

The Determinants of Latent Entrepreneurship in Japan

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ABSTRACT. This paper examines regional characteristics affecting the latent entrepreneurship in Japan, focusing on regional macroeconomic indicators, existing density of establishments and human capital, and business start-up assistance programs by local governments. We define two types of people having the latent entrepreneurship as follows: (1) persons merely wishing to be a self-employed worker, and (2) persons preparing to be a self-employed worker out of the former definition. Total cash earnings and the unemployment rate, which are the macro economic indicators, had positive effects on latent entrepreneurship in Japan. Judging from the significance of their estimations, the latent entrepreneurship is explained by the “Push hypothesis”. If we examine the problem more closely, it is necessary for us to identify government assistance programs which make the latent entrepreneurs more self-employment.

KEY WORDS: Business startup assistance, entrepreneurship, gender, Japan, latent entrepreneurship

JEL CLASSIFICATION: M13

1. Introduction

This paper is interested in the determinants of latent entrepreneurship. Because latent entrepreneurs wish to be self-employed in the future and have a high possibility to realize self-employment with an adequate policy, and focusing on the determinants of latent entrepreneurship is also important for the policymakers. The birth of self-employment has activated a market economy and further created job opportunities. The Japa-

nese government has created many assistance programs to increase self-employment during the 10 years since “the collapse of bubble economy” in 1991. Nevertheless, the total number of self-employed workers has continued to fall.¹ In Japan, it is important to understand why self-employment has decreased. However, apart from the discussion of self-employment, we must consider the point “whether people want to be self-employed exist or not”. We regard a would-be self-employed person as people having the latent entrepreneurship. And so we define latent entrepreneurship as follows: (1) persons merely wishing to be a self-employed worker, and (2) persons preparing to be a self-employed worker out of the former definition. This paper examines in particular the regional distribution of latent entrepreneurship in Japan. This is the first attempt to examine the determinants of latent entrepreneurship across regions in Japan.

This paper is organized into six main sections. Section 2 provides a brief review of empirical studies regarding the determinants of latent entrepreneurship. Section 3 presents the measurement of the latent entrepreneurship. Section 4 shows the methodology used in the empirical analysis. Section 5 discusses the estimated results and their implications. Finally, Section 6 provides a conclusion, along with suggestions for further research.

2. Determinants of latent entrepreneurship: a brief review of literature

Since the seminal paper by Blau (1987) pointed out that the self-employment rate in the U.S. had begun to rise in the 1970s, many researchers have examined the determinants of self-employment or entrepreneurship. They have used the following variables as an index of the self-employment or

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entrepreneurship: entry rate, as measured by the number of new start-up business incorporations (Highfield and Smiley, 1987; Acs and Audretsch, 1989a, b; Audretsch and Acs, 1994; Carree and Thurik, 1996; Mata, 1996) and small firm birth rate, as measured by a registration of an establishment (Johnson and Parker, 1994; Santarelli and Sterlacchini, 1994; Santarelli and Piergiovanni, 1995; Kleijweg and Lever, 1996). Explanatory variables were as follows: economic growth, profitability and demand growth, the tax system, funds and assets, the interest rate, educational background, parent's occupation, the industry, gender, and finally, industrial density. Most studies have used some combinations of these explanatory variables. Carree and Thurik (1996, Table III, pp. 160–161) summarize the effects of profitability and demand growth in papers published from 1962 (Mansfield's study) to 1994 (Wagner's study). In general, these variables had a positive and significant effective on entrepreneurship.

Some researchers have also used self-employment as a proxy for entrepreneurship. According to interview and questionnaire surveys, potential self-employers answer that raising capital is their principle problem. Blanchflower and Oswald (1998) also emphasized the concern for sufficient capital to successfully start up business. They focused upon, as potential explanatory variables, a fair standard set of personal characteristics, regional variables, and information on the father's occupation. Their estimated results showed that the probability to be self-employment depends positively upon whether the individual ever received an inheritance or gift.

There are some studies that examined the effects of national and regional characteristics on the determinants of latent entrepreneurship and firm birth rates. Cowling (2000) confirmed that in the EU there were significant differences across countries in terms of who becomes an entrepreneur. He used the probability of being self-employed as a proxy for entrepreneurship. The potential explanatory variables included a set of personal characteristics: gender, age, marital status, family size, and educational background. In general age, gender and educational background were confirmed to be important variables, and the nature and strength of the relationship between latent entrepreneurship and these

personal characteristics varied considerably across countries in the EU.

The "International Social Survey Program" has published world-wide information on people who say they would prefer to be self-employed. Blanchflower et al. (2001, Table 1, p. 683) defined such people as latent entrepreneurs and then ranked nations with the rate of latent entrepreneurship. According to that table, Japan is ranked 16 out of 23 nations. Highly ranked nations were Poland, Portugal and the U.S.A. Blanchflower et al. (2001) also examined the following common feature across countries. For individuals, the probability of preferring to be self-employed strongly decreases with age, while the probability of being self-employed strongly increases with age. They concluded on this opposite sign for age that "despite the fact that older people are more likely to be self-employed, it is younger people who say they would prefer to be self-employed" (p. 686). Observing Japan, the probability of being self-employed was 0.19 (*t*-value; 5.21) for male, 0.22 (5.53) for female, and 0.21 (7.65) for both sexes. The probability of preferring to be self-employed was -0.20 (4.55), -0.12 (2.40), and -0.17 (5.00) respectively.

Reynolds et al. (1994) conducted cross-national comparisons of the variation in new firm formation rates. Dependent variables are the average for new firm birth rates, and explanatory variables are demand growth, urbanization, unemployment, personal or household wealth, accumulation of small firms, political ethos, and government spending. They estimated the linear regression model on all economic sectors and manufacturing sectors across all six countries. They concluded that regional characteristics affecting new firm births were demand growth, urbanization and accumulation of small firms. These findings were uniform for all nations.

Armington and Acs (2002) examined the effects of regional characteristics on firm birth rates in the U.S.A. Regional characteristics, which have a positive and significant relationship with firm birth rates, were industry intensity, income growth, population growth and college graduates. They emphasized new firm start-up is motivated by high technology, because college graduates are a proxy for human capital on new firm formation.

