Risk Tolerance and Performance of Self-employment: Men vs. Women Entrepreneurs in Korea

by Joyup Ahn and Jaimie Sung

One of the most significant characteristics of the Korean labor market is that the proportion of self-employment is high: it was 38 percent in 2001 and has dropped to 31 percent in 2008. There has been no study considering the role of risk preference in choosing self-employment, its performance, and its termination. This study, which exploits information on the risk-taking behavior in the 7th wave of the Korean Labor and Income Panel Study (2004), constructs a measure for risk-taking indicator and uses it as an explanatory variable in the estimation of a multinomial logit model of choice of the employment status and a regression model of earnings function in order to check whether it has a significant positive effect on choosing self-employment and its economic performance. The estimates indicate that risk-takers are more likely to be their own boss but not own account workers, which implies that the indicator can be a proxy of entrepreneurship, and that the indicator does not have a significant positive effect on earnings for the self-employment, which implies no direct relationship between the indicator and entrepreneurship or between entrepreneurship and economic performance.

Introduction

One of the main characteristics of the Korean labor market is the high proportion of self-employment out of workers. As seen in the Figure 1, it is true that its proportion has shown a downward trend since 1963 (68 percent) when the developing process and the urbanization process started. It is also true that 31 percent in 2008 is still a higher level than in other countries such as USA (about 8 percent). It is noteworthy that, during 1990s, the proportion showed a slightly increasing trend from 37 percent to 38 percent and that again a decreasing trend during 2000s, which is mainly due to the economic recession and 'self-employment' restructuring since 2003. When farming households (agricultural sector) are excluded, the share of self-employment during 1990s has shown a significant increasing trend from 29 percent in 1990 to up to 32 percent in 1998. It was mainly due to an increasing trend of the share of male self-employment while no change in that of female self-employment, which resulted in no significant difference in the share of self-employment between male and female (around 31 percent in 2001).

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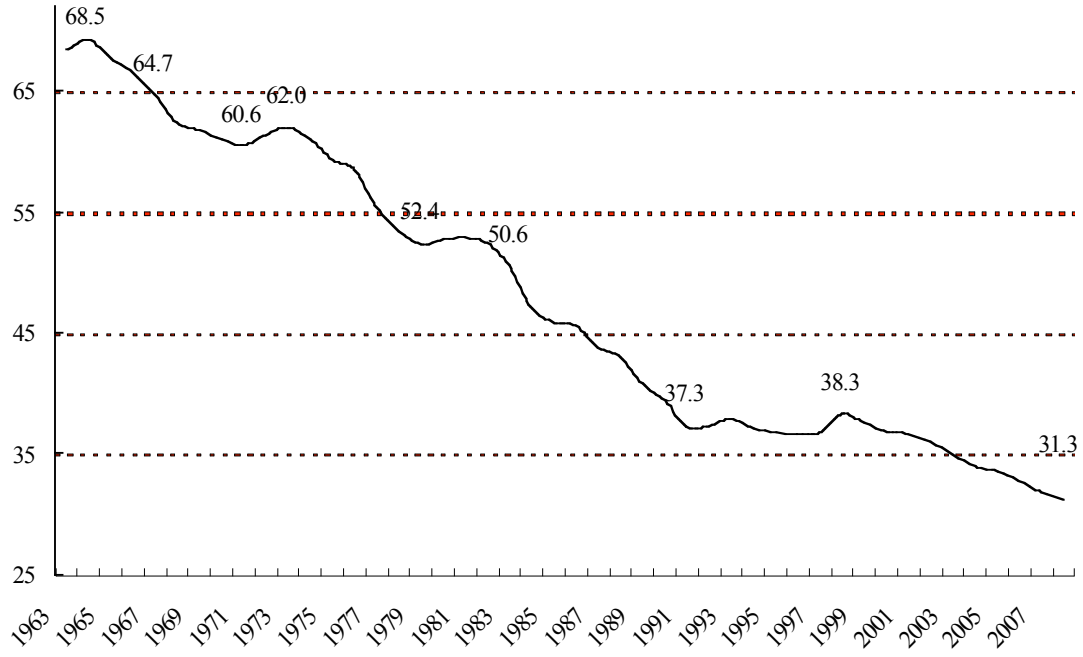
Figure 1. The Long-Term Trend of the Proportion of Self-Employment

(unit: %)



Although self-employment has played a significant role in the Korean labor market as an alternative to paid employment in order to exploit entrepreneurship as well as a last resort for those who have lower employability and difficulties in finding paid employment, a few studies have been done by some researchers until now and most have focused on the choice of self-employment rather than a series of self-employment process such as start-up or opening a business, its growth, and its termination or closing a business. And further, there has been no study considering the role of risk-taking behavior in the whole process of self-employment, which is mainly due to lack of survey data providing appropriate information on risk preference.

The purposes of this study are threefold: the first is to construct a measure of risk preference, i.e., the risk-taking indicator (RTI), from the five experimental questionnaires in the 7th wave of the Korean Labor and Income Panel Survey; the second is to investigate the effect of the RTI on choosing self-employment, especially it with employees (being one's own boss) by employing multinomial logit model of the choice of the employment status, i.e., the employed, self-employment with employees (employers), and self-employment without employees (own account workers)ed, which implies that the indicator can be a measure of entrepreneurship; and the third is to investigate the additional effect of the risk-taking behavior on earnings of the self-employed, which implies that entrepreneurship pays in as risk-premium.

The remainder of this paper is organized as follows. Section 2 introduces the data and information on the risk-taking behavior with its descriptive statistics and presents estimates of the ordered logit model of taking risks (cash vs. lotto and indifference). Section 3 constructs a measure of risk-taking indicator from various risk-taking behavior (three out of five are used in this study) and its effect on choosing self-employment is investigated by employing the multinomial logit model with three state, i.e., the

employed, self-employed with employees, and self-employed without employees. Section 4 investigates the effect of risk-taking indicator on earnings of self-employment. The final section concludes with a brief summary of results and some further directions.

