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Potential Entrepreneurship in Japan

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Abstract

The aim of this paper is to investigate the potential for entrepreneurship in Japan using the Employment Status Survey, which is the only government-administered survey that includes questions regarding the desire to become an entrepreneur. First, we find that there are still a number of aspiring entrepreneurs in Japan, despite a recent decline in the number of actual new firms being started. Next, we find that there is a large regional variation in the distribution of entrepreneurial potential, with the amount in Tokyo being prominent. Further, using a panel data set of 47 prefectures over the period from 1982–97, we examine the determinants of entrepreneurial potential. The estimation results show that market size, market growth and the unemployment rate have positive effects on the potential for entrepreneurship.

JEL Classification: J23, L10, M13

Keywords: Entrepreneurship; Japan; Employment Status Survey

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1. Introduction

In the 1980s the entry rate for new businesses in Japan began to decline, and by the 1990s the exit rate exceeded the entry rate. From 1979–81 the number of new enterprises was about 300,000 and the number of exiting enterprises was about 190,000 per year. However, between 1997–99 the number of new enterprises declined rapidly to about 180,000 per year and the exit rate increased to about 280,000 per year.¹ From the middle of the 1990s the decline of the entry rate and the reversion between the entry rate and the exit rate began to be recognized as important policy issues that needed to be addressed. They were considered indicative of a decline of entrepreneurial spirit, which might bring about a slowdown of innovative activities and which could be one of the causes of prolonged economic stagnation in Japan. Moreover, during the last decade, the unemployment rate in Japan has increased rapidly, more than doubling, and thus fostering entrepreneurship has also become an important aspect of policy aimed at improving job security.

The purpose of this paper is to examine the potential for entrepreneurship in Japan. Because we can consider that the actual entrepreneurs mainly originate out of the class, an examination of entrepreneurial potential is also important in evaluating the potential for the government's fostering-entrepreneurship policy.

While there are many studies on actual entry and new business establishments, very few studies have considered entrepreneurial potential.² In particular, in relation to Japan, there are a number of empirical studies on actual entry (e.g. Kawai and Urata, 2002; Morikawa and Tachibanaki, 1999; Odagiri and Honjo, 1995; and

¹ Source: Statistics Bureau, Ministry of Public Management, Home Affairs, Posts and Telecommunications, *Establishment and Enterprise Census* of Japan. “Enterprises” means companies (business corporations) plus sole proprietorships of non-primary sectors.

² The OECD (2000, p.172) briefly surveyed several studies on preferences for self-employment.

Yamawaki, 1991), but almost none on entrepreneurial potential. To our knowledge, only the study by Blanchflower, Oswald and Stutzers' (2001), which uses the results of the International Society Survey Program (ISSP) for 1997/98, includes Japan as one of its 22 countries/regions of analysis. This study estimated probit models to examine the probability of persons preferring to be self-employed and actually being self-employed, and showed that the former probability decreased with age, while the latter probability increased with age.

For the purpose of this study, we use data from the Employment Status Survey ("*Syuugyokouzou Kihon Cyousa*"), which is the only government-administered survey in Japan that includes questions regarding the desire to become an entrepreneur. It is a large-scale survey that has been conducted every three to five years since 1956. Surveyed households are extracted based on the results of the Population Census by a stratified two-stage sampling method. The overall sampling ratio is approaching about 1/100: in the latest (the 13th) survey for 1997, about 430,000 households were extracted and 1.1 million members of these households aged 15 and over were surveyed. From the sampled results, the aggregate status of Japan (and of its 47 prefectures) are estimated and officially published.

Using the published data set, we first observe the time-series data on aspiring entrepreneurs in Japan and their regional distribution by prefectures. Then, we examine the determinants of entrepreneurial potential by panel estimation using the latest four surveys, which are for 1982, 1987, 1992 and 1997, by prefectures. The assumed explanatory variables for estimation are size and age structure of the population, industrial structure, proxies of expected profit and the unemployment rate.

This paper is organized as follows. Section 2 observes the results of the Employment Status Survey as a preliminary analysis. Section 3 describes the hypothesis and variables for panel estimation, and presents the estimation results.

Section 4 concludes the paper.