TABLE I
The number of latent entrepreneurs

Surveyed year	People wishing to change jobs (1000 persons; %)				
	a. Working persons (%)	b. Total (b/a; %)	c. Others (c/a; %)	d. Wishing to be self-employed workers: WSE (d/a; %)	e. Preparing to be self-employed workers: PSE (e/a; %)
1968	49006 (100)	2190 (4.47)	1694 (3.46)	496 (1.01)	204 (0.42)
1971	50630 (100)	2262 (4.47)	1549 (3.06)	713 (1.41)	317 (0.63)
1974	51341 (100)	2531 (4.93)	1822 (3.55)	709 (1.38)	299 (0.58)
1977	53649 (100)	4085 (7.61)	3010 (5.61)	1075 (2.00)	475 (0.89)
1979	54737 (100)	4758 (8.69)	3582 (6.54)	1176 (2.15)	504 (0.92)
1982	57888 (100)	4972 (8.59)	3822 (6.60)	1150 (1.99)	525 (0.91)
1987	60502 (100)	5999 (9.92)	4704 (7.77)	1295 (2.14)	566 (0.94)
1992	65756 (100)	6244 (9.50)	5118 (7.78)	1126 (1.71)	484 (0.74)
1997	67003 (100)	7146 (10.67)	5902 (8.81)	1244 (1.86)	573 (0.86)
		(c/b; %)	(d/b; %)	(e/b; %)	(e/d; %)
1968		77.35	22.65	(9.32)	[41.13]
1971		68.48	31.52	(14.01)	[44.46]
1974		71.99	28.01	(11.81)	[42.17]
1977		73.68	26.32	(11.63)	[44.19]
1979		75.28	24.72	(10.59)	[42.86]
1982		76.87	23.13	(10.56)	[45.65]
1987		78.41	21.59	(9.43)	[43.71]
1992		81.98	18.03	(7.75)	[42.98]
1997		82.59	17.41	(8.02)	[46.06]

Note: Others are composed of regular staff, part-timer employed worker, family worker, piece-work at home, and other.

Source: *Employment Status Survey*, various years.

However we do not yet say these studies are an analysis of latent entrepreneurship, because they do not use, as a dependent variable, latent entrepreneurship in the true sense of the word. For Japan, Harada (2002) also used the rate of such latent entrepreneurship and examined the determinants across regions in Japan. He calculated the rate of latent entrepreneurship from the *Employment Status Survey*² (*ESS*) data in 1997, and examined the relationship between latent entrepreneurship and independent variables, that is, net prefectural output, land value, and unemployment rates. Observing his estimated results, the latent entrepreneurship had a positive and significant relationship with unemployment rate and did not have a definite one with net prefectural output and land value. This relationship depended on prefecture size and had significance in metropolitan areas (Tokyo, Osaka and Kanagawa etc.). We also adopted the data from the *ESS* and examined the

determinants across regions with additional explanatory variables.

3. Measuring the latent entrepreneurship

First of all, it is necessary to construct the measures of the latent entrepreneurship in the true sense of the word. But, unfortunately in Japan, there is no published statistical data available for its calculation. This paper measures the rate of latent entrepreneurship by using data from the *ESS*, which also had been used by Harada (2002). The *ESS* asks working people whether they would wish to change their job³ or wish to have additional jobs. For persons not working, the *ESS* also asks whether they would wish to have any work. Furthermore, the *ESS* asks of persons answering “yes” what they wish to change, or have, in addition to present conditions or what kind of job is desired. They choose between the following kinds of jobs:

Regular staff
 Part-time, "Arubaito"
 Self-employed worker
 Family worker
 Piecework at home
 Other

We focus on people wishing to change their jobs, and regard the people who choose "self-employed worker" as persons having latent entrepreneurship. Hence, latent entrepreneurship is divided into two categories: one is for persons merely wishing to be a self-employed worker (the WSE); the other is for persons preparing to be self-employed (the PSE). We adopt both categories. Then we define the rates of latent entrepreneurship as follows:

$$WLE = WSE/WP \quad (1)$$

$$PLE = PSE/WP \quad (2)$$

where WP is the total number of working persons.

Table I shows a trend in the number (percentage) of people "wishing to change jobs", "wishing to be a self-employed worker", and

"preparing to be a self-employed worker". Three items have similar trends in both actual numbers and ratios to the number of working persons. The number of WSE and PSE are 1244 and 573 (1000 people), respectively as of 1997.

The percentage of other occupations to total number of people wishing to change jobs (c/b) has increased. On the other hand, both percentages of WSE and PSE (d/b and e/b) have decreased gradually. The ratio of PSE to WSE (e/d) averaged about 44% from 1968 to 1997.

Table II describes the number and percentage of latent entrepreneurs by regions. All of the higher ranked regions are metropolitan in Japan. As noted above, Harada (2002) found that latent entrepreneurship had a significant relationship to the prefecture size.

The number and percentage of latent entrepreneurs by sex are presented in Table III. As showed in the lower column, in every area the percentage of female workers have increased steadily, but for male workers they have decreased. Thus we can guess the density of female workers correlated with latent entrepreneurship.

According to the *White Paper on New Business Start-up, 1997*, the ages of start-up business

TABLE II
 The Number of latent entrepreneurs by region: 1997

Regions	People wishing to change jobs (1000 persons; %)				
	a. Working persons	b. Total (b/a; %)	c. Wishing to be self-employed workers: WSE (c/b; %)	d. Preparing to be self-employed workers: PSE (d/b; %)	[d/c; %]
1. Tokyo	6677	842 (12.61)	177 (21.02)	90 (10.69)	[50.85]
2. Osaka	4581	536 (11.70)	109 (20.34)	46 (8.58)	[42.20]
3. Kanagawa	4494	542 (12.06)	108 (19.93)	53 (9.78)	[49.07]
4. Saitama	3700	455 (12.30)	79 (17.36)	39 (8.57)	[49.37]
5. Aichi	3877	399 (10.29)	75 (18.80)	36 (9.02)	[48.00]
6. Chiba	3147	363 (11.53)	61 (16.80)	30 (8.26)	[49.18]
7. Fukuoka	2460	289 (11.75)	53 (18.34)	22 (7.61)	[41.51]
8. Hyogo	2755	290 (10.53)	51 (17.59)	22 (7.59)	[43.14]
9. Hokkaido	2907	318 (10.94)	47 (14.78)	20 (6.29)	[42.55]
10. Shizuoka	2117	217 (10.25)	31 (14.29)	15 (6.91)	[48.39]
•	•	•	•	•	•
•	•	•	•	•	•
47. Totori	332	28 (8.43)	4 (14.29)	2 (7.14)	[50.00]
Total	67003	7146 (10.67)	1244 (17.41)	573 (8.02)	[46.06]

Note: Regions are ranked by the number of persons "wishing to be self-employed workers."