Previous Studies on Self-employment in Korea

The studies focused on the self-employment started by Ryoo and Choi (1999) with Economically Active Population Survey of the Korea National Statistical Office. Using the cross data of January 1985–October 1998, they showed descriptive statistics of the self employed by demographic characteristics (age, educational level, work hours, industry and occupation) and worker stability in the study of 1999. Work stability of self employment which is measured by the changes of work status within one month was stable and showed similar proportion with regular wage workers, but the proportion of entering into the self-employment was higher temporary workers than regular wage workers. In the study of 2000, Ryoo and Choi used same data but created data as panel to analyze stability of male self-employment. They found that the substantial proportion of the labor flow into the self-employment comes from the non-employment, but such flows were largely confined to the relatively small group of marginal workers. They showed the expected duration of self-employment has changed from downward trend to upward in 1990. They concluded that the stability of self-employment has been increased since self-employment sector provided more opportunity to the highly educated and skilled workers than wage-employment sector.

Kim (2001) used 1999 Economically Active Population Survey, and included female self-employers for comparing the gender differences. The empirical analysis found that self=-employment rate was higher for males than females since entry was larger but exist from self-employment was smaller in males than females. And a large part of gender gap in the rate of self-employment was due to the differences of demographic characteristics such as head of family, marital status and age.

Kim (2000) investigated the factors related to the choice of self-employment, and found that previous work experience in self-employment, employment status of the father, age, marital status. Industry and occupation had significant effect on the choice. Keum and Cho (2000) analyzed the choice of self-employment and they divided self-employed into two groups of new entry group into the labor market and voluntarily transferred group from wage earners to reflect the diversity of self-employed. Cheon (2003) examined the determinants of being self-employed using both individual characteristics and economic environment by including financial constraint and regional unemployment rate. Regional unemployment rate was revealed as a significant factor to the choice of self-employment with human capital variables.

Ryoo (2004) investigated the reason of the increasing trend of male self-employment since 1990, after a long period of decline. Using 1998 to 2001 KLIPS, determinants of being self-employment and earnings of self-employment were estimated. Those who had higher educational level were more likely to be a self-employer with employee. Also, self-employers who had higher wages in previous workplace were higher probability to have higher level of earnings.

Choi, Jeong and Jung (2005) analyzed the distribution and determinants of income of the elf-employed compared with that of wage-earners. They found that the income of self-employed was larger than that of wage earners and self-employed tended to have larger dispersion as well as larger heterogeneity. In another study of Choi and Jung (2007), they investigated gender differences in earning by comparing self-employer and wage earner groups. Gender differences in earnings were larger for the self-employed than for the wage earners due to the unobserved non-productivity factors including discrimination.

Kim and Kim (2001) used two data sets of Korean Household Panel Study and 1998 KLIPS and found that there was no difference in the job satisfaction between the self-employers and wage earners. Their findings were contrasted results with previous studies on other countries. The reason can be explained by the economic crisis of the Korea. On the other hand, Yee and Choi (2007) examined the factors related to the labor market outcomes of the self-employed in Korea and Japan. They found that job satisfactions of the self-employers were relatively higher than those of wage earners in both countries. Related to the positive income, tenure of the self-employed had positive effect on the self-employment in Korea while previous occupation had positive effect on the self-employment in Japan. Also human capital variables were the determinants of the magnitude of the income.

Sung(2002) examined the work time flexibility of self-employment focused on female workers. Presence of the young children which is known as most critical factor to the women's labor supply had negative effect on the choice of labor force participation but not on the choice of self-employment. However, female self-employers without employees and unpaid family workers were less likely to exit labor market compared with female wage earners. Therefore, self-employment could be a good alternative to evade women's career interruption and enhance the human resources.

Using 4th wave of KLIPS, Sung and Ahn (2002) investigated the economic performance and evaluation on the self-employment. Factors of educational level, previous work experience and mid-long term objectives of self-employers had significant effect on the earnings of self-employment. Mid-long term objectives as well as size of the business had significant effect on the amount of sales. Also, significant determinants of subjective evaluation on the economic performance of self-employment were economic performance, motivation of starting up the business and mid-long term objectives. The results implied the importance of consultants that support self-employers to set the mid-long term objectives of the business in the policy approach.

Ahn (2000) analyzed the duration of unemployment using competing risks model, and found that self-employers had lower expected duration of unemployment than wage earners in both male and female job seekers.

Ahn and Sung (2003) applied the proportional hazard model to analyze the determinants of the duration of self-employment using the 4th wave of KLIPS. They found that the level of education, economic performances, annual sales and earnings had positive effect, but hardship at the start of self-employment had a negative effect on continuing self-employment. Training before starting business showed a positive effect on continuing the self-employment, especially training provided by public sector not by private institutions.

Sung and Ahn (2004) examined whether individuals took the self-employment as bride job between no work and wage work in the process of entering into or exiting labor market using 1st wave to 5th wave of KLIPS. Those who were older, females, less educated, and in the bad health status were more likely to choose self-employment as a bridge job in the process of exit the labor market, and that they were less likely to choose it as a bridge job in the process of entry into the labor market. Business cycle had a negative effect on its role of bridge job in the process of exit but not in the process of entry. They concluded that labor market policy should consider the self-employment as a better alternative than wage workers for the aged individuals.

Sung and Ahn (2007) included the risk tolerance variable to explain the choice of self-employment. KLIPS 7th wave has 5 experimental questionnaires to measure risk tolerance. In the analysis of self-employment choice, risk tolerance index created by combining 5 risk tolerance variables had statistically significant effect while individual risk tolerance variables had no significant effect. In the choice model of self-employers with employees and wage earners, both individual risk tolerance variable and risk tolerance index variable had statistically significant effect. Males and females who were taking more risks had higher probability of being self employed or self-employed with employees. Therefore, the level of risk tolerance is an importance factor in the decision of self-employment.