2. Preliminary Analysis

The Employment Status Survey contains detailed questions on topics such as employment structure, change of usual economic activity and the desire for work. Here, we describe only the survey items concerning the desire to become an entrepreneur. First, the survey asked each household member aged 15 years and over whether they are “usually engaged in any work for pay or profit”. Those who answered yes are categorized as a “working person”, while those who answered no are categorized as a “not-working person”. Next, the survey asked the working persons whether they “wish to change their job” and whether they “wish to have an additional job besides the present one”, and asked the not-working persons whether they “wish to work”. Then it asks the persons who answered yes to any of the above three questions, “in what kind of job do you wish to work?”. One of the six alternative responses to the question is “wishing to start up a business” (*jibun de jigyou wo sitai*).³ We can define the persons who selected this alternative (wishing to start up a business) as aspiring entrepreneurs. In the results, aspiring entrepreneurs are aggregated into three categories, which are “working persons who wish to start up a business by changing their job”, “working persons who wish to start up a business as an additional job”, and “not-working persons who wish to start up a business”. Further, the survey asks each aspiring entrepreneur whether they are “preparing for

³ The five other alternatives are: “wishing to be employed as a regular employee”, “wishing to work as a part-timer or *arubaito*”, “wishing to work in a family business”, “wishing to do piecework at home”, and “other”. Although the alternative *jibun de jigyou wo sitai* is translated as “wishing to be self-employed” in the official English explanation of the survey, the expression “wishing to start up a business” is probably more suitable as the translation. Thus, this paper adopts that expression.

the start of a business”. Hence aspiring entrepreneurs are separated into two categories: a) “total” aspiring entrepreneurs, which comprises those who are preparing to start a business plus those who are not; and b) “preparing” aspiring entrepreneurs, which comprises only those who are preparing to start a business.⁴

From the results of the Employment Status Survey, Table I presents the number of these aspiring entrepreneurs in Japan and their share in the population of 15 years and over, going back to the second survey for 1959, which was when the questions were first asked. In terms of the proportion of the population, the aspiring entrepreneurs in Japan are few indeed, only 3.7% at the most. In terms of actual numbers, however, since 1977 there have been more than 2.5 million aspiring entrepreneurs and more than 1.1 million preparing aspiring entrepreneurs.⁵ In more detail, the number of working persons who wish to start a business by changing their job and those who wish to do so as an additional job are similar, between 1.1–1.4 million since 1977 (the number preparing is about 0.5–0.6 million). The number of not-working persons wishing to start a business is less, about 0.4–0.5 million (the number preparing is about 0.2–0.3 million). In the latest 1997 survey, there are about 2.8 million aspiring entrepreneurs and 1.3 million preparing entrepreneurs. This amount greatly exceeds the number of newly established enterprises, which is estimated to be 180,000 per year, as mentioned in section 1. We can conclude that there have been more than 15 times as many aspiring entrepreneurs as newly established businesses in Japan, and more than seven times as many preparing

⁴ Unfortunately, some vagueness is left in the expression “preparing for the start of a business”, because the definition of “preparing” is not presented in the survey. Moreover, the aspiring entrepreneurs’ detailed plan, such as when and in what industry they intend to start a business, are not revealed because such questions are not provided in the survey. These limitations stem from the survey design itself.

⁵ However, the scheme and questioned items of the survey have been revised several times (especially before 1982). Therefore, some reservations remain regarding direct comparisons between long time series of the survey results.

aspiring entrepreneurs.⁶ Further, comparing the latest results to the beginning of the 1980s — when the number of new enterprises began to decline— aspiring entrepreneurs have declined by about 8%, while the actual number of businesses started up has declined much more severely, by about 40%. This indicates that the recent decline in the number of new businesses has stemmed mainly from the deteriorating economic environment that prevents new business start-ups, rather than from a decline of entrepreneurial potential.

Table II shows the regional distribution of aspiring entrepreneurs in Japan, which is the number of aspiring entrepreneurs in 1997 and their share in the population aged 15 years and over for the 47 prefectures. In the tabulation, the data on working persons who wish to start a business as an additional job are excluded, because in 1992 and 1997 these data are not available by prefectures either in published books or in the original tabulations stored in the Statistics Bureau. Table II shows that there is a large regional variation in the distribution of entrepreneurial potential. The number of aspiring entrepreneurs in Tokyo reaches 240,000 (with 130,000 preparing entrepreneurs), which is outstanding. Next in order are Osaka, Kanagawa and Saitama. The prefecture with the least number of aspiring entrepreneurs is Shimane, with only 5,000 (of which 3,000 are preparing entrepreneurs). More than 100,000 aspiring entrepreneurs exist in the top four prefectures, while there are 28 prefectures with less than 20,000 aspiring entrepreneurs and seven prefectures with less than 10,000. Regarding preparing entrepreneurs, more than 50,000 aspiring entrepreneurs exist in the top four prefectures, while there are 29 prefectures with less than 10,000. These results show that many of the aspiring entrepreneurs are concentrated into a few regions. However,

⁶ However, it should be noted that this statement is probably somewhat over-estimated mainly because some of the aspiring entrepreneurs may be planning to start a business jointly.

when considering the share of entrepreneurs in the population aged 15 years and over the diversification is reduced and the order is somewhat varied — for instance Okinawa’s order rises. Nevertheless, most of the main features are unvaried: the share of Tokyo remains outstanding, namely 2.4% (with 1.2% preparing); Tokyo, Osaka, Kanagawa and Saitama are still the top four prefectures; and Shimane is still the lowest prefecture, with only 0.8% (and 0.5% preparing).