Source: *Employment Status Survey, 1997*.

owners averaged 39.6 years.⁴ On an average, they took 13.2 years to realize their business start-up. That is, they prepared to be a self-employed worker at the age of 26.4 years (39.6 minus 13.2). The upper column in Table IV also proves this fact; huge numbers of young workers (25–29 years-old) wish and prepare to be a self-employed worker. The lower column shows their current employment status. Their current employment status is classified into three groups: self-employed workers, family workers, and employees. Their status in employment is usually “employee” and regular staff. Self-employed workers in this column are also people wishing or preparing to start up another business in addition to their present conditions. Such WSE and PSE are 86 and 42 (1000 people), respectively in 1997.

We can also recognize that the probability of starting their own business depends on the own

income. Because raising capital is their principle barrier to starting up a business. The ratio of their own funds to total cost establishing a new firm, is about 29.5% in 2000.⁵ Table V shows the annual income levels of latent entrepreneurs. Focusing on actual numbers, every kind of latent entrepreneur is found in the first rank in the class 300–399 (ten thousands of yen). The lower column indicates that the percentages of WSE and PSE within each income class rise with their class. Therefore the probabilities of would-be WSE or PSE are relatively high in the higher income classes, and financing problems should be more severe in the lower income classes.⁶

4. Empirical methodology

We reviewed some empirical studies on the differences in determinations of latent entrepreneurship across nations and regions in Section 2.

TABLE III
The number of latent entrepreneurs by sex

Surveyed year	People wishing to change jobs (1000 persons; %)			Subtotal					
	a. Total	b. Wishing to be self-employed workers: WSE	c. Preparing to be self-employed workers: PSE	Male			Female		
				a1	b1	c1	a2	b2	c2
1968	2190	496	204	1323	429	179	867	67	25
1971	2262	713	317	1383	618	276	879	95	41
1974	2531	709	299	1516	608	261	1015	101	38
1977	4085	1075	475	2455	925	415	1630	150	60
1979	4758	1176	504	2751	987	427	2007	189	76
1982	4972	1150	525	2749	953	434	2223	197	91
1987	5999	1295	566	3341	1069	467	2658	225	99
1992	6244	1126	484	3333	928	390	2911	198	94
1997	7146	1244	573	3915	1021	462	3231	222	111
	(%)	(%)	(%)	(a1/a; %)	(b1/b; %)	(c1/c; %)	(a2/a; %)	(b2/b; %)	(c2/c; %)
1968	100	100	100	60.41	86.49	87.75	39.59	13.51	12.25
1971	100	100	100	61.14	86.68	87.07	38.86	13.32	12.93
1974	100	100	100	59.90	85.75	87.29	40.10	14.25	12.71
1977	100	100	100	60.10	86.05	87.37	39.90	13.95	12.63
1979	100	100	100	57.82	83.93	84.72	42.18	16.07	15.08
1982	100	100	100	55.29	82.87	82.67	44.71	17.13	17.33
1987	100	100	100	55.69	82.55	82.51	44.31	17.37	17.49
1992	100	100	100	53.38	82.42	80.58	46.62	17.58	19.42
1997	100	100	100	54.79	82.07	80.63	45.21	17.85	19.37

Note: $a = a1 + a2$; $b = b1 + b2$; $c = c1 + c2$. Figures may not add up totals because figures are rounded in thousand or totals are inclusive of unclassifiable.

Source: Same as for Table II.

TABLE IV
Latent entrepreneurs by age and status in employment: 1997

	Working persons	(%)	People wishing to change jobs (1000 persons; %)					(c/a; %)	[c/b; %]		
			a. Total		b. Wishing to be self-employed workers:WSE		c. Preparing to be self-employed workers: PSE				
			(%)	(%)	(%)	(b/a; %)				(%)	
1. Age											
15~19-years-old	1340	2.00	318	4.45	22	1.77	6.92	11	1.92	3.46	[50.00]
20~24	6807	10.16	1459	20.42	150	12.06	10.28	75	13.09	5.14	[50.00]
25~29	7463	11.14	1310	18.33	237	19.05	18.09	107	18.67	8.17	[45.15]
30~34	6214	9.27	890	12.45	190	15.27	21.35	83	14.49	9.33	[43.68]
35~39	6195	9.25	740	10.36	158	12.7	21.35	65	11.34	8.78	[41.14]
40~44	6859	10.24	670	9.38	137	11.01	20.45	58	10.12	8.66	[42.34]
45~49	9119	13.61	734	10.27	158	12.7	21.53	72	12.57	9.81	[45.57]
50~54	7231	10.79	454	6.35	94	7.56	20.70	44	7.68	9.69	[46.81]
55~59	6341	9.46	339	4.74	62	4.98	18.29	35	6.11	10.32	[56.45]
60~64	4232	6.32	163	2.28	26	2.09	15.95	16	2.79	9.82	[61.54]
65 years-old and over	5202	7.76	70	0.98	9	0.72	12.86	5	0.87	7.14	[55.56]
Both sexes	67003	100	7146	100	1244	100	17.41	573	100	8.02	[46.06]
2. Status in employment											
Self-employed workers			388	5.43	86	6.91		42	7.33		
Family workers			175	2.45	21	1.69		11	1.92		
Employee			6582 (100%)	92.11	1136 (100%)	91.32		520 (100%)	90.75		
Executives of corporations			91 (1.38)		31 (2.73)			17 (3.27)			
Regular staff			4245 (64.49)		916 (80.63)			389 (74.81)			
Part-timer			963 (14.63)		54 (4.75)			28 (5.38)			
Arubaito			979 (14.87)		88 (7.75)			57 (10.96)			
Shokutaku			91 (1.38)		14 (1.23)			9 (1.73)			
Dispatched workers by worker dispatching			68 (1.03)		8 (0.70)			4 (0.77)			
Other			142 (2.16)		25 (2.20)			16 (3.08)			

Source: Same as for Table II.