Jun and Choi (2006) examined the factors related to the proportion of self-employment in the macro level. They analyzed the effect of national income level, unemployment, and tax burden on the proportion of self-employment across the OECD countries. They found positive relationship of unemployment level, and negative relationship of tax burden with the proportion of self-employment. Individuals tended to choose the wage workers when the welfare system for the unemployed or the aged developed based on the tax revenue.

Risk-taking Measures in the KLIPS

Our data are drawn from the Korea Labor and Income Panel Study (KLIPS).[1] The 7th wave in 2004 includes information on risk-taking behavior,[2] by asking five questions as follows:

> "You helped your friend for one day during the last weekend. He wanted to pay for your effort. He says you can choose either cash (100 dollars) or a lotto, of which probability and payment is given as follows. Which one do you prefer? Cash or lotto, or indifferent? "

	Probability of being paid	amount
(Risk1)	50%	$150
	50%	$ 50
(Risk2)	50%	$200
(Risk3)	20%	$500
(RiskL)	40%	$200
(RiskH)	60%	$200

[1] See http://www.kli.re.kr/ for more information on the KLIPS.

[2] The 10th wave of the KLIPS in 2007 also have the same information even though the proportions of taking risky assets are much lower, suggesting that the lower employment growth rate and restructuring of self-employment made respondents more pessimistic and take risk less.

Out of 11,661 respondents in the survey, 11,577 answer all of the five questions. As seen in the Table 1, 9.5 percent (11.4 percent when those who are indifferent are counted) take risky asset of the lotto. The proportion of those who take risk is higher for male (14.1 percent) than for female (5.1 percent), for singles (never married) than for the married with spouses present (married) or without spouses (ever married), and the medium educated than for the less educated or the more educated. It increases up to age group of 35~44 and then decreases thereafter. Figure 2 presents the proportion of risk-taking behavior by the age groups.

Table 1. Risk-taking by Demographic Characteristics (Risk2)

	Observation	Prefer		
		Cash	Indifferent	Lotto
All sample	11,577	88.6	1.9	9.5
Gender				
Male	5,586	83.4	2.5	14.1
Female	5,991	93.5	1.4	5.1
Marital Status				
Never Married	3,092	83.7	2.2	14.1
Married	7,259	89.7	1.7	8.6
Ever Married	1,226	95.2	1.9	2.9
Education Level				
Less than High School	4,207	93.7	1.6	4.7
High school graduate	4,018	86.2	1.7	12.1
Community college graduate	1,477	84.3	2.3	13.4
College graduate	1,665	85.3	2.7	12.0
Graduate	210	91.0	1.9	7.1
Age Group				
15~24	1,835	85.9	1.8	12.3
25~34	2,523	84.3	2.1	13.6
35~44	2,385	84.5	1.9	13.6
45~54	1,996	91.0	2.1	6.9
55~64	1,375	95.1	1.2	3.7
65 and over	1,463	97.0	2.1	1.0

Figure 2. The Proportion of Those who Take Risk by the Age group

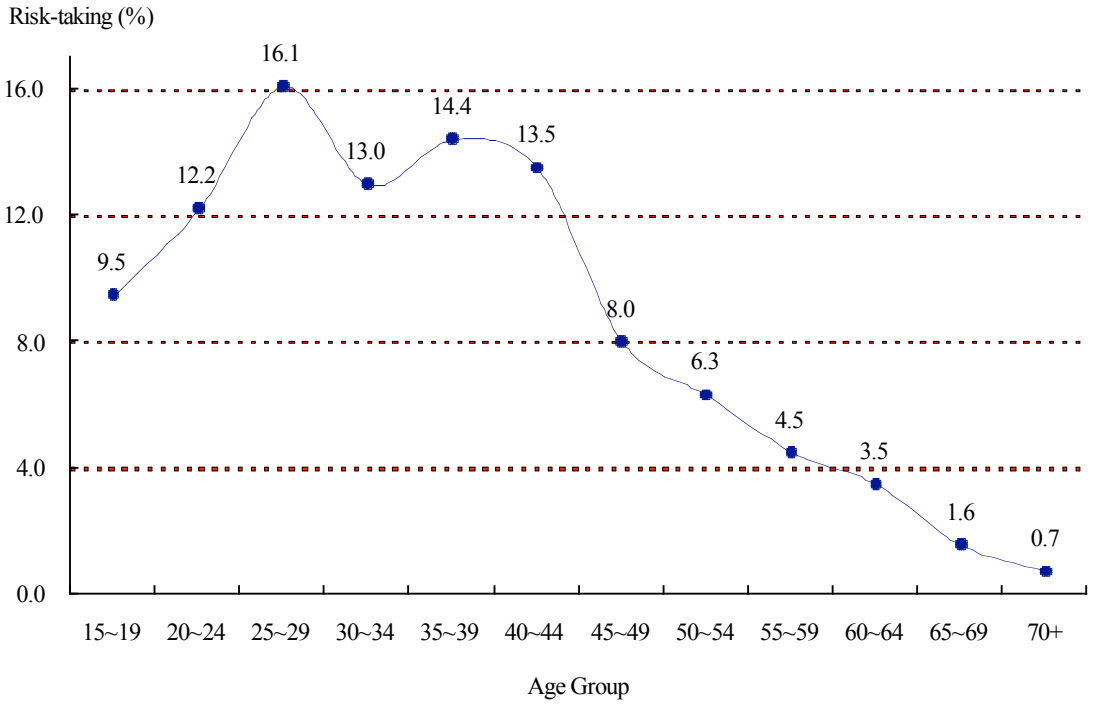


Table 2 presents estimate of the ordered logit model of risk-taking

Y = 1 if choose lotto
0.5 if indifferent
0 if choose cash.

As seen in the table, females are less likely to choose risk asset than their counterparts. When the model is separately estimated by gender, age and education level have significant effects only on males' decisions to take risk while financial status of their households have them only on females'.