3. Determinants of Entrepreneurial Potential

In this section, we conduct panel estimation on aspiring entrepreneurs using the time series data set for the 47 prefectures.⁷ We examine the determinants of the number of aspiring entrepreneurs (= working persons who wish to start a business by changing their job + not-working persons who wish to start a business) in each of the two categories, “total” aspiring entrepreneurs and “preparing” aspiring entrepreneurs.⁸ Because the Employment Status Survey is a stratified survey retaining representativeness, we can handle the time-series pooled data as a comprehensive panel data set.⁹

⁷ It may be considered that it would better to conduct the estimation by industry rather than by prefecture. However, we cannot conduct such an estimation because the survey does not provide any information on the industry which aspiring entrepreneurs plan to start up, as stated in note 4. Instead, as a feasible alternative, we use prefecture data sets controlling for the difference of industry structure in each prefecture.

⁸ In this section, working persons who wish to start a business as an additional job are also excluded, mainly because the data by prefectures are not published in 1992 and 1997. However, because such aspiring entrepreneurs intend to become “part-time” entrepreneurs, this exclusion may be more appropriate in terms of the analysis focusing on “full-time” aspiring entrepreneurs.

⁹ Because the survey is not longitudinal (i.e., the sample of the survey is re-sampled each survey year), such panel-analysis cannot be conducted by micro-data set of the survey.

3.1. Hypothesis

We suppose the following factors as explanatory variables for the determinants of the number of aspiring entrepreneurs. First, we control the difference of population by prefecture, because there simply are more aspiring entrepreneurs if the population size of the prefecture is greater. In addition, differences between the prefectures in the population of productive age may affect the number of aspiring entrepreneurs. To control the difference, we adopt the share of the population who are elderly as an explanatory variable. Further, we control the industrial structure, because prefecture where a certain industry is more developed may nurture circumstances that make it easier or more for business start up. Finally, as the representative economic factor, we adopt three proxies of the expected profit of the new firm and the unemployment rate of the prefectures, both of which have been widely adopted in empirical analysis on actual entry since Orr (1974). The relationships are written as follows:

$$E=f(POP, Aged\ Share, Industrial\ Structure, Expected\ Profit, Unemployment\ Rate) \quad (1)$$

E is the number of aspiring entrepreneurs (E_{Total} : total, $E_{Preparing}$: preparing) and POP is the population aged 15 years and over. *Aged Share* is described as the population 60 years and over (POP_o) as a share of POP . *Industrial Structure* is the share of gross prefectual domestic product of the following industries: the agriculture, forestry and fishery sector (SH_{Ag}), the manufacturing sector (SH_{Mn}), the construction sector (SH_{Con}), the wholesale and retail trade sector (SH_{WR}), and the public services sector (SH_{Pb}). We obtained the data on gross prefectual domestic product, aggregated and by kind of economic activity, from the Prefectual Accounts published by the Economic

and Social Research Institute, Cabinet Office.¹⁰

For the proxies of *Expected Profit*, we adopt the price-cost margin (PCM), market size and growth. All three variables are adopted in many empirical studies on entry, and are expected to show a positive-signed coefficient (Acs and Audretsch, 1990, chapter 5; Dunne and Roberts, 1991; Kawai and Urata, 2002; Odagiri and Honjo, 1995; Orr, 1974; Sleuwaegen and Dehandschutter, 1991; Yamawaki, 1991).¹¹ The price-cost margin is defined as [(gross output - intermediate input - indirect tax less subsidies - compensation of employees)/gross output] from the Prefectural Accounts.¹² However, as Tokyo does not publish the value of intermediate input and gross output in its Prefectural Accounts, we estimated the value based on the gross output share of value added from the Input-Output Tables of Tokyo, which have been published quinquennially by the Statistics Division, Bureau of General Affairs, Tokyo Metropolitan Government since 1985. As an indicator of market size and growth, we adopt the Gross Prefectural Domestic Product in 1990 prices (*GPDP*) divided by *POP* and the rate of change of *GPDP*, which is stated as $\log(GPDP/GPDP_{-1})$, respectively.

