

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 about the desire to become an entrepreneur. We find that there are still a number of potential entrepreneurs in Japan, despite a recent decline in the number of new firms being established. We also find that there is a large regional variation in the distribution of entrepreneurial potential, with clustering into a few regions and the level in Tokyo being exceptional. Further, using panel data on 47 prefectures from 1982 to 1997, we examine the determinants of entrepreneurial potential. The estimation results show that the price-cost margin, market size, market growth and the unemployment rate have positive effects on the potential for entrepreneurship.

KEY WORDS: Employment status survey, Entrepreneurship, Japan

JEL CLASSIFICATION: J23, L10, M13

1. Introduction

In the 1980s the entry rate for new businesses in Japan began to decline, and by the 1990s the entry rate had fallen below the exit rate. Between 1979 and 1981 the number of new enterprises was about 300,000 and the number of exiting enterprises was about 190,000 per year. However, between 1997 and 1999 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

in the entry rate and the reversal of the entry rate relative to the exit rate began to be recognized as important policy issues that needed to be addressed. These trends are thought to indicate a decline of entrepreneurial spirit, which seems to have brought about a slowdown in innovative activity and partly caused the prolonged economic stagnation in Japan. Moreover, during the last decade, Japan's unemployment rate has more than doubled, and thus fostering entrepreneurship has also become an important policy issue in terms not only of promoting innovation and economic growth, but also of creating jobs.

The purpose of this paper is to examine the potential for entrepreneurship in Japan. Since we can suppose that entrepreneurs mainly develop from potential entrepreneurs who aspire to become entrepreneurs, an examination of entrepreneurial potential is important, not only for investigating its level and distribution, but also for evaluating the government's potential for fostering entrepreneurship.

While there are many studies of entry and new business startups, very few papers have studied entrepreneurial potential.² In particular, in relation to Japan, there are a number of empirical studies on entry (e.g., Yamawaki, 1991; Odagiri and Honjo, 1995; Morikawa and Tachibanaki, 1999; Kawai and Urata, 2002), but almost none on entrepreneurial potential. To my knowledge, only the study by Blanchflower, Oswald and Stutzer (2001), which uses the results of the International Society Survey Program (ISSP) for 1997/1998, includes Japan as one of its 22 countries/regions of analysis. This study estimated probit models to examine the probability of preferring to be self-employed and the probability of being self-employed, and found that the former probability decreased with age, while the latter probability increased with age.

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For the purposes of this study, we use data from the Employment Status Survey (“*Syuugyokouzou Kihon Chousa*”) conducted by the Statistics Bureau, Ministry of Public Management, Home Affairs, Posts and Telecommunications, which is the only government-administered survey in Japan that includes questions about the desire to become an entrepreneur. It is a large-scale survey that has been conducted every 3–5 years since 1956. Households are surveyed on the basis of the results of the Population Census by using a stratified two-stage sampling method. The overall sampling ratio is about 1/100: in the latest (the 13th) survey for 1997, about 430,000 households were sampled and 1.1 million members of these households aged 15 and over were surveyed. From the sample results, the entire population of Japan (and of its 47 prefectures) is estimated by using the ratio estimation method with a benchmark of the population by sex, age (14 age groups), region and household-type estimated from other sources, and officially published.

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

This paper is organized as follows. Section 2 broadly observes the results of the Employment Status Survey. Section 3 describes the hypotheses to be tested and the variables used for estimation, and presents the estimation results. Section 4 concludes the paper.

2. Preliminary analysis

The Employment Status Survey contains detailed questions about individuals’ employment status including their working patterns, changes in economic activity and willingness to work. Here we discuss only the survey items concerning the desire to become an entrepreneur. First, the survey asks each household member aged 15 years