Table 2. Estimates of Ordered Logit Model of Risk-taking

	All			Male			Female		
Intercept Lotts	-4.7107	(.4794)	***	-6.2583	(.6657)	***	-3.8602	(.7920)	***
Intercept Indifferent	-4.4876	(.4791)	***	-6.0522	(.6653)	***	-3.5930	(.7915)	***
Female	-.7931	(.0913)	***						
Spouse	-.3077	(.1220)	**	-.2117	(.3271)		.0138	(.3075)	
Neither Head nor Spouse	.2643	(.1347)	**	.3109	(.1607)	*	.2269	(.2799)	
Age/10	.8772	(.1563)	***	1.3671	(.1979)	***	-.0398	(.2619)	
Square of Age/10	-.0012	(.0002)	***	-.0018	(.0002)	***	-.0001	(.0003)	
Highest grade completed	.1483	(.0492)	***	.2403	(.0755)	***	.1340	(.0715)	*
Square of grade	-.0055	(.0020)	***	-.0092	(.0030)	***	-.0046	(.0031)	
Never Married	-.0260	(.1412)		.0284	(.1655)		-.0122	(.3128)	
Ever married	-.0385	(.1606)		-.0761	(.2188)		.1077	(.3600)	
Health: Excellent	1.4973	(.1205)	***	1.2659	(.1505)	***	1.9576	(.1992)	***
Good	.4304	(.0795)	***	.4099	(.0979)	***	.4500	(.1393)	***

Bad	.1356	(.1374)		.2604	(.1695)		-.0992	(.2417)	
Worse	.3369	(.2904)		-.4194	(.4568)		1.2825	(.3891)	***
Have Financial Asset	.1711	(.0714)	**	.1356	(.0865)		.2638	(.1297)	**
Haver Real estates	.0387	(.0785)		.0555	(.0959)		.0384	(.1393)	
Have debts	.1614	(.0653)	***	.1184	(.0796)		.2536	(.1169)	**
No. of observations	11,580			5,589			5,991		
-2 log likelihood	8401.23			5349.74			2952.30		

Note: Risk 2 is considered.
***, **, and * stand for the significance level of 0.01, 0.05, and 0.10, respectively.
The Numbers in parentheses are standard errors.
Estimates for the existence of income by sources and regional dummies are not reported.

Are Risk-takers likely to be Their Own Bosses? Yes.

A. The Risk-Taking Indicator

In order to the effect of risk-taking behavior on the choice of work type, we first construct a measure so-called the Risk-Taking Indicator (RTI) from answers to the three questions, i.e., Risk1, Risk2, and Risk3. The RTI is defined as

$$RTI = \alpha_1 Risk1+\alpha_2 Risk2+\alpha_3 Risk3$$

where Riski = 0 if cash is preferred
0.5 if they are indifferent
1 if lotto is preferred

and α_i's are weights related to corresponding risks, i=1, 2, and 3, defined by

$$\alpha_i = (1/p_i)/\Sigma(1/p_j), \qquad \Sigma\, \alpha_i = 1$$

where p_i is the proportion of the sample taking corresponding risk, i.e., the mean value of Riski for all sample, which means that the choice of more risky asset has higher weight. The value of RTI ranges from zero to one by construction.

The Table 3 presents the descriptive statistics of the RTI by demographic groups. From the table, it can be found that male is much more likely to take risk than female and that singles have higher RTI than the married both for male and female. Also we can find that community college graduates have highest RTI among various education levels both for male and female. The Figure 3 showing RTI by age groups tells that, over the all age groups, male has higher RTI than female and that there are two peaks at age groups of 25~29 and 40~44 for male and one peak at age group 25~29 for female.

The Figure 4 presents the distribution of RTI by gender, which says that about 83 percent of the sample (90 percent of female sample and 77 percent of male sample) do not take any risks and that about 8 percent (=100-92 percent) of the sample (13 percent of the male sample and 4 percent of female sample) have the value of RTI greater than 0.5. The Figure 5 presents the RTI by the highest grade completed, which shows a quadratic relationships with a peak around 12~14.

Table 3. Risk-taking Indicator by Demographic Characteristics

	All	Male	Female

	Obs.	Mean	S.d.	Obs.	Mean	S.d.	Obs.	Mean	S.d.
All Sample	11,579	0.095	(0.245)	5,588	0.142	(0.296)	5,991	0.052	(0.174)
Marital Status									
Never Married	3,093	0.139	(0.287)	1,717	0.183	(0.326)	1,376	0.084	(0.216)
Married	7,260	0.086	(0.235)	3,607	0.126	(0.282)	3,653	0.047	(0.168)
Ever Married	1,226	0.037	(0.150)	264	0.088	(0.235)	962	0.023	(0.113)
Education Level									
Less than High School	4,208	0.053	(0.188)	1,660	0.089	(0.241)	2,548	0.030	(0.138)
High school graduate	4,019	0.115	(0.267)	2,054	0.162	(0.312)	1,965	0.067	(0.199)
Community college	1,477	0.128	(0.274)	725	0.178	(0.319)	752	0.079	(0.211)
College graduate	1,665	0.124	(0.274)	990	0.170	(0.322)	675	0.058	(0.164)
Graduate	210	0.079	(0.221)	159	0.087	(0.233)	51	0.052	(0.180)
Age									
15~24	1,836	0.122	(0.273)	889	0.163	(0.314)	947	0.083	(0.221)
25~34	2,523	0.131	(0.274)	1,242	0.187	(0.324)	1,281	0.077	(0.200)
35~44	2,385	0.126	(0.280)	1,213	0.193	(0.335)	1,172	0.057	(0.183)
45~54	1,996	0.079	(0.231)	987	0.123	(0.283)	1,009	0.036	(0.153)
55~64	1,375	0.043	(0.169)	679	0.066	(0.207)	696	0.020	(0.116)
65 and over	1,464	0.020	(0.104)	578	0.025	(0.117)	886	0.017	(0.093)