The *Unemployment Rate* is also adopted in a lot of empirical studies on entry and entrepreneurship (e.g. Evans and Leighton, 1990; Storey, 1991; Audretsch and Acs, 1994; Audretsch, 1995). The factor represents the condition of the labor market

¹⁰ The Prefectural Accounts are based on 68SNA. Public services refer to government services plus private non-profit services to households. Gross prefectural domestic product by kind of economic activity, which is valued at producers' prices, is only published by nominal value, and thus the nominal values are adopted as both the numerator and the denominator for calculating industrial share.

¹¹ For empirical analysis of entry, variables using capital, such as the capital-profit ratio, capital intensity and the capital-sales ratio, are often assumed as important explanatory factors. However, such factors cannot be included in our analysis because there are no available data for capital stock by prefecture in Japan.

¹² The numerator can be also expressed as the (consumption of fixed capital + operating surplus).

and partially the macroeconomy, and thus either a positive or a negative effect can appear.¹³

For the estimation, we suppose that equation (1) can be specifically expressed as follows:

$$E = a \times POP \times e^{\alpha_1 \frac{POP_o}{POP}} \times e^{\beta_1 SH_{Ag} + \beta_2 SH_{Mn} + \beta_3 SH_{Con} + \beta_4 SH_{WR} + \beta_5 SH_{Pb}} \times e^{\gamma_1 PCM + \gamma_2 \frac{GDP}{POP} + \gamma_3 \log \frac{GDP}{GDP_{-1}}} \times e^{\eta_{Unemployment Rate}} \times e^{\varepsilon} \quad (2)$$

The ε is an error term. By dividing both sides of equation (2) by POP and taking the logarithm, we derive the following equation to be estimated.

$$\log \frac{E}{POP} = \log a + \alpha_1 \frac{POP_o}{POP} + \beta_1 SH_{Ag} + \beta_2 SH_{Mn} + \beta_3 SH_{Con} + \beta_4 SH_{WR} + \beta_5 SH_{Pb} + \gamma_1 PCM + \gamma_2 \frac{GDP}{POP} + \gamma_3 \log \left(\frac{GDP}{GDP_{-1}} \right) + \varepsilon. \quad (3)$$

Following the usual panel-estimation approach, we further suppose the fixed-effect and random-effect model as individual effects of each prefecture.¹⁴

For the estimation periods, we use the last four survey results 1982, 1987, 1992 and 1997, as the value of GDP is only provided fully from 1980, and to avoid a possible discontinuity problem in the long-period time series Employment Status

¹³ Such opposing possibilities have been called the “push” and “pull” hypotheses and have been examined empirically in the field of self-employment (OECD, 1992; Meager, 1992; see also the surveys by Blanchflower, 2000 and OECD, 2000). According to previous studies, there are more empirical results that the unemployment rate has a positive effect on entry rate or the probability of selecting to be self-employed, supporting the “push” hypothesis.

¹⁴ Theoretically, it would be better to conduct the panel estimation for “grouped” data of a discrete choice model. However, this approach does not work well in this case, probably because the grouped proportion is very small (0.001-0.003 as in Table III) and perhaps further because the sample size is not large.

Survey results before the 1982 survey stated in note 5. In the results, the sample size for analysis becomes 188 (= 47 prefectures times 4 time periods). The definitions and descriptive statistics of all variables for estimation are summarized in Table III. Further, the correlation matrix for economic variables is presented in Table IV. The table shows that the correlations of economic variables are small and thus the possible problem of multi-collinearity in regression does not seem to exist.

3.2. Estimation Results

The results of panel estimation of equation (3) are presented in Table V. Column [1] shows the total aspiring entrepreneurs, and column [2] shows the preparing aspiring entrepreneurs. The statistics of the Lagrange multiplier test and the Hausman test indicate respectively that the plain OLS models (without individual effects) are statistically rejected and that the fixed effect models are not supported for either estimation. Thus, the estimation results of the random effect model only are reported in the table.

First, age structure POP_o/POP demonstrates negative significant effects for both estimations, as expected. The result is considered to control the differences in the population of productive age between prefectures. Next, most variables for industry structure indicate a significant effect. Among them, the shares of the primary and construction industries demonstrate a large negative effect, and the result indicates that the smaller the share of these industries, the more aspiring entrepreneurs tend to exist. That the share of the public sector does not show a significant effect is an unexpected result, because we naturally expected there to be less entrepreneurship in prefectures with larger public sector.