and over whether they are “usually engaged in any work for pay or profit”. Those answering “yes” are categorized as “working persons”, while those answering “no” are categorized as “non-working persons”. Next, the survey asks working persons whether they “wish to change their job” and whether they “wish to have an additional job besides the present one”, and asks non-working persons whether they “wish to work”. The survey then asks persons answering “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 define persons selecting this alternative (wishing to start up a business) as potential entrepreneurs. As a result, potential entrepreneurs are aggregated into three categories: “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 “non-working persons who wish to start up a business”. Further, the survey asks each potential entrepreneur whether they are “preparing for the start of a business”. Hence potential entrepreneurs are separated into two categories: (a) ‘total’ potential entrepreneurs, which comprises those who are preparing to start a business plus those who are not; (b) ‘preparing’ potential 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 potential entrepreneurs in Japan and their share in the population aged 15 years and over since the second survey in 1959, which was when these questions were first asked.⁵ In terms of the proportion of the population, potential entrepreneurs in Japan are few indeed, only 3.7% at most. In terms of actual numbers, however, since 1977 there have been more than 2.5 million potential entrepreneurs and more than 1.1 million preparing potential entrepreneurs.⁶ In more detail, the number of working persons wishing to start a business by changing their job and the number wishing to do so by taking an additional job are similar, at about 1.1–1.4 million since 1977 (the number preparing is about 0.5–0.6 million). The number of non-working persons wishing to start a business is lower, at about 0.4–0.5 million (the number preparing is about

TABLE I
Entrepreneurial potential in Japan

Population 15 years old and over	Working persons	Persons wishing to change their job		Persons wishing to have an additional job		Non- 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	Preparing	Total	Preparing		Total	Preparing	Total	Preparing	
(1-1) Number											
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	1000	186	27805	5573	305	666	293
1968	76551	49006	2190	496	1496	654	27544	8018	379	179	609
1971	79419	50630	2262	713	1791	890	28789	8639	476	210	932
1974	82815	51341	2531	709	2279	1054	31475	9217	519	232	995
1977	86126	53649	4085	1075	3214	1451	32477	10698	616	299	1426
1979	88297	54737	4758	1176	2937	1375	33560	10353	517	250	1278
1982	91264	57888	4972	1150	3154	1383	33376	10103	509	275	1429
1987	97337	60502	5999	1295	2802	1194	36836	10661	489	259	1362
1992	102938	65756	6244	1126	2902	1061	37182	9540	380	194	1145
1997	106653	67003	7146	1244	3250	1146	39650	11333	422	228	1320
(thousands)											
(1-2) Share of population 15 years old and over											
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	1.38	0.26	38.3	7.68	0.42	0.18	0.40
1968	100	64.0	2.86	0.65	1.95	0.85	36.0	10.47	0.50	0.23	0.80
1971	100	63.8	2.85	0.90	2.26	1.12	36.2	10.88	0.60	0.26	0.80
1974	100	62.0	3.06	0.86	2.75	1.27	38.0	11.13	0.63	0.28	1.20
1977	100	62.3	4.74	1.25	3.73	1.68	37.7	12.42	0.72	0.35	1.66
1979	100	62.0	5.39	1.33	3.33	1.56	38.0	11.73	0.59	0.28	1.45
1982	100	63.4	5.45	1.26	3.46	1.52	36.6	11.07	0.56	0.30	1.57
1987	100	62.2	6.16	1.33	2.88	1.23	37.8	10.95	0.50	0.27	1.40
1992	100	63.9	6.07	1.09	2.82	1.03	36.1	9.27	0.37	0.19	1.11
1997	100	62.8	6.70	1.17	3.05	1.07	37.2	10.63	0.40	0.21	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".

0.2–0.3 million). In the latest 1997 survey, there are a total of around 2.8 million potential entrepreneurs and 1.3 million preparing potential entrepreneurs. This number greatly exceeds the number of newly established enterprises, which is estimated to be 180,000 per year, as we noted in Section 1. This suggests that there are more than 15 times as many potential entrepreneurs as newly established businesses in Japan, and more than seven times as many preparing potential entrepreneurs.⁷ Further, comparing the latest results with those from the early 1980s – when the number of new enterprises began to decline – the number of potential entrepreneurs has declined by about 8%, while the actual number of businesses starting up has declined by much more, about 40%. This indicates that the recent decline in the number of new businesses has been mainly due to the deteriorating economic environment, which prevents new business startups, rather than from a decline in entrepreneurial potential.

