	[0.0000832]
public sector		-0.0107***	-0.0107***	-0.00803***	-0.00849***	-0.0103***	-0.0111***	-0.0113***
		[0.000827]	[0.000831]	[0.000703]	[0.000742]	[0.000891]	[0.000914]	[0.000893]
job tenure		-0.00256***	-0.00233***	-0.00194***	-0.00188***	-0.00262***	-0.00227***	-0.00256***
		[0.000195]	[0.000191]	[0.000152]	[0.000172]	[0.000184]	[0.000185]	[0.000178]
constant		0.0135***	0.0165***	0.0145***	0.0130***	0.0208***	0.0225***	0.0200***
		[0.00194]	[0.00211]	[0.00210]	[0.00230]	[0.00264]	[0.00256]	[0.00234]
sector dummies		Yes	Yes	Yes	Yes	Yes	Yes	Yes
sample size		416,636	413,735	537,727	513,015	416,564	434,869	416,006

Standard errors in brackets; level of significance: * p<.1, ** p<.05, *** p<.01.