For the proxies of the expected profit, the price-cost margin did not have significant effect for either estimation, while market size and growth did show positive significant effects. The results indicate that the number of aspiring

entrepreneurs is positively affected by market size and growth, as well as the number of actual new firms being started up, as mentioned in previous studies. The insignificant effect of the price-cost margin may indicate that this factor has no effect on aspiring entrepreneurship, but it is also possible that our measurement method using Prefectural Accounts is too rough to capture the .

The unemployment rate shows a significantly positive effect for both estimations. The result indicates that a higher unemployment rate increases the number of aspiring entrepreneurs, and is consistent with many previous studies on actual entry, entrepreneurship and self-employment supporting “push” hypothesis mentioned in note 13. We can conclude that there is more scope for a policy fostering entrepreneurship policy when the unemployment rate is higher, other things being equal.

4. Concluding Remarks

This paper investigated entrepreneurial potential in Japan, using data from the Employment Status Survey, which is the only government-administered survey that includes questions regarding the desire to become an entrepreneur. First, by observing the time-series data, we found that there were still many aspiring entrepreneurs in Japan in comparison with the number of actual new firms being started. Moreover, after the beginning of the 1980s, when the decline in the rate of new businesses began to be pointed out, the number of aspiring entrepreneurs did not decline so much in comparison to the decline in the actual number of new businesses. This indicates that the recent decline in the business establishment rate is mainly the result of deteriorating economic environment that prevents new business start-ups, rather than of a decline of entrepreneurial potential. Further, observing the regional data, we found a large regional variation in the distribution of entrepreneurial

potential, with the amount in Tokyo being prominent both in terms of the number of entrepreneurs and their share of the population of 15 years old and over.

Further, we examined the determinants of entrepreneurial potential, using a panel data set of 47 prefectures over the period from 1982–97. The estimation results show that market size, market growth and the unemployment rate have positive effects on the potential as well as the number of actual new firms being started.

There is some room for further study, mainly stemming from the limitations in the design of the Employment Status Survey, although it should be noted that this is the only official large sample survey concerning potential entrepreneurship. First, we cannot observe the aspiring entrepreneurs' detailed plans for starting businesses, as mentioned in note 4. Thus, for instance, we cannot conduct observation and estimation by industry. Second, a more fundamental limitation is that we cannot observe any subsequent behavior of aspiring entrepreneurs because the survey is not longitudinal. Hence, we cannot investigate the degree to which aspiring entrepreneurs successfully start actual businesses, what determinants affect this (cf. Praag and Ophem, 1995), or the post-establishment performance of these new firms (cf. Honjo, 2000, 2001; Harada, 2001, 2002). The first problem can be solved merely by adding the required items to the survey questionnaire, while the resolution of the second problem requires a fundamental extension of the survey so that it becomes longitudinal. Otherwise, we must prepare a new survey to deal with such research issues in order to overcome these problems.

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TABLE I
Entrepreneurial potential in Japan

1-1) Number

Year		Popula- tion 15 years old and over	Working persons	Persons wishing to change their job			Persons wishing to have an additional job			Persons wishing to work				Sum of persons wishing to start up a business	
				Total	Wishing to start up a business		Total	Wishing to start up a business		Not Working persons	Total	Wishing to start up a business			
					Pre- paring	Total		Pre- paring	Total			Pre- paring	Total		
														Total	Pre- paring
1959	64322	41330	1636	260	-	903	245	-	22991	5128	549	-	1054	-	
1962	67222	42855	1735	225	-	1268	263	-	24368	4947	295	-	783	-	
1965	72584	44779	1539	175	75	1000	186	90	27805	5573	305	128	666	293	
1968	76551	49006	2190	496	204	1496	654	226	27544	8018	379	179	1529	609	
1971	79419	50630	2262	713	317	1791	890	405	28789	8639	476	210	2079	932	
1974	82815	51341	2531	709	299	2279	1054	464	31475	9217	519	232	2282	995	
1977	86126	53649	4085	1075	475	3214	1451	652	32477	10698	616	299	3142	1426	
1979	88297	54737	4758	1176	504	2937	1375	524	33560	10353	517	250	3068	1278	
1982	91264	57888	4972	1150	525	3154	1383	629	33376	10103	509	275	3042	1429	
1987	97337	60502	5999	1295	566	2802	1194	537	36836	10661	489	259	2978	1362	
1992	102938	65756	6244	1126	484	2902	1061	467	37182	9540	380	194	2567	1145	
1997	106653	67003	7146	1244	573	3250	1146	519	39650	11333	422	228	2812	1320	
(thousand)															

(thousand)