Table II shows the regional distribution of potential entrepreneurs in Japan, which is indicated by the number of potential entrepreneurs in 1997 and their share in the population aged 15 years and over for the 47 prefectures. In the table, the data on working persons wishing to start a business as an additional job are excluded because these data are not available by prefecture for 1992 and 1997, either from published books or from the original tabulations of the Statistics Bureau. Table II shows that there is a large regional variation in the distribution of entrepreneurial potential. The number of potential entrepreneurs in Tokyo reached 240,000 (with 130,000 preparing entrepreneurs), which is exceptional. Next, in descending order, are Osaka, Kanagawa and Saitama. The prefecture with the lowest number of potential entrepreneurs is Shimane, with only 5000 (of which 3000 are preparing entrepreneurs). More than 100,000 potential entrepreneurs are in the top four prefectures, while there are 28 prefectures with less than 20,000 potential entrepreneurs and seven prefectures with less than 10,000. There are more than 50,000 preparing entrepreneurs in the top four prefectures, while there are 29 prefectures with less than 10,000. These results show that many of the potential entrepreneurs cluster into a few regions. The share of potential entrepreneurs in

the population aged 15 years and over is less varied and the ordering is somewhat different – for instance, Okinawa's ranking rises. However, the main features are the same: the share of Tokyo is still exceptional, at 2.4% (with 1.2% preparing); Tokyo, Osaka, Kanagawa and Saitama are still the top four prefectures; and Shimane remains the lowest-ranking prefecture, with only 0.8% of potential entrepreneurs (and 0.5% preparing). The rank correlation between the number of potential entrepreneurs and the share of the population is 0.715 (and 0.728 preparing), which confirms the persistence of the main features.

3. Determinants of entrepreneurial potential

In this section, we investigate the determinants of entrepreneurial potential using time-series data for 47 prefectures of the Employment Status Survey.⁸ Specifically, we examine the determinants of the number of potential entrepreneurs (comprising working persons wishing to start a business by changing their jobs and non-working persons wishing to start a business) in each of the two categories, 'total' potential entrepreneurs and 'preparing' potential entrepreneurs.⁹ Because the Employment Status Survey provides consistent data by prefecture, we can use the time-series pooled data as a comprehensive panel data set.¹⁰

3.1. Hypotheses

We use the following explanatory variables as determinants of the number of potential entrepreneurs. First, we control for differences in population size, because there may be more potential entrepreneurs simply because the population is greater. Moreover, differences in the size of the population of working age may affect the number of potential entrepreneurs. To control for these differences, we use the number of elderly people as a proportion of the population as an explanatory variable. We also control for differences in industrial structure, which are represented by the shares of primary, secondary (that is, manufacturing and construction), and private tertiary industries, and the public sector, because these differences are expected to affect the conditions underlying economic activities including