Figure 3. Risk-taking Indicator by Gender and Age Groups

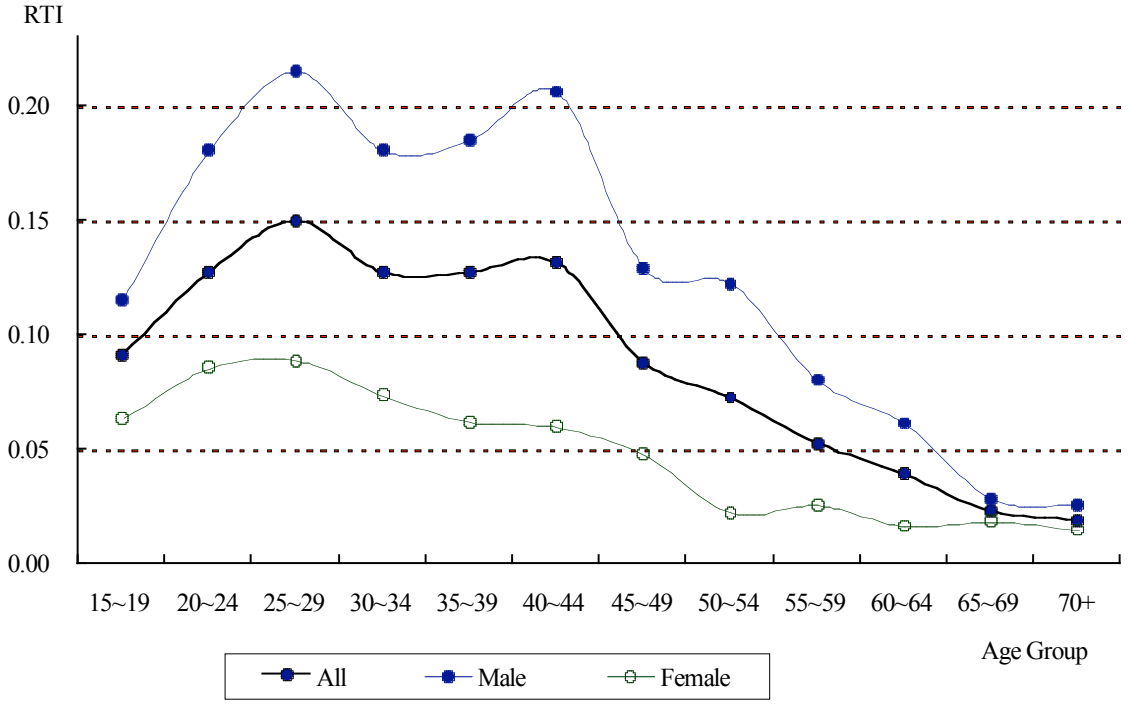


Figure 4. The Distribution of Risk-taking Indicator by Gender

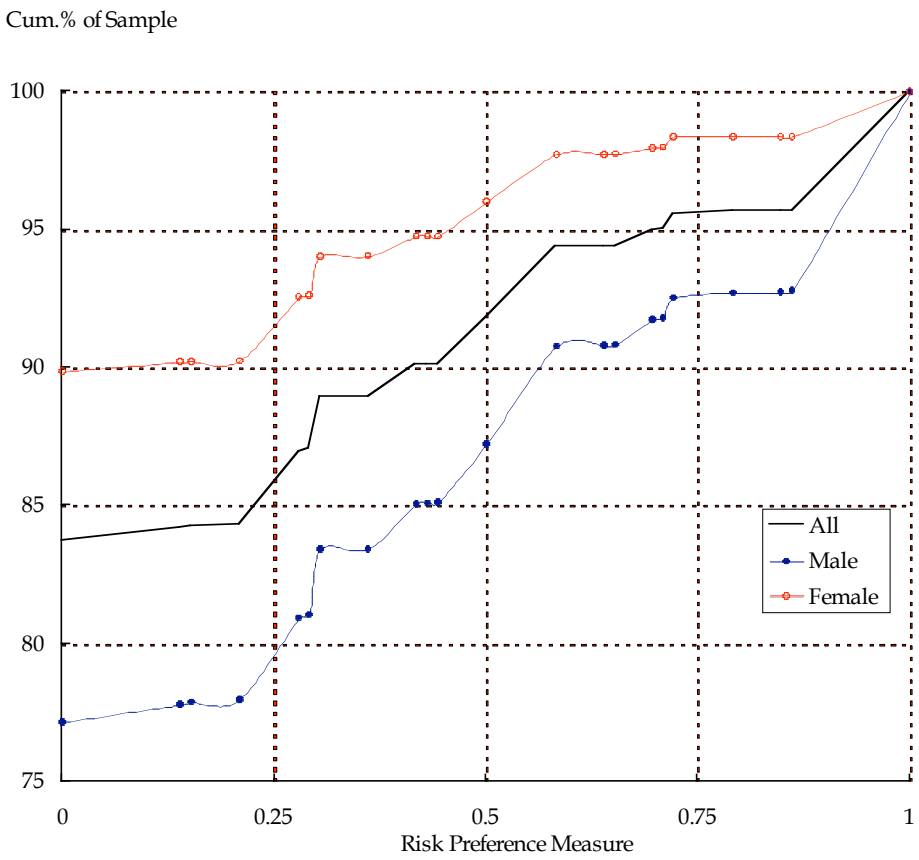
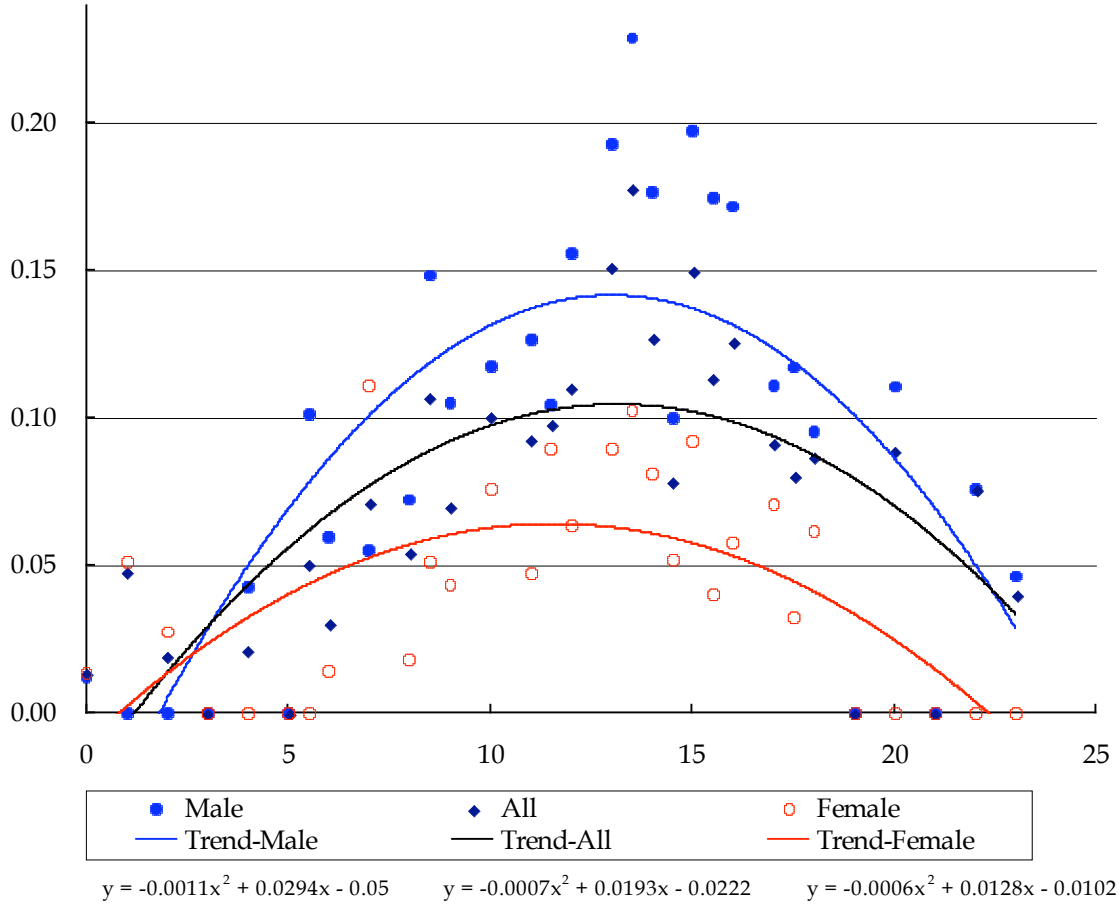