TABLE V
Latent entrepreneurs by annual income:1997

	People wishing to change jobs (1000 persons; %)					
	a. Total	(%)	b. Wishing to be self-employed workers:WSE	(%)	c. Preparing to be self-employed workers:PSE	(%)
Both sexes	7146	100	1244	100	573	100
Under 50 (ten thousands of yen)	438	6.13	23	1.85	14	2.44
50~99	881	12.33	56	4.50	32	5.58
100~149	712	9.96	63	5.06	36	6.28
150~199	659	9.22	66	5.31	35	6.11
200~249	896	12.54	119	9.57	59	10.30
250~299	702	9.82	117	9.41	55	9.60
300~399	1147	16.05	255	20.50	117	20.42
400~499	707	9.89	211	16.96	87	15.18
500~699	554	7.75	206	16.56	81	14.14
700~999	202	2.83	81	6.51	34	5.93
1000~1499	45	0.63	19	1.53	9	1.57
1500 and over	10	0.14	4	0.32	2	0.35
Family workers	175	2.45	21	1.69	11	1.92
	(%)		(b/a; %)		(c/a; %)	
Both sexes	100		17.41		8.02	
Under 50 (ten thousands of yen)	100		5.25		3.20	
50~99	100		6.36		3.63	
100~149	100		8.85		5.06	
150~199	100		10.02		5.31	
200~249	100		13.28		6.58	
250~299	100		16.67		7.83	
300~399	100		22.23		10.20	
400~499	100		29.84		12.31	
500~699	100		37.18		14.62	
700~999	100		40.10		16.83	
1000~1499	100		42.22		20.00	
1500 and over	100		40.00		20.00	
Family workers	100		12.00		6.29	

Source: Same as for Table II.

However, we understand that factors affecting a region's latent entrepreneurship are the extent of its entrepreneurial culture. This entrepreneurial culture is often defined as a social context where entrepreneurial behavior is encouraged (Johanisson, 1984). Various researchers have emphasized that the strength of local entrepreneurial culture varies spatially, although empirical study of the relationship between local culture and entrepreneurial activity is often difficult. We also need to collect data on personal characteristics (Blanchflower and Oswald, 1998; Cowling, 2000) and cultural background as potential explana-

tory variables. But, in Japan, there is no published statistical data about personal characteristics.

This paper examines regional characteristics affecting latent entrepreneurship (Reynolds et al., 1994; Armington and Acs, 2002), focusing on regional macro economic indicators, existing density of establishments, human capital, and assistance programs by local governments.

To examine the effects of regional characteristics on the determinants of latent entrepreneurship (LE), the regression equation estimated had the following structure:

$$\begin{aligned} \text{LE(WLE, PLE)} = & \alpha_0 + \alpha_1(\text{TCED}) + \alpha_2(\text{UN}) \\ & + \alpha_3(\text{FD}) + \alpha_4(\text{VB}) + \alpha_5(\text{AG}) \\ & + \alpha_6(\text{CUG}) + \alpha_7(\text{SW}) + \alpha_8(\text{TW}) \\ & + \alpha_9(\text{MW}) + \alpha_{10}(\text{PW}) \\ & + \alpha_{11}(\text{FAD}) + \alpha_{12}(\text{BMAD}) + u \end{aligned}$$

where LE^7 is as described above, TCED and UN stand for regional macroeconomic indicators, total cash earnings and unemployment rate, respectively. Additional explanatory variables are as follows: eight variables from female dummy (FD) to professional workers (PW) are existing density of establishments and human capital, and financial assistance dummy (FAD) and business management assistance dummy (BMAD) are business start-up assistance programs by local governments, and u represents the error term.

We chose 1997 as the year of analysis, because it is comparable with part of the estimated results by Harada (2000). We can also get all statistical data available for estimation in this year. The equations were estimated by the ordinary least squares (OLS) method. Because heteroscedasticity of an unknown kind often tends to bias the estimates of the variances of the estimated coefficients in analyses based on cross section data t -values are computed using White's heteroscedasticity-consistent covariance matrix estimator. Next we will outline the explanatory variables included in the equation.

(1) *Total cash earnings (TCED)*. This variable is a regional macroeconomic indicator. It is reasonable to expect that, as demand increases through income growth, more self-employed firms will be founded to satisfy this greater demand. Many authors have examined this relationship between demand or income growth and self-employment (Mata, 1996). Most of them confirmed a positive and significant co-relationship (Carree and Thurik, 1996, Table III, pp. 160–161). This relationship has been called “The Pull Hypothesis” (Storey, 1991). We use the total cash earnings dummy (TCED) as a substitute for demand or income growth. This variable is expected to exert a positive effect on latent entrepreneurship. If the increase ratio of total cash earnings in 1997 to the previous year is plus = 1, otherwise = 0.

(2) *Unemployment rate (UN)*. This is another regional macroeconomic indicator. When people lose their jobs, they may well wish to be self-employed. This fact has been called “The Push Hypothesis” (Storey, 1991). In Japan, there is no statistical data on unemployment rate for every prefecture. We measured this rate from the *ESS* data. Harada (2002) showed that the unemployment rate had a positive and significant relationship to latent entrepreneurship.

$$\begin{aligned} \text{UN} = & [(\text{Seeking a job of not working persons} \\ & / (\text{Working persons} \\ & + \text{Seeking a job of not working persons})) \\ & \times 100. \end{aligned}$$

Additional explanatory variables are the existing density of establishments, human capital, and differences in assistance systems used by the local governments.