1-2) Share of population 15 years old and over

Popula- tion 15 years old and over		Working persons	Persons wishing to change their job			Persons wishing to have an additional job			Not Working persons	Persons wishing to work			Sum of persons wishing to start up a business		
			Total	Wishing to start up a business		Total	Wishing to start up a business			Total	Wishing to start up a business				
				Total	Pre- paring		Total	Pre- paring			Total	Pre- paring			
1959	100	64.3	2.54	0.40	-	1.40	0.38	-	35.7	7.97	0.85	-	1.64	-	
1962	100	63.8	2.58	0.33	-	1.89	0.39	-	36.3	7.36	0.44	-	1.16	-	
1965	100	61.7	2.12	0.24	0.10	1.38	0.26	0.12	38.3	7.68	0.42	0.18	0.92	0.40	
1968	100	64.0	2.86	0.65	0.27	1.95	0.85	0.30	36.0	10.47	0.50	0.23	2.00	0.80	
1971	100	63.8	2.85	0.90	0.40	2.26	1.12	0.51	36.2	10.88	0.60	0.26	2.62	1.17	
1974	100	62.0	3.06	0.86	0.36	2.75	1.27	0.56	38.0	11.13	0.63	0.28	2.76	1.20	
1977	100	62.3	4.74	1.25	0.55	3.73	1.68	0.76	37.7	12.42	0.72	0.35	3.65	1.66	
1979	100	62.0	5.39	1.33	0.57	3.33	1.56	0.59	38.0	11.73	0.59	0.28	3.47	1.45	
1982	100	63.4	5.45	1.26	0.58	3.46	1.52	0.69	36.6	11.07	0.56	0.30	3.33	1.57	
1987	100	62.2	6.16	1.33	0.58	2.88	1.23	0.55	37.8	10.95	0.50	0.27	3.06	1.40	
1992	100	63.9	6.07	1.09	0.47	2.82	1.03	0.45	36.1	9.27	0.37	0.19	2.49	1.11	
1997	100	62.8	6.70	1.17	0.54	3.05	1.07	0.49	37.2	10.63	0.40	0.21	2.64	1.24	
															(%)

(%)

Source : Statistics Bureau, Ministry of Public Management, Home Affairs, Posts and Telecommunications, *Employment Status Survey*, various years.

Note: Okinawa is included from the 1979 survey onwards.

"Preparing" means "Preparing for the start of a business".

TABLE II
Entrepreneurial potential by prefectures

2-1) Number

Prefecture	Popula- tion 15 years old and over	Persons wishing to change their job: wishing to start up a business		Persons wishing to work: wishing to start up a business		Sum	
		Pre- paring		Pre- paring		Pre- paring	
		Total		Total		Total	
1 Hokkaido	4828	47	20	13	8	60	28
2 Aomori	1235	13	5	3	2	16	7
3 Iwate	1193	12	5	3	1	15	6
4 Miyagi	1968	22	9	7	3	29	12
5 Akita	1027	9	3	2	1	11	4
6 Yamagata	1054	8	3	3	1	11	4
7 Fukushima	1770	17	8	4	2	21	10
8 Ibaraki	2495	26	13	9	5	35	18
9 Tochigi	1671	19	9	7	4	26	13
10 Gumma	1699	19	9	5	2	24	11
11 Saitama	5782	79	39	27	16	106	55
12 Chiba	4965	61	30	21	12	82	42
13 Tokyo	10301	177	90	65	36	242	126
14 Kanagawa	7105	108	53	32	16	140	69
15 Niigata	2102	14	6	4	2	18	8
16 Toyama	961	8	3	2	1	10	4
17 Ishikawa	999	9	4	2	1	11	5
18 Fukui	694	7	3	2	1	9	4
19 Yamanashi	745	9	4	2	1	11	5
20 Nagano	1865	17	7	5	2	22	9
21 Gifu	1773	22	10	4	2	26	12
22 Shizuoka	3165	31	15	11	6	42	21
23 Aichi	5820	75	36	22	12	97	48
24 Mie	1559	13	6	4	2	17	8
25 Shiga	1083	10	5	3	2	13	7
26 Kyoto	2244	26	13	11	6	37	19
27 Osaka	7498	109	46	40	23	149	69
28 Hyogo	4577	51	22	22	12	73	34
29 Nara	1217	13	6	6	3	19	9
30 Wakayama	910	7	3	4	2	11	5
31 Tottori	513	4	2	2	1	6	3
32 Shimane	647	4	2	1	1	5	3
33 Okayama	1649	14	5	5	2	19	7
34 Hiroshima	2426	24	10	8	4	32	14
35 Yamaguchi	1317	10	5	4	2	14	7
36 Tokushima	705	6	3	3	1	9	4
37 Kagawa	872	7	3	3	2	10	5
38 Ehime	1272	11	5	5	3	16	8
39 Kochi	693	6	3	3	1	9	4
40 Fukuoka	4179	53	22	17	9	70	31
41 Saga	730	6	2	2	1	8	3
42 Nagasaki	1271	8	3	4	2	12	5
43 Kumamoto	1553	13	5	4	3	17	8
44 Oita	1036	10	5	3	2	13	7
45 Miyazaki	976	6	3	3	2	9	5
46 Kagoshima	1489	12	5	5	3	17	8
47 Okinawa	1017	13	5	5	3	18	8
Japan	106653	1244	573	422	228	1666	801