TABLE II
Entrepreneurial potential by prefecture

(2-1) Number	Prefecture	Population 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	Prefecture	Population 15 years old and over	Persons wishing to change their job: wishing to start up a business	Persons to work: wishing to start up a business	Sum							
											Total Preparing	Total Preparing	Total Preparing	Total Preparing			
(2-2) Share of population 15 years old and over																	
1	Hokkaido	4828	47	20	13	8	60	28	1	Hokkaido	100	0.97	0.41	0.27	0.17	1.24	0.58
2	Aomori	1235	13	5	3	2	16	7	2	Aomori	100	1.05	0.40	0.24	0.16	1.30	0.57
3	Iwate	1193	12	5	3	1	15	6	3	Iwate	100	1.01	0.42	0.25	0.08	1.26	0.50
4	Miyagi	1968	22	9	7	3	29	12	4	Miyagi	100	1.12	0.46	0.36	0.15	1.47	0.61
5	Akita	1027	9	3	2	1	11	4	5	Akita	100	0.88	0.29	0.19	0.10	1.07	0.39
6	Yamagata	1054	8	3	3	1	11	4	6	Yamagata	100	0.76	0.28	0.28	0.09	1.04	0.38
7	Fukushima	1770	17	8	4	2	21	10	7	Fukushima	100	0.96	0.45	0.23	0.11	1.19	0.56
8	Ibaraki	2495	26	13	9	5	35	18	8	Ibaraki	100	1.04	0.52	0.36	0.20	1.40	0.72
9	Tochigi	1671	19	9	7	4	26	13	9	Tochigi	100	1.14	0.54	0.42	0.24	1.56	0.78
10	Gumma	1699	19	9	5	2	24	11	10	Gumma	100	1.12	0.53	0.29	0.12	1.41	0.65
11	Saitama	5782	79	39	27	16	106	55	11	Saitama	100	1.37	0.67	0.47	0.28	1.83	0.95
12	Chiba	4965	61	30	21	12	82	42	12	Chiba	100	1.23	0.60	0.42	0.24	1.65	0.85
13	Tokyo	10301	177	90	65	36	242	126	13	Tokyo	100	1.72	0.87	0.63	0.35	2.35	1.22
14	Kanagawa	7105	108	53	32	16	140	69	14	Kanagawa	100	1.52	0.75	0.45	0.23	1.97	0.97
15	Niigata	2102	14	6	4	2	18	8	15	Niigata	100	0.67	0.29	0.19	0.10	0.86	0.38
16	Toyama	961	8	3	2	1	10	4	16	Toyama	100	0.83	0.31	0.21	0.10	1.04	0.42
17	Ishikawa	999	9	4	2	1	11	5	17	Ishikawa	100	0.90	0.40	0.20	0.10	1.10	0.50
18	Fukui	694	7	3	2	1	9	4	18	Fukui	100	1.01	0.43	0.29	0.14	1.30	0.58
19	Yamanashi	745	9	4	2	1	11	5	19	Yamanashi	100	1.21	0.54	0.27	0.13	1.48	0.67
20	Nagano	1865	17	7	5	2	22	9	20	Nagano	100	0.91	0.38	0.27	0.11	1.18	0.48
21	Gifu	1773	22	10	4	2	26	12	21	Gifu	100	1.24	0.56	0.23	0.11	1.47	0.68
22	Shizuoka	3165	31	15	11	6	42	21	22	Shizuoka	100	0.98	0.47	0.35	0.19	1.33	0.66
23	Aichi	5820	75	36	22	12	97	48	23	Aichi	100	1.29	0.62	0.38	0.21	1.67	0.82
24	Mie	1559	13	6	4	2	17	8	24	Mie	100	0.83	0.38	0.26	0.13	1.09	0.51
25	Shiga	1083	10	5	3	2	13	7	25	Shiga	100	0.92	0.46	0.28	0.18	1.20	0.65
26	Kyoto	2244	26	13	11	6	37	19	26	Kyoto	100	1.16	0.58	0.49	0.27	1.65	0.85
27	Osaka	7498	109	46	40	23	149	69	27	Osaka	100	1.45	0.61	0.53	0.31	1.99	0.92
28	Hyoogo	4577	51	22	22	12	73	34	28	Hyoogo	100	1.11	0.48	0.48	0.26	1.59	0.74
29	Nara	1217	13	6	6	3	19	9	29	Nara	100	1.07	0.49	0.49	0.25	1.56	0.74