(3) *Female dummy (FD)*. As we saw in Table III, the number and percentage of female latent entrepreneurs have increased steadily. According to the *White Paper on New Business Start-up* (2001), the ratio of female to total new firm founders has increased (1991 = 12.4%; 1993 = 12.9%; 1995 = 13.4%; 1997 = 14.9%), and for males the ratios have decreased (87.6%; 87.1%; 86.1%; 85.1%). The density of female workers would be positively related to latent entrepreneurship.⁸ We also use a dummy variable. If the ratio of female workers to total working persons increases from 1992 to 1997 = 1, otherwise = 0.

(4) *Venture business (VB)*. A high density of venture business is proxied for entrepreneurship. High density contributes to regional externalities or economies of information flows, and induces people to be an entrepreneur. Thus, the latent entrepreneurs are most likely to be located in regions where such density is the highest. This would suggest that venture business density would have a positive effect on latent entrepreneurship.

$$\begin{aligned} \text{VB} = & (\text{the number of venture business} \\ & / \text{Total of 47 prefectures}) \times 100. \end{aligned}$$

(5) *25–29-years-old (AG)*. As we have explained above, people wanting to be a self-employed worker start preparation at the age of 26.4 years on average. And also, huge numbers of young workers (25–29-years-old) hope and prepare to be self-employed. This fact shows that 25–29-year-old people have the most ambition to be self-employed. This density would be positively related to latent entrepreneurship.

$$AG = (25\text{--}29\text{-years-old} / \text{Working persons}) \times 100.$$

(6) *College or University graduates (CUG)*. This is a proxy measure of the technical skills needed in the economy, for example engineers and scientists, and skills needed to start and build a business. College or university (including graduate school) graduates, especially engineers provide a supply of labor to local firms. The latent entrepreneurship would be positively related to higher levels of education, and negatively related to the levels of unskilled workers in the region.

$$CUG = (\text{College or University graduates} / \text{Working persons}) \times 100.$$

(7) *Services workers (SW)*. An absolute and/or relative decline in manufacturing seems to be a common phenomenon among advanced countries. A trend towards relative contraction in the manufacturing sector is called deindustrialization. In contrast to manufacturing, there has not been a decline in the relative size of Japan's service sector, which has grown and created new jobs. Many new start-ups have also come from the service sector rather than manufacturing.⁹ In particular, many have grown in industries for individuals within the service sector. We can expect this density has a positive effect on entrepreneurship.

$$SW = (\text{Services workers} / \text{Working persons}) \times 100.$$

(8) *Technical workers (TW)*. In Japan, the most powerful personal aspiration of new firm founders is to be independent, next is the desire

to use their own technical capabilities¹⁰ (*White Paper on New Business Start-up*, 2001). The rate of technical workers indicates a proxy measure of regional entrepreneurship. We expect a positive relationship between this density and entrepreneurship.

$$TW = (\text{Technical workers} / \text{Working persons}) \times 100.$$

(9) *Managers and official workers (MW)*. Most new entrepreneurs were originally employed as managers and officials.¹¹ As stated by other empirical studies, a managerial background seems to be a better training ground for future independent activity (Marco, 1991). We expect this density has a positive relationship to entrepreneurship.

$$MW = (\text{Managers and Official workers} / \text{Working persons}) \times 100.$$

(10) *Professional workers (PW)*. This variable shows persons excluding technical workers. For example, this indicator includes medical, social workers, and teachers. We want to examine such worker's entrepreneurship.

$$PW = (\text{Professional workers} / \text{Working persons}) \times 100.$$

(11) *Financial assistance dummy (FAD)*. As far as a new firm's formation is concerned, financing problems appear to be the most powerful deterrence. To be independent, the latent entrepreneur had better prepare sufficient capital or at least gain the ability to successfully raise an unsecured loan. As shown in Table V, the percentage of latent entrepreneurs increased with income class. In works using U.S. micro data, Evans and Leighton (1989) and Evans and Jovanovic (1989) have argued formally that entrepreneurs face liquidity constraints. Blanchflower and Oswald (1998) also confirmed that the probability to be self-employment depends upon whether the individual ever received an inheritance or gift.

Many local governments provide financial assistance programs. Here we used a dummy variable. When local governments assist with

loans, if a client is claimed any security = 1, otherwise = 0.

(12) *Business management assistance dummy (BMAD)*. In addition to financial assistance, local governments also have many assistance programs (see *Venture Handbook*). Whether or not a local government has business management assistance programs seem for the latent entrepreneur to be as important as financing. Here we also use a dummy variable. If a local government has such an assistance program = 1, otherwise = 0.

Summary statistics of the variables used are shown in Table VI. The following are the data sources: for WSE, PSE, WS, UN, FD, AG, TW, MW, SW, PW, and CUG we used the *Employment Status Survey, 1997*. For TCED, the *Annual Report on the Monthly Labour Survey, 1997* is used. For VB, the *NIKKEI Venture Business Year Book, 1996* is used. For FAD and BMAD the *White Paper on New Business Start-up, 1998* and the *Venture Handbook* are used, respectively.

5. Estimated results

The above section provided a set of hypotheses concerning the regional characteristics that are the determinants of latent entrepreneurship. Table VII shows the estimated results. Two latent entrepreneurship, by our definitions, have similar determinants except for financial

assistance dummy, FAD, and business management assistance dummy, BMAD. Now, we will examine the specific results in turn.

First, we examined the Pull and Push Hypotheses on regional macroeconomic indicators. Total cash earnings, TCED, had a positive effect on the latent entrepreneurship. This finding coincides with many analyses that demand or income growth is positively related to business birth rate. Unemployment rate, UN, has the expected sign and a strong relationship to latent entrepreneurship.¹² This finding also coincides with Harada's (2002) estimation result. Judging from the size of the *t*-value, unemployment rate is more effective than total cash earnings. That is, the regional macro economic determinant of latent entrepreneurship is explained by the Push Hypothesis rather than the Pull Hypothesis.