Figure 5. The Risk-taking Indicator and Highest Grade Completed



B. The Risk-Taking Indicator and the Employment Status

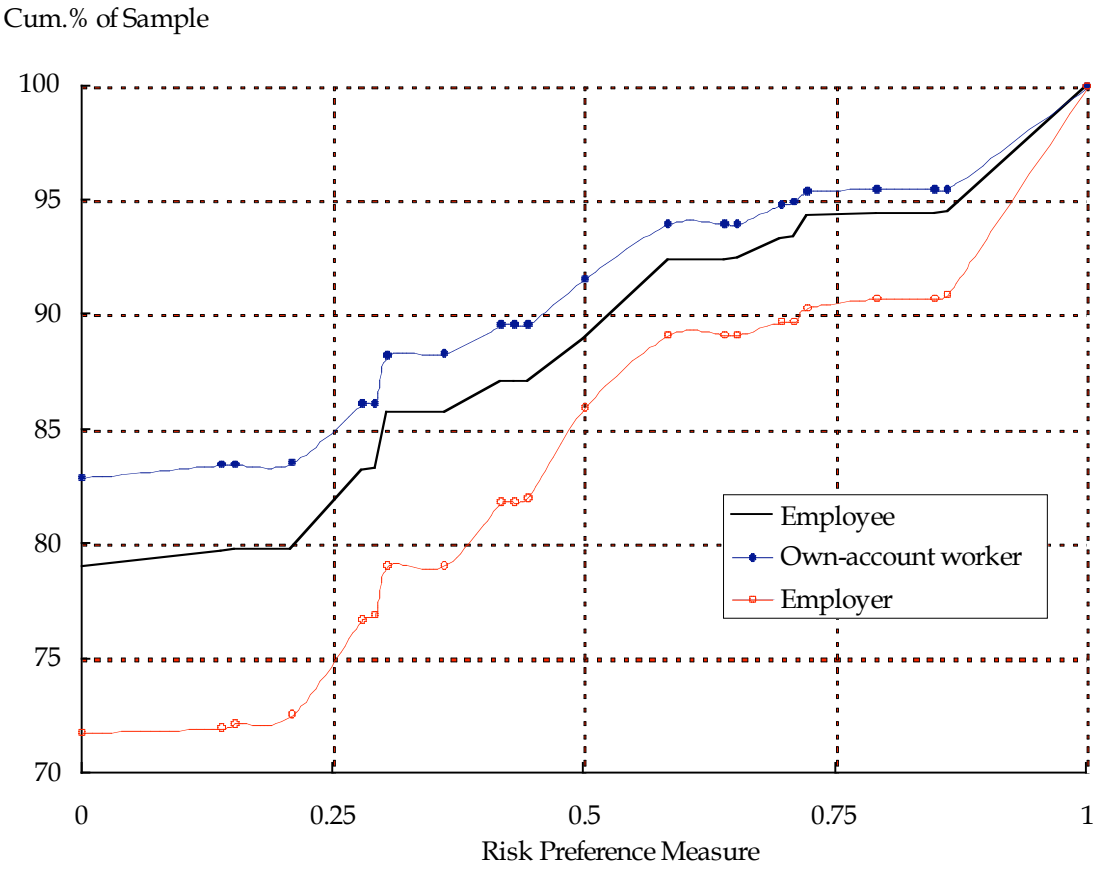
The Table 4 presents the mean and the standard deviation of the risk-taking indicator by the employment status and gender. First of all, it can be found that there is no difference in the RTI between the employed and the self-employed while the self-employed with employees (employers) have higher RTI than the self-employed without employee (own account workers) and the employed of any types. For male, the employed have higher mean of the RTI than the self-employed while its value is higher for the employer than for the employed and lower for the own account workers. For female, the employed and the self-employed have almost same mean of the RTI while the employer shows highest value of the RTI compared with other employment statue.