30	Wakayama	910	7	3	4	2	11	5	30	Wakayama	100	0.77	0.33	0.44	0.22	1.21	0.55
31	Tottori	513	4	2	2	1	6	3	31	Tottori	100	0.78	0.39	0.39	0.19	1.17	0.58
32	Shimane	647	4	2	1	1	5	3	32	Shimane	100	0.62	0.31	0.15	0.15	0.77	0.46
33	Okayama	1649	14	5	5	2	19	7	33	Okayama	100	0.85	0.30	0.30	0.12	1.15	0.42
34	Hiroshima	2426	24	10	8	4	32	14	34	Hiroshima	100	0.99	0.41	0.33	0.16	1.32	0.58
35	Yamaguchi	1317	10	5	4	2	14	7	35	Yamaguchi	100	0.76	0.38	0.30	0.15	1.06	0.53
36	Tokushima	705	6	3	3	1	9	4	36	Tokushima	100	0.85	0.43	0.43	0.14	1.28	0.57
37	Kagawa	872	7	3	3	2	10	5	37	Kagawa	100	0.80	0.34	0.34	0.23	1.15	0.57
38	Ehime	1272	11	5	5	3	16	8	38	Ehime	100	0.86	0.39	0.39	0.24	1.26	0.63
39	Kochi	693	6	3	3	1	9	4	39	Kochi	100	0.87	0.43	0.43	0.14	1.30	0.58
40	Fukuoka	4179	53	22	17	9	70	31	40	Fukuoka	100	1.27	0.53	0.41	0.22	1.68	0.74
41	Saga	730	6	2	2	1	8	3	41	Saga	100	0.82	0.27	0.27	0.14	1.10	0.41
42	Nagasaki	1271	8	3	4	2	12	5	42	Nagasaki	100	0.63	0.24	0.31	0.16	0.94	0.39
43	Kumamoto	1553	13	5	4	3	17	8	43	Kumamoto	100	0.84	0.32	0.26	0.19	1.09	0.52
44	Oita	1036	10	5	3	2	13	7	44	Oita	100	0.97	0.48	0.29	0.19	1.25	0.68
45	Miyazaki	976	6	3	3	2	9	5	45	Miyazaki	100	0.61	0.31	0.31	0.20	0.92	0.51
46	Kagoshima	1489	12	5	5	3	17	8	46	Kagoshima	100	0.81	0.34	0.34	0.20	1.14	0.54
47	Okinawa	1017	13	5	5	3	18	8	47	Okinawa	100	1.28	0.49	0.49	0.29	1.77	0.79
	Japan	10653	1244	573	422	228	1666	801		Japan	100	1.17	0.54	0.40	0.21	1.56	0.75

(thousands)

(%)

Source: *Employment Status Survey in 1997*.

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

new business startups. Lastly, to represent economic factors, we use three proxies for the expected profit of the new firm and the unemployment rate of the prefecture, both of which have been widely used in empirical analyses of entry since Orr (1974). The relationships are summarized as follows:

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

where E is the number of potential entrepreneurs (E_{Total} : total, $E_{\text{Preparing}}$: preparing) and POP is the population aged 15 years and over, excluding full-time students because very few full-time students seem to be potential entrepreneurs (see also note 5). *Aged Share* is the population aged 60 years and over (POP_o) as a share of POP. *Industrial Structure* is the share of gross prefectural domestic product of the following industries: agriculture, forestry and fishing (SH_{Ag}), manufacturing (SH_{Mn}), construction (SH_{Con}) and public services (SH_{Pb}). Private tertiary industries are excluded from the estimation to avoid the problem of linear dependence between explanatory variables. We obtained the data on gross prefectural domestic product, aggregated by type of economic activity, from the Prefectural Accounts published by the Economic and Social Research Institute, Cabinet Office.¹¹

For the proxy of *Expected Profit*, we use the price–cost margin, market size and growth. All three variables are typically used in empirical studies of entry, and are expected to have positive coefficients (Orr, 1974; Acs and Audretsch, 1990, chapter 5; Dunne and Roberts, 1991; Sleuwaegen and Dehandschutter, 1991; Yamawaki, 1991; Odagiri and Honjo, 1995; and Kawai and Urata, 2002). The price–cost margin (PCM) is defined as ((gross output – intermediate input – indirect tax less subsidies – compensation of employees)/gross output), data which are taken from the Prefectural Accounts.¹² However, since data on intermediate input and gross output for Tokyo are not available from the Prefectural Accounts (the cells are blank), we estimated these values using the gross output share of value added from the Input–Output Tables for

Tokyo, which have been published every 5 years by the Statistics Division, Bureau of General Affairs, Tokyo Metropolitan Government since 1985. As indicators of market size and growth, respectively, we use Gross Prefectural Domestic Product (GPDP) in 1990 prices and the rate of change of GPDP, which is defined as $\log(\text{GPDP}/\text{GPDP}_{-1})$.

The *Unemployment Rate* has also been used in many empirical studies of entry, entrepreneurship (e.g., Evans and Leighton, 1990; Storey, 1991; Audretsch and Acs, 1994; Audretsch, 1995), and self-employment (OECD, 1992; Meager, 1992; see also the surveys by Blanchflower (2000) and OECD (2000)). Since this variable reflects the condition of both the labor market and, in part, the macroeconomy, its effect could be positive or negative. These opposing possibilities are called the ‘push’ and ‘pull’ hypotheses, respectively, and have been investigated empirically. Most studies find that the unemployment rate has a positive effect on the entry rate or on the probability of selecting into self-employment (i.e., support the ‘push’ hypothesis).