Second, we estimated the existing density of establishments and human capital. As for the gender difference, it is shown that the female dummy, FD, has a significantly positive effect on the latent entrepreneurship. The result may indicate that female workers are determined to take a higher risk in Japanese business society. Venture business, VB, as expected, has a positive and significant relationship to latent entrepreneurship. We can understand that a high density of VB contributes to regional externalities. Most ambitious 25–29-year-olds, AG, as expected, are positively signed and statistically significant.

TABLE VI
Summary statistics (N = 47)

Variables	Definition	Maximum	Minimum	Average	Standard deviation
WLE	Persons wishing to be self-employed workers	2.65	0.99	1.59	0.382
PLE	Persons preparing to be self-employed workers	1.35	0.41	0.71	0.203
TCED	Total cash earnings dummy	1	0	0.83	0.38
UN	Unemployment rate	11.87	4.57	6.63	1.456
FD	Female dummy	1	0	0.26	0.441
VB	Venture business	26.76	0.34	2.13	4.187
AG	25–29-years-old	13.54	8.09	10.13	1.383
CUG	College or university graduates	29.28	8.59	15.04	4.58
SW	Services workers	11.57	6.52	7.97	0.907
TW	Technical workers	7.37	1.19	2.93	0.981
MW	Managers and official workers	4.57	2.68	3.26	0.364
PW	Professional workers	12	7.42	9.2	1.132
FAD	Financial assistance dummy	1	0	0.766	0.428
BMAD	Business management assistance dummy	1	0	0.234	0.428

TABLE VII
Estimated results (N = 47)

Persons wishing to be self-employed workers:WLE																	Persons preparing to be self-employed workers:PLE							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16								
Constant	0.079	-0.529	0.358	1.115	-0.88	-1.518	-0.943	-0.702	-0.051	-0.393	0.153	0.485	-0.577	-0.78	-0.467	-0.393								
Total cash earnings dummy	0.091	0.129	0.118	0.071	0.026	0.128 ^c	0.187 ^b	0.119	0.069	0.089	0.081	0.06	0.039	0.074 ^c	0.101 ^b	0.08 ^c								
	[0.966]	[1.117]	[1.124]	[0.549]	[0.322]	[1.872]	[2.127]	[1.335]	[1.653]	[1.534]	[1.566]	[0.983]	[0.909]	[1.869]	[2.282]	[1.766]								
Unemployment rate	0.15 ^a	0.148 ^a	0.145 ^a						0.06 ^a	0.063 ^a	0.063 ^a													
	[6.91]	[6.633]	[7.054]						[6.035]	[5.202]	[5.635]													
Female dummy	0.039	0.147 ^c	0.103	0.265 ^b	0.173 ^b	0.127 ^b	0.095	0.039	0.043	0.094 ^c	0.072	0.142 ^b	0.098 ^b	0.083 ^b	0.055	0.028								
	[0.535]	[1.772]	[1.443]	[2.327]	[2.355]	[2.05]	[1.125]	[0.049]	[1.029]	[1.735]	[1.547]	[2.458]	[2.511]	[2.104]	[1.186]	[0.72]								
Venture Business			0.032 ^a	0.042 ^a							0.019 ^a	0.024 ^a												
			[7.042]	[3.641]							[7.57]	[5.37]												
25-29-years-old					0.206 ^a	0.177 ^a							0.109 ^a	0.098 ^a										
					[9.03]	[9.156]							[11.961]	[10.624]										
College or university graduates							0.043 ^a	0.05 ^a							0.026 ^a	0.028 ^a								
							[6.286]	[7.589]							[8.554]	[9.082]								
Services workers						0.131 ^a	0.194 ^a	0.182 ^a					0.047 ^a	0.08 ^a	0.076 ^a									
						[4.975]	[5.732]	[4.683]					[2.813]	[5.449]	[4.32]									
Technical workers	0.152 ^a								0.103 ^a															
	[4.195]								[4.748]															
Managers and official workers		0.259 ^b								0.159 ^b														
		[2.369]								[2.166]														
Professional workers				0.094	0.021							0.035	0.01											
				[0.198]	[0.91]							[0.156]	[0.803]											
Financial assistance dummy		0.196 ^b	0.126	0.243 ^b	0.15 ^b	0.186 ^b	0.229 ^a		0.079	0.037	0.037	0.087	0.042	0.054	0.069									
		[2.17]	[1.578]	[2.586]	[2.257]	[2.596]	[2.942]		[1.373]	[0.735]	[0.735]	[1.653]	[1.048]	[1.299]	[1.632]									
Business management assistance dummy	-0.064		-0.094	-0.056	-0.036	-0.044	-0.077	-0.058	-0.044		-0.071	-0.054	-0.029	-0.043	-0.055	-0.05								
	[-0.655]		[-0.995]	[-0.446]	[-0.044]	[-0.671]	[-0.905]	[-0.633]	[-0.965]		[-1.468]	[-0.983]	[-0.747]	[-1.225]	[-1.408]	[-1.226]								
Adj. R2	0.63	0.56	0.64	0.37	0.69	0.76	0.66	0.61	0.65	0.48	0.59	0.41	0.7	0.72	0.67	0.66								
	17.16	13.14	15.05	5.57	18.15	25.51	16.11	15.82	18.23	9.52	12.07	6.31	18.77	21.66	16.92	19.26								

Notes: *T*-values are in parentheses; *F* is *F*-value.Significance level: ^a1%; ^b5%; ^c10% (two-tailed test).

The year of analysis is 1997. Method = OLS (WHITESE).

College or university graduates, CUG, are also positively signed and statistically significant. This finding shows that a high density of technical skills attracts people to be entrepreneurs. Services workers, SW, have the expected signs and statistically significant. Technical workers, TW, are also positively signed and statistically significant. A high density of TW would have a high possibility to start up businesses. Managers and Official workers, MW, have a positive and significant relationship. Professional workers, PW, have a positive but not significant relationship to latent entrepreneurship.