(thousand)

2-2) Share of population 15 years old and over

Prefecture	Popula- tion 15 years old and over	Persons wishing to change their job: wishing to start up a business		Persons wishing to work: wishing to start up a business		Sum	
		Pre- paring		Pre- paring		Pre- paring	
		Total		Total		Total	
1 Hokkaido	100	0.97	0.41	0.27	0.17	1.24	0.58
2 Aomori	100	1.05	0.40	0.24	0.16	1.30	0.57
3 Iwate	100	1.01	0.42	0.25	0.08	1.26	0.50
4 Miyagi	100	1.12	0.46	0.36	0.15	1.47	0.61
5 Akita	100	0.88	0.29	0.19	0.10	1.07	0.39
6 Yamagata	100	0.76	0.28	0.28	0.09	1.04	0.38
7 Fukushima	100	0.96	0.45	0.23	0.11	1.19	0.56
8 Ibaraki	100	1.04	0.52	0.36	0.20	1.40	0.72
9 Tochigi	100	1.14	0.54	0.42	0.24	1.56	0.78
10 Gumma	100	1.12	0.53	0.29	0.12	1.41	0.65
11 Saitama	100	1.37	0.67	0.47	0.28	1.83	0.95
12 Chiba	100	1.23	0.60	0.42	0.24	1.65	0.85
13 Tokyo	100	1.72	0.87	0.63	0.35	2.35	1.22
14 Kanagawa	100	1.52	0.75	0.45	0.23	1.97	0.97
15 Niigata	100	0.67	0.29	0.19	0.10	0.86	0.38
16 Toyama	100	0.83	0.31	0.21	0.10	1.04	0.42
17 Ishikawa	100	0.90	0.40	0.20	0.10	1.10	0.50
18 Fukui	100	1.01	0.43	0.29	0.14	1.30	0.58
19 Yamanashi	100	1.21	0.54	0.27	0.13	1.48	0.67
20 Nagano	100	0.91	0.38	0.27	0.11	1.18	0.48
21 Gifu	100	1.24	0.56	0.23	0.11	1.47	0.68
22 Shizuoka	100	0.98	0.47	0.35	0.19	1.33	0.66
23 Aichi	100	1.29	0.62	0.38	0.21	1.67	0.82
24 Mie	100	0.83	0.38	0.26	0.13	1.09	0.51
25 Shiga	100	0.92	0.46	0.28	0.18	1.20	0.65
26 Kyoto	100	1.16	0.58	0.49	0.27	1.65	0.85
27 Osaka	100	1.45	0.61	0.53	0.31	1.99	0.92
28 Hyogo	100	1.11	0.48	0.48	0.26	1.59	0.74
29 Nara	100	1.07	0.49	0.49	0.25	1.56	0.74
30 Wakayama	100	0.77	0.33	0.44	0.22	1.21	0.55
31 Tottori	100	0.78	0.39	0.39	0.19	1.17	0.58
32 Shimane	100	0.62	0.31	0.15	0.15	0.77	0.46
33 Okayama	100	0.85	0.30	0.30	0.12	1.15	0.42
34 Hiroshima	100	0.99	0.41	0.33	0.16	1.32	0.58
35 Yamaguchi	100	0.76	0.38	0.30	0.15	1.06	0.53
36 Tokushima	100	0.85	0.43	0.43	0.14	1.28	0.57
37 Kagawa	100	0.80	0.34	0.34	0.23	1.15	0.57
38 Ehime	100	0.86	0.39	0.39	0.24	1.26	0.63
39 Kochi	100	0.87	0.43	0.43	0.14	1.30	0.58
40 Fukuoka	100	1.27	0.53	0.41	0.22	1.68	0.74
41 Saga	100	0.82	0.27	0.27	0.14	1.10	0.41
42 Nagasaki	100	0.63	0.24	0.31	0.16	0.94	0.39
43 Kumamoto	100	0.84	0.32	0.26	0.19	1.09	0.52
44 Oita	100	0.97	0.48	0.29	0.19	1.25	0.68
45 Miyazaki	100	0.61	0.31	0.31	0.20	0.92	0.51
46 Kagoshima	100	0.81	0.34	0.34	0.20	1.14	0.54
47 Okinawa	100	1.28	0.49	0.49	0.29	1.77	0.79
Japan	100	1.17	0.54	0.40	0.21	1.56	0.75

(%)

Source : Employment Status Survey in 1997.