The Figure 6 shows the distribution of the RTI by the employment status, which says that about 79 percent of the employed do not take any risks while it is 72 percent for the employers and 83 percent for own account workers and that about 11 percent of the employed have the value of RTI greater than 0.5 while it is about 14 percent for the employers and 8 percent for own account workers.

Table 4. Descriptive Statistics of the RTI by the Employment Status

	All Sample			Male			Female		
	Obs.	Mean	S.D.	Obs.	Mean	S.D.	Obs.	Mean	S.D.
The Employed	4,230	0.124	(0.273)	2,548	0.162	(0.311)	1,682	0.065	(0.189)
Permanent Workers	3,288	0.132	(0.282)	2,060	0.170	(0.318)	1,228	0.068	(0.192)
Temporary Workers	445	0.094	(0.237)	163	0.148	(0.296)	282	0.063	(0.189)
Daily Workers	497	0.094	(0.236)	325	0.121	(0.264)	172	0.043	(0.159)
The Self-Employed	1,555	0.124	(0.276)	1,161	0.144	(0.297)	394	0.066	(0.191)
Employer	507	0.175	(0.319)	394	0.192	(0.335)	113	0.115	(0.246)
Own Account Workers	1,048	0.100	(0.249)	767	0.119	(0.272)	281	0.046	(0.161)
Unpaid Family Workers	467	0.053	(0.195)	46	0.214	(0.378)	421	0.035	(0.155)
Not Employed	5,327	0.068	(0.209)	1,833	0.110	(0.267)	3,494	0.046	(0.166)
Note: See the text for constructing the RTI.									

Figure 6. The Distribution of Risk-taking Indicator by the Employment Status



C. The Effect of the Risk-Taking Indicator on the choice of the Employment Status

The Table 5 and 6 present estimates of the multinomial logit model of the choice of the employment status, i.e., the employed, the employer, and own account workers[3]:

Yi = 0 if employed (reference group)
1 if self-employed without employees
2 if self-employed with employees.

From the table, several facts are found. First, the risk-taking indicator has a statistically significant positive effect on choosing self-employment with employees than the employed (reference group) for both male and female while a positive but statistically insignificant effect on choosing self-employment without employees.

Second, age has a positive but a quadratic effect on choosing self-employment with and without

Table 5. Estimates of the Multinomial Logit Model of the Choice of the Work Status

	Employer			Own Account Worker		
Intercept	-9.3242	(1.0503)	***	-5.1752	(.7219)	***
RTI	0.6553	(.1625)	***	0.0584	(.1515)	
Age	0.2422	(.0412)	***	0.1509	(.0267)	***
Age Squared	-0.00211	(.0004)	***	-0.00108	(.0003)	***
Highest grade completed	0.0751	(.0169)	***	-0.0615	(.0126)	***
Never married male	-0.8037	(.3059)	***	-0.8481	(.2313)	***
Ever married male	-0.4427	(.3339)		-0.1048	(.2047)	
Never married female	-1.4426	(.4548)	***	-0.7888	(.2889)	***
Ever married female	-0.2198	(.2533)		-0.4877	(.1602)	***
Marry female	-0.0264	(.3350)		-0.6358	(.2703)	**
Spouse	-0.5852	(.3384)	*	-0.1941	(.2693)	
Neither head nor spouse	0.0364	(.2588)		0.18	(.1914)	
Health: Excellent	-0.0323	(.2723)		-0.4953	(.2531)	*
Good	0.0689	(.1134)		-0.2146	(.0871)	**
Bad	-0.128	(.2114)		0.1302	(.1303)	
Worse	-0.6929	(1.1230)		0.4172	(.4768)	
Home Ownership						
Rent with installment	-0.0526	(.2146)		0.4232	(.1729)	**
Monthly rent	-0.0642	(.3351)		0.8389	(.2517)	***
Others	0.1116	(.0930)		0.1553	(.0771)	**
Have Financial Assets	-0.037	(.1144)		-0.1438	(.0874)	*
Have Real estates	0.4329	(.1206)	***	0.5319	(.0929)	***
Have debts	0.4148	(.1073)	***	0.2477	(.0827)	***
The sample size	5,785					
-2 log Likelihood	7,432.89					

[3] Most studies have explored the split between self-employment and paid employment while the division within self-employment between own account workers and employer status has been adopted recently (see Earle and Sakova (2000)). In Korea, the latter reflects the reality in Korea more appropriately in the sense that self-employment with employees is an alternative for entrepreneurship while self-employment without employees is more likely to be a last resort for survival.

Note: See Note in the Table 2.

employees for male and female. The peak age of choosing self-employment is at 55 for male employers, 59 for female employers, 66 and 92 for male and female own account workers.

Third, education has a significant positive effect on choosing self-employment with employees for both male and female while a significant negative effect on choosing self-employment without employees for male but not for female.

Fourth, the never married are less likely to be their own bosses compared with married for both male and female and to be own account workers for male but not for female.

Fifth, the health status plays a minor role in the choice of the employment status, i.e., better health has a negative effect on being own account workers for male.

Finally, the existence of debts and real estates asset have significant positive effects on being self-employed for both male and female while the existence of financial assets has a significant negative effect on choosing own account work for male but not female.

It can be concluded that, when other determinants are controlled, risk-taking behavior affects to be one's own boss rather than to be employed and therefore the RTI can be interpreted as an indicator of "entrepreneurship."