Finally, we estimated differences in assistance programs set by local governments. Two dummy variables, financial assistance dummy, FAD, and business management assistance dummy, BMAD, have the same signs for the latent entrepreneurship (WLE and PLE). FAD is positively signed and statistically significant for WLE, but not significant for PLE. This finding indicates that FAD provides the opportunity for people who are merely wishing to be entrepreneurs, but not adequate for people preparing to be entrepreneurs. BMAD has a negative but not significant relationship to both latent entrepreneurship. Such estimated results show that the assistance programs by local governments are still not sufficient or adequate for the client. In particular, positive signs of FAD suggest that, although its assistance is a loan of security, the government ought to provide more financial assistance to mitigate liquidity constraints for people preparing to be entrepreneurs.

6. Concluding remarks

This paper has examined the determinants of latent entrepreneurship across regions of Japan. We defined two kinds of latent entrepreneurship. The main findings are as follows:

- (1) Total cash earnings and the unemployment rate have positive effects on latent entrepreneurship. We can understand, judging from the size of the *t*-value, that the Push Hypothesis is adopted in Japan.
- (2) The high density of female workers has also had a positive effect on latent entrepreneurship. This finding suggests that Japanese female workers have a strong willingness to

take the higher risk to be entrepreneurs in the near future.

- (3) High density regions of college or university graduates, venture businesses, 25–29-year-olds, technical workers, services workers, managers and official workers all these factors attract people to be entrepreneurs, and contribute to regional externalities.
- (4) The effectiveness for two latent entrepreneurship is different in only business start-up assistance programs by local governments. Business start-up assistance programs, in both financial and management assistances, were still not sufficient and adequate for people preparing to be entrepreneurs.

From these estimated results, we can point out the following policies. First, policymakers should take interest in factors which make their local economy more entrepreneurial. Second, the government ought to promote start up businesses in high density regions of establishments and human capital. As an effective policy instrument, the government can provide technical education and training to latent entrepreneurs. Third, the government should examine any impact of their assistance programs upon new firm formation, and identify programs which provide latent entrepreneurs more self-employment. Fourth, we confirmed female workers have a willingness to be entrepreneurs, and so the government should offer support to reduce their risks (e.g. mitigation of financing problems). Finally, the government can provide financial assistance to the unemployed. This assistance program has been called the “Business Start UP Scheme” or “Self-Employment Assistance”¹³ in foreign countries but has not yet been provided in Japan.

Unfortunately, our study was restricted to specific variables, due to the lack of available data. If we examine the problem more closely, it is necessary to examine the probability the latent entrepreneurs would be self-employed. Also, it is interesting and important to make international comparisons on the determinants of latent entrepreneurship. To do so, we have to collect data on a set of personal characteristics: gender, income class, parent’s occupation, marital status, and family size etc. These problems will be left to further papers.

Notes

¹ A great deal of effort has been devoted to studying the determinants of self-employment. In most developed countries, as well as in Japan, the movement in self-employment has been an important issue, because it closely relates to the distribution of available job opportunities. According to Blanchflower (2000) and OECD (2000, pp. 159–160), the self-employment rate in Japan has continued to decline since the end of the 1970s. The time-series movement of data by Small and Medium Enterprises Agency (1999, Chapter 6) and many studies by Japanese researchers (Kamata, 1995; Abe and Yamada, 1998; Genda et al., 1998; Yahata, 1998) also confirmed that the total number of self-employed people has continued to fall in Japan since the 1980s. In Japan, it is important to understand why self-employment has decreased. Genda and Kambayashi (2002) examined why working householders aged below 55 avoid self-employment, focusing on age, location, and gender effects.

² The ESS has been conducted about every 5 years. This survey was first conducted in 1959. Surveyed items have been almost uniform since 1977.

³ Inoki et al. (2001) analyzed some aspects of job change in Japan.

⁴ The *White Paper on New Business Start-up* includes the data on new firm founders lent by the National Life Finance Corporation. They are entrepreneurs in the first years subsequent to the establishment of their own firms. The average ages of new firm founders have increased; 38.9-years-old in 1991, 39.7-years-old in 1995, 40.2-years-old in 1998, and 41.6-years-old in 2000. See above the *White Paper* (2001, p.265). The period from their job separation to be new firm founders is as follows: 4.7 months for under 29-years-old, 6.6 months for 30–34-years-old, 7.2 months for 45–59-years-old, and 12.0 months for the 60-years-old and over group. About 74% of the total became new firm founders within 6 months. This period became longer with age. See above the *White Paper* (2001, p. 15). This *White Paper* has surveyed the data on new firm founders from 1991 to 2000 (2001, pp. 264–267).

⁵ Average cost to establish a new firm is 1645.4 (in tens of thousand yen) in 2000. Fund raising is 427.7 (in tens of thousand yen) from their own funds, 130.6 (in tens of thousand yen) from parents, brothers and relations, and 156.9 (in tens of thousand yen) from private financial institutions. See above the *White Paper* (2001, p.237).

⁶ This point was suggested by a referee.

⁷ These figures include the self-employed as current employment status shown in the lower column of Table IV.

⁸ We analyzed population density, population growth, and labor force etc. as regional characteristics that were suggested by a referee, but could not reach significant conclusions. And so we adopted the density of female workers as a proxy for these regional characteristics. We can get this data every 5 years.

⁹ The industries started by new firm founders are as follows: 25% in service industry for individual, 16.3% in

retail industry, 15.7% in eating house, 12.1% in service industry for business, 8.4% in construction, and 5.2% in manufacturing. See above the *White Paper* (2001, p. 257).

¹⁰ The third aspiration of new firm founders is to “put their job experience to practical use”. Fourth is to “be well rewarded for his contribution”. We can understand that new firm founders have a desire to “find their life’s work” rather than acquire a higher income. See above the *White Paper* (2001, p. 17).

¹¹ Most of the new firm founders were employed at their previous jobs as regular staff, and next were employed as regular staff and/or managers and officials. See above the *White Paper* (2001, p. 266).

¹² The correlation coefficient between TCED and UN was a negative and very low (–0.086), and thus multicollinearity was not a problem. This point was suggested by a referee.

¹³ According to OECD (2000, Chapter 5), such assistance programs have been provided in 19 countries.