For estimation, we suppose that equation (1) can be specified as follows:

$$E = a \times \text{POP} \times e^{\alpha_1 \frac{\text{POP}_o}{\text{POP}}} \times e^{\beta_1 \text{SH}_{\text{Ag}} + \beta_2 \text{SH}_{\text{Mn}} + \beta_3 \text{SH}_{\text{Con}} + \beta_4 \text{SH}_{\text{Pb}}} \times e^{\gamma_1 \text{PCM} + \gamma_2 \text{GPDP} + \gamma_3 \log \frac{\text{GPDG}}{\text{GPDG}_{-1}}} \times e^{\eta_1 \text{Unemployment Rate}} \times e^\varepsilon \quad (2)$$

where ε is an error term. By dividing both sides of equation (2) by POP and taking natural logarithms, we have the following equation to estimate:

$$\log \frac{E}{\text{POP}} = \log a + \alpha_1 \frac{\text{POP}_o}{\text{POP}} + \beta_1 \text{SH}_{\text{Ag}} + \beta_2 \text{SH}_{\text{Mn}} + \beta_3 \text{SH}_{\text{Con}} + \beta_4 \text{SH}_{\text{Pb}} + \gamma_1 \text{PCM} + \gamma_2 \text{GPDP} + \gamma_3 \log \frac{\text{GPDG}}{\text{GPDG}_{-1}} + \eta_1 \text{Unemployment Rate} + \varepsilon \quad (3)$$

Following the usual approach to panel data estimation, we apply the plain OLS, and fixed and random effects models assuming individual effects of each prefecture.¹³ Then, we select the preferred

model on the basis of the Lagrange multiplier test and the Hausman test.

For the estimation periods, we use the last four surveys (1982, 1987, 1992 and 1997), because the data on GDP are only wholly available from 1980, and to avoid the possible pre-1982 discontinuity of the results of the Employment Status Survey (see note 6). As a result, the sample size for estimation is 188 (on 47 prefectures for four time periods).

The definitions and descriptive statistics of all the variables used for estimation are summarized in Table III. The sum of the means of the industrial shares is only 0.51, which means that the share of private tertiary industries, which is excluded from the estimation, averages 0.49. Further, the correlation matrix for the economic variables is presented in Table IV. This table shows relatively small correlations between economic variables, which suggests that multicollinearity is unlikely to be a problem.

3.2. Estimation results

The results of the panel data estimation of equation (3) are presented in Table V. Column (1) shows the results for total potential entrepreneurs, and column (2) reports those for preparing potential entrepreneurs. The Lagrange multiplier and Hausman statistics, respectively, indicate that plain OLS (without individual effects) and the fixed effects models are not statistically preferred in both cases. Thus, the results from the random effects models are selected and reported in the table.

First, the age structure, POP_o/POP , has a negative and significant effect in both models, as expected. This confirms that differences in the population of working age are worth controlling for. Several variables for industrial structure have significant effects. The shares of primary industries for total entrepreneurs, and the shares of construction industries for both models, have sig-

TABLE III
Variable definitions and descriptive statistics

Variable	Definition	Mean	S.D.	Min	Max
POP	Population 15 years old and over; excluding full-time students (thousands)	1933.1	1782.2	442	9481
E_{Total}/POP	Proportion of potential entrepreneurs (total) to POP	0.0159	0.0042	0.0083	0.0314
$E_{Preparing}/POP$	Proportion of potential entrepreneurs (preparing) to POP	0.0074	0.0022	0.0034	0.0155
$\log(E_{Total}/POP)$	—	-4.1728	0.2513	-4.7875	-3.4621
$\log(E_{Preparing}/POP)$	—	-4.9447	0.2861	-5.6836	-4.1668
POP_o/POP	Proportion of population 60 years old and over to POP	0.2597	0.0510	0.1423	0.3850
SH_{Ag}	Gross prefectural domestic product share of the agriculture, forestry and fishery sector	0.0380	0.0260	0.0006	0.1099
SH_{Mn}	Gross prefectural domestic product share of the manufacturing sector	0.2541	0.0884	0.0617	0.4814
SH_{Con}	Gross prefectural domestic product share of the construction sector	0.1006	0.0191	0.0516	0.1511
SH_{pb}	Gross prefectural 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	Gross prefectural domestic product (trillion yen in 1990 prices)	8.665	11.794	1.325	82.623
$\log(GDP/GDP_{-1})$	Rate of change of the gross prefectural domestic product (in 1990 prices)	0.0148	0.0312	-0.0505	0.0840
Unemployment Rate	Persons wishing to work (seeking a job; excluding 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