Note : "Preparing" means "Preparing for the start of a business".

TABLE III
Variable definitions and descriptive statistics

Variable	Definition	Mean	S.D.	Min	Max
E_{Total}/POP	Proportion of aspiring entrepreneurs (total) to population 15 years old and over	0.0146	0.0037	0.0077	0.0278
$E_{Preparing}/POP$	Proportion of aspiring entrepreneurs (preparing) to population 15 years old and over	0.0068	0.0019	0.0031	0.0137
$\log(E_{Total}/POP)$	-	-4.2600	0.2446	-4.8629	-3.5836
$\log(E_{Preparing}/POP)$	-	-5.0318	0.2802	-5.7668	-4.2883
POP_o/POP	Share of population 60 years old and over in total population 15 years old and over	0.2383	0.0481	0.1285	0.3570
SH_{Ag}	Gross prefectual domestic product share of the agriculture, forestry and fishery sector	0.0380	0.0260	0.0006	0.1099
SH_{Mn}	Gross prefectual domestic product share of the manufacturing sector	0.2541	0.0884	0.0617	0.4814
SH_{Con}	Gross prefectual domestic product share of the construction sector	0.1006	0.0191	0.0516	0.1511
SH_{WR}	Gross prefectual domestic product share of the wholesale and retail trade sector	0.1363	0.0325	0.0773	0.2381
SH_{pb}	Gross prefectual domestic product share of the public services	0.1194	0.0278	0.0697	0.1996
PCM	Price-cost margin = [(gross output – intermediate input – indirect tax less subsidies – compensation of employees)/gross output]	0.2011	0.0251	0.1371	0.2584
GDP/POP	Gross prefectual domestic product divided by population 15 years old and over (million yen in 1990 prices)	3.6214	0.8462	2.1905	8.0208
$\log(GDP/GDP_{-1})$	Rate of change of the gross prefectual domestic product (in 1990 prices)	0.0148	0.0312	-0.0505	0.0840
$Unemployment\ Rate$	Persons wishing to work (seeking a job; except for persons wishing to start up a business)/[working persons + the numerator]	0.0577	0.0153	0.0229	0.1147

Note : The sample size is 188.

TABLE IV
Correlation matrix for economic variables

	<i>PCM</i>	<i>GDP/POP</i>	$\log(GDP/$ $GDP_{-1})$	<i>Unemploym</i> <i>ent Rate</i>
<i>PCM</i>	1			
<i>GDP/POP</i>	-0.3639	1		
$\log(GDP/GDP_{-1})$	0.2329	-0.2869	1	
<i>Unemployment Rate</i>	-0.0636	-0.0615	0.0146	1

Note : The sample size is 188.

TABLE V
Determinants of entrepreneurial potential

	[1] $\log(E_{Total}/POP)$	[2] $\log(E_{Preparing}/POP)$
<i>Constant</i>	-4.0417 *** (-10.14)	-4.8871 *** (-9.72)
<i>POPo/POP</i>	-2.6669 *** (-6.73)	-2.9518 *** (-5.97)
<i>SH_{Ag}</i>	-0.8831 (-1.12)	0.7634 (0.77)
<i>SH_{Mn}</i>	-0.1449 (-0.40)	0.2404 (0.53)
<i>SH_{Con}</i>	-1.8127 ** (-2.35)	-2.2053 ** (-2.23)
<i>SH_{WR}</i>	-0.3612 (-0.60)	-0.4066 (-0.54)
<i>SH_{Pb}</i>	0.2507 (0.21)	0.4293 (0.28)
<i>PCM</i>	0.6873 (1.39)	0.1137 (0.18)
<i>GPDP/POP</i>	0.0509 ** (2.01)	0.0704 ** (2.23)
$\log(GPDP/GPDP_{-1})$	1.0738 *** (3.31)	0.7692 * (1.84)
<i>Unemployment Rate</i>	6.0756 *** (6.20)	7.0203 *** (5.61)
R^2	0.7278	0.6735
Lagrange multiplier statistics	60.62 ***	45.25 ***
Hausman statistics	5.14	11.1

Notes : The sample size is 188.

t-statistics are in parentheses.

* Significant at 0.10 level.

** Significant at 0.05 level.

*** Significant at 0.01 level.