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References

- Abe, M. and A. Yamada, 1998, ‘Some Empirical Aspects of Aged Entrepreneurs in Japan’, *The Japanese Journal of Labour Studies* **40**, 26–41 (in Japanese).
- Acs, Z. J. and D. B. Audretsch, 1989a, ‘Small-firm Entry in US Manufacturing’, *Economica* **56**(2), 255–265.
- Acs, Z. J. and D. B. Audretsch, 1989b, ‘Births and Firm Size’, *Southern Economic Journal* **56**(2), 467–475.
- Armington, C. and Z. J. Acs, 2002, ‘The Determinants of Regional Variation in New Firm Formation,’ *Regional Studies* **36**(1), 33–45.
- Audretsch, D. B. and Z. J. Acs, 1994, ‘New-firm Startups, Technology, and Macroeconomic Fluctuations’, *Small Business Economics* **6**, 439–449.
- Blau, D. M., 1987, ‘A Time Series Analysis of Self-employment in the United States’, *Journal of Political Economy* **95**(3), 445–467.
- Blanchflower, D. G. and A. J. Oswald, 1998, ‘What Makes an Entrepreneur?’, *Journal of Labor Economics* **16**(1), 26–60.
- Blanchflower, D. G., 2000, ‘Self-Employment in OECD Countries’, *Labor Economics* **7**, 471–505.
- Blanchflower, D. G., A. J. Oswald and A. Stutzer, 2001, ‘Latent Entrepreneurship Across Nations’, *European Economic Review* **45**, 680–691.
- Carree, M. and R. Thruik, 1996, ‘Entry and Exit in Retailing: Incentives, Barriers, Displacement and Replacement’, *Review of Industrial Organization* **11**, 155–172.

- Cowling, M., 2000, 'Are Entrepreneurs Different across Countries', *Applied Economics Letters* **7**, 785–789.
- Evans, D. and L. Leighton, 1989, 'Some Empirical Aspects of Entrepreneurship', *American Economic Review* **79**, 519–535.
- Evans, D. and B. Jovanovic, 1989, 'An Estimated Model of Entrepreneurial Choice under Liquidity Constraints', *Journal of Political Economy* **97**, 808–827.
- Genda, Y., M. Ishihara and R. Kambayashi, 1998, 'Background of Declining Self-Employment Report, Quarterly', **47**, 14–35, Tokyo: National Life Finance Corporation Consolidated Research Center (in Japanese).
- Genda, Y. and R. Kambayashi, 2002, 'Declining Self-Employment in Japan', *Journal of the Japanese and International Economics* **16**, 73–91.
- Harada, N., 2002, 'An Empirical Analysis of Potential Entrepreneurship in Japan', *Tokyo: Japan Center for Economic Research* **44**, 122–140 (in Japanese).
- Highfield, R. and R. Smiley, 1987, 'New Business Starts and Economic Activity', *International Journal of Industrial Organization* **5**(1), 51–66.
- Inoki, T. and Rengo Consolidated Life Development Research Center, et al., 2001, *The Economics of Job Change*, Tokyo: Keizai Shinpo Sha (in Japanese).
- Johanisson, B., 1984, 'A Cultural Perspective on Small Business – local climate', *International Small Business Journal* **2**(4), 32–43.
- Johnson, P. and S. Parker, 1994, 'The Interrelationships between Births and Deaths', *Small Business Economics* **6**, 283–290.
- Kamata, A., 1995, 'Establishment and Employment Problem of Small and Medium-sized Enterprises', *Tokyo: The Japanese Journal of Labour Studies* **38**(8), 2–10 (in Japanese).
- Kleijweg, AADJ. M. and M. H. C. Lever, 1996, 'Entry and Exit in Dutch Manufacturing Industries', *Review of Industrial Organization* **11**, 375–382.
- Mansfield, E., 1962, 'Entry, Gibrat's Law, Innovation and Growth of Firms', *American Economic Review* **52**, 1023–1051.
- Marco, V., 1991, 'The Birth of New Enterprises', *Small Business Economics* **3**, 215–223.
- Mata, J., 1996, 'Small Firm Births and Macroeconomic Fluctuations', *Review of Industrial Organization* **11**, pp. 173–182.
- National Life Finance Corporation Consolidated Research Center., 1997, 2000, 2001, *The White Paper on New Business Start-up*, Tokyo: Small and Medium Enterprises Research Center (in Japanese).
- Nippon Keizai Shinbunsya, 1996, *Nikkei Venture Business Year Book* (in Japanese).
- OECD., 2000, 'The Partial Renaissance of self-employment', *Employment Outlook*, June, OECD.
- Policy Planning and Research Department, 1997, *Annual Report on The Monthly Labour Survey*, Minister's Secretariat, Ministry of Labour, Japan (in Japanese).
- Reynolds, P., D. J. Storey and P. Westhead, 1994, 'Cross-national Comparisons of the Variation in New Firm Formation Rates', *Regional Studies* **28**(4), 443–456.
- Santarelli, E. and A. Sterlacchini, 1994, 'New Firm Formation in Italian Industry 1985–89', *Small Business Economics* **6**, 95–106.
- Santarelli, E. and R. Piergiovanni, 1995, 'The Determinations of Firm Start-up and Entry in Italian Producer Services', *Small Business Economics* **7**, 221–230.
- Small and Medium Enterprises Agency (SMA)., 1996, *Venture Handbook*, Tokyo: Small and Medium Enterprises Consolidated Research Organization (in Japanese).
- Small and Medium Enterprises Agency (SMA)., 1999, *White Paper on Small and Medium Enterprises in Japan*, Tokyo: Printing Bureau, Department of Finance (in Japanese).
- Statistics Bureau, Management and Coordination Agency Government of Japan., 1997, *The Employment Status Survey Results for Japan*, Tokyo: Printing Bureau, Department of Finance (in Japanese).
- Storey, D. J., 1991, 'The Birth of New Firms – Does Unemployment Matter? A Review of the Evidence', *Small Business Economics* **3**, 167–178.
- Wagner, J., 1994, 'Small Firm in Manufacturing Industries: Lower Saxony, 1979–1989', *Small Business Economics* **6**, 211–223.
- Yahata, S., 1998, 'Former Employees as owners of Small Independent Business', *Tokyo: The Japanese Journal of Labour Studies* **40**, 2–14 (in Japanese).

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