	PCM	GDP	log(GDP/GDP ₋₁)	Unemployment Rate
PCM	1			
GDP	-0.4144	1		
log(GDP/GDP ₋₁)	0.2329	-0.0666	1	
Unemployment Rate	-0.0636	0.2644	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)
Constant	-4.0944** (-14.68)	-4.9578** (-14.19)
POP ₀ /POP	-2.1479** (-7.27)	-2.2594** (-6.07)
SH _{Ag}	-1.5282* (-1.96)	0.0650 (0.067)
SH _{Mn}	0.0744 (0.23)	0.5266 (1.31)
SH _{Con}	-1.5409* (-2.16)	-1.9047* (-2.10)
SH _{Pb}	0.4270 (0.36)	0.5818 (0.39)
PCM	1.1894** (2.41)	0.7161 (1.14)
GDP	0.0039* (2.08)	0.0053* (2.25)
log(GDP/GDP ₋₁)	1.1296** (3.57)	0.7953* (1.97)
Unemployment Rate	5.7612** (6.23)	6.6532** (5.67)
Estimated variances		
Error term	0.0093	0.0161
Individual effects	0.0107	0.0148
Lagrange multiplier statistics	60.70**	47.43**
Hausman statistics	4.97	11.51

Notes: Random effects model.

The sample size is 188.

t-statistics are in parentheses.

*Significant at 0.05 level.

**Significant at 0.01 level.

nificantly negative effects. This suggests that the smaller the shares of these industries, the greater the number of potential entrepreneurs. The share of the public sector does not have a significant effect, which is somewhat surprising, because one

would expect less entrepreneurship with larger public sector.

Of the proxies of expected profit, market size and growth have positive and significant effects in both models. This indicates that the number of potential entrepreneurs increases with both market size and growth. These results are consistent with many earlier studies, which have found that market size and growth positively affect the actual number of business startups. The price-cost margin has a positive effect in both models, but is only significant in the model for total entrepreneurs. This may indicate that the price-cost margin has a limited effect on potential entrepreneurship in comparison with other economic factors, but it is also possible that our measurement of the price-cost margin using the Prefectural Accounts is too rough to capture the true effect.¹⁴

Lastly, the unemployment rate has a significantly positive effect in both models. In other words, the worse are labor market conditions, the greater the number of potential entrepreneurs there tends to be. This result means that the 'push' hypothesis is supported for potential entrepreneurship, which is consistent with most of the studies of entry, entrepreneurship and self-employment mentioned above. In addition, this suggests that policies for fostering entrepreneurship are more likely to work effectively when labor-market conditions are poor, other things being equal, because there tends to be more potential entrepreneurs under these conditions, and thus policy can focus on selecting them and encouraging them to start up businesses.

4. Concluding remarks

This paper has investigated entrepreneurial potential in Japan, using data from the Employment

Status Survey, which is the only government-administered survey that includes questions about the desire to become an entrepreneur. By using time-series data, we found that there are still many potential entrepreneurs in Japan in comparison with the number of new firms being established. Moreover, from the 1980s, when the decline in the rate of new businesses starting up emerged, the number of potential entrepreneurs did not decline by as much as did the number of new businesses. This indicates that the recent decline in the rate at which new businesses are being established is mainly due to deteriorating economic conditions, which hinder new business startups, rather than to a decline in entrepreneurial potential. We also found substantial regional variation in the distribution of entrepreneurial potential, with clustering into a few regions and an exceptional level in Tokyo, both in terms of the number of entrepreneurs and their share of the population aged 15 years and over.

Further, we examined the determinants of entrepreneurial potential, using panel data on 47 prefectures from 1982 to 1997. The estimation results showed that the price-cost margin, market size, market growth and the unemployment rate had positive effects on potential entrepreneurship (with only the price-cost margin being partly insignificant). This means that these economic factors affect entrepreneurial potential. These findings are consistent with those of most previous studies of entry, entrepreneurship and self-employment. Moreover, the positive unemployment rate effect suggests that the 'push' hypothesis is supported for potential entrepreneurship.

The design of the Employment Status Survey places some limitations on our analysis in this paper, even though it is the only large official survey covering potential entrepreneurship. First, we do not observe potential entrepreneurs' detailed plans for starting businesses because questions on these are not asked, as mentioned in note 8. Thus, we cannot investigate potential entrepreneurship in more detail, for instance by conducting an inter-industry analysis. Second, and more fundamentally, we do not observe the subsequent behavior of potential entrepreneurs because the survey is not longitudinal. Therefore, we cannot examine, for instance, the degree to which these

potential entrepreneurs actually start businesses following the survey, what affects the difference between potential entrepreneurs (cf. Praag and Ophem, 1995), or the post-establishment performance of these new firms (cf. Honjo, 2000, 2001; Harada, 2003, 2004). The first problem can be solved simply by adding the required questions to the survey, while the second problem is more difficult to resolve, because this requires the fundamental extension of the survey into a longitudinal one. Alternatively, we must develop a new survey to overcome these problems and extend our research further in these directions.

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Notes

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

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

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 jigyu 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 a more suitable translation. Thus, this paper adopts that expression.

⁴ Unfortunately, the definition of "preparing for the start of a business" is not provided in the survey.

⁵ As the survey covers all persons aged 15 years and over, full-time students aged 15 or more are included as "non-working persons". It would be more appropriate to separate out full-time students from the data in Tables I and II, because very few full-time students seem to be potential entrepreneurs, especially in Japan. However, we cannot do

this because detailed information on full-time students, such as how many full-time students are included in "persons wishing to work", are not published. Thus, we present Tables I and II without adjusting for full-time students. However, we are able to incorporate this adjustment for the empirical analysis of Section 3, since we observe the total number of full-time students.

⁶ However, the scheme and the questions of the survey have been revised several times, especially before 1982. Therefore, there may be some limitation on direct comparisons of survey results over long time periods, especially beyond 1982.

⁷ However, we should note here that some of the potential entrepreneurs may be planning to start businesses jointly.

⁸ It would be better to conduct the estimation by industry rather than by prefecture. However, we cannot do so because the potential entrepreneurs' detailed plans, including in what industry they intend to start a business, are not asked in the survey. Instead, as a feasible alternative, we use prefecture data and control for the differences in industry structure between prefectures.

⁹ In this section, working persons wishing to start a business as an additional job are also excluded, mainly because the data by prefecture are not available for 1992 and 1997. However, because such (excluded) potential entrepreneurs are persons who intend to become 'part-time' entrepreneurs, this exclusion seems to be more appropriate in the sense that our analysis focuses on 'full-time' potential entrepreneurs.

¹⁰ As the survey is not longitudinal (i.e., the sampled units differ each year), panel data analysis could not be applied even if we could access and use the microdata of the survey.

¹¹ The Prefectural Accounts are based on 68SNA. The public services sector is defined as government services plus private non-profit services to households. Gross prefectural domestic product by type of economic activity, which is valued in producers' prices, is only published in nominal terms, and thus, nominal values are used in both the numerator and the denominator for calculating industrial shares.

¹² The numerator can also be written as the consumption of fixed capital plus the operating surplus.

¹³ Theoretically, it would be better to apply panel data estimation to 'grouped' data under a discrete choice model. However, this approach does not work well in this case, probably because the grouped proportion is very small (0.003–0.03 from Table III), and perhaps partly because of the small sample size.

¹⁴ However, there is no other comprehensive prefectural data set that enables measurement of the price–cost margin.

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