Table 6. Estimates of the Multinomial Logit Model of the Choice of the Work Status - by Gender

	Male		Female	
	Employer	Own Account Worker	Employer	Own Account Worker
Intercept	-9.2278 (1.2349) ***	-4.8876 (.8828) ***	-10.6732 (2.1422) ***	-6.6586 (1.3442) ***
RTI	0.5556 (.1762) ***	0.0472 (.1644)	1.428 (.4357) ***	0.2407 (.4251)
Age	0.2528 (.0486) ***	0.1619 (.0329) ***	0.2711 (.0847) ***	0.127 (.0484) ***
Age Squared	-.00226 (.0005) ***	-.00122 (.0003) ***	-.00228 (.0009) **	-.00069 (.0005)
Highest grade completed	0.0594 (.0194) ***	-0.0889 (.0152) ***	0.1062 (.0372) ***	0.0046 (.0246)
Never married	-0.9488 (.3365) ***	-1.1133 (.2577) ***	-1.2507 (.6223) **	0.1764 (.4812)
Ever married	-0.4829 (.3357)	-0.2191 (.2075)	-0.3069 (.5296)	0.3236 (.4106)
Marry female				
Spouse	-0.531 (.5365)	-0.4102 (.4501)	-0.7572 (.4901)	-0.2532 (.3971)
Neither head nor spouse	0.1731 (.3047)	0.5203 (.2313) **	-0.1778 (.5403)	-0.543 (.3525)
Health: Excellent	0.0253 (.2950)	-0.6245 (.2928) **	-0.4912 (.7865)	0.0342 (.5052)
Good	0.0817 (.1316)	-0.2683 (.1031) ***	0.0785 (.2311)	-0.0446 (.1684)
Bad	-0.1446 (.2586)	0.0454 (.1681)	-0.0848 (.3840)	0.3739 (.2208) *
Worse	-0.6549 (1.1399)	0.1636 (.5731)	-10.7169 (495)	1.0513 (.8650)
Home Ownership				
Rent with installment	-0.1932 (.2432)	0.2386 (.1978)	0.3214 (.4722)	0.9272 (.3926) **
Monthly rent	-0.1657 (.3873)	0.789 (.2899) ***	0.341 (.7078)	1.1356 (.5732) **
Others	0.0853 (.1045)	0.099 (.0873)	0.1906 (.2115)	0.3256 (.1828) *
Have Financial Assets	-0.0401 (.1321)	-0.2533 (.1044) **	-0.0549 (.2383)	0.1911 (.1667)
Have Real estates	0.5298 (.1379) ***	0.501 (.1127) ***	0.0795 (.2657)	0.5669 (.1727) ***
Have debts	0.3623 (.1229) ***	0.222 (.0988) **	0.5303 (.2302) **	0.3321 (.1572) **
The Sample Size	3,709		2,076	
-2 log Likelihood	5,237.12		2,080.53	

Note: See Note in the previous table.

Is Risk-taking Behavior Paid? Well…

A. Higher Monthly Earnings for Self-employment[4]

The Table 7 presents the average monthly earnings for various employment status and gender. From the table, it can be found that self-employment with employees and without employees are paid more than the employed for both male and female, which suggests that entrepreneurship pays both for male and for female.

Table 7. The Mean of Monthly Earnings by the Employment status

(unit: 10 thousands won)

	All Sample			Male			Female		
	Obs.	Mean	S.D	Obs.	Mean	S.D	Obs.	Mean	S.D
All Workers	5,348	178.4	(192.5)	3,392	211.1	(223.9)	1,956	121.7	(97.0)
The Employed	4,162	158.1	(99.9)	2,516	187.3	(105.0)	1,646	113.4	(71.2)
Permanent Workers	3,263	175.1	(102.7)	2,043	203.1	(106.9)	1,220	128.0	(74.3)
Temporary Workers	429	85.2	(50.1)	157	104.6	(60.4)	272	73.9	(38.9)
Daily Workers	470	106.5	(58.3)	316	125.7	(57.7)	154	67.0	(35.0)
Own Account Workers	752	196.8	(368.0)	537	228.0	(426.7)	215	119.1	(103.4)
Employer	434	341.6	(309.4)	339	361.1	(323.5)	95	272.3	(241.5)

Note: The sample of workers, excluding unpaid family workers, who do not work in agricultural sector and have positive monthly earnings.

B. Does Risk-taking Behavior Pay? Yes, to Female Workers

The Table 8 presents estimates of a regression model of worker's monthly earnings. First of all, when usual determinants of earning function are controlled, the risk-taking indicator has a significant positive effect on earnings for female workers but not for male workers. The most risk-takers have 13 percent higher earnings than the least risk-taker (take no risk at all).

From the table some more important facts can be found. First, tenure increases earnings by 2 percent per year, which is higher for female than male, while male's labor market experience does it by 3 percent per year and one more year's education increases earnings about 6 percent. Second, the health status has significant positive effect on earnings, especially for male. Finally, for both male and female, the never married and the ever married earn significantly less than the married, of which difference is greater for male (30 percent and 14 percent) than for female (13 percent and 7 percent).

C. Does Risk-taking Behavior Pay to Self-employment? No.

The Table 9 presents estimates of a regression model of worker's monthly earnings by the employment status. First of all, risk-taking behavior pays for the employed rather than for the self-employed, which is contrary to the expectations. It suggests that entrepreneurship does not pay in pecuniary form or that the risk-taking indicator might not be a measure of entrepreneurship.

Tenure at the current job, in other words, the years running own business, does not have a significant effect on own account worker's earnings while it has a significant positive effect on employer's

[4] Hamilton(2000) discusses on measuring earnings of self-employment compared with those of the employed. In this study, 'monthly earnings' reported by respondents is used for analysis.

earnings, 2 percent per year, which is smaller than for the employed (2.4 percent). Experience, which represents labor market experience before current job, does not have any significant effect on earnings of the self-employed while it has a significant positive effect on earnings of the employed. The education has a significant positive effect on earnings of the self-employed but the size of the effect is lower(4.6 percent per year for own account workers and 2.9 percent per year for employers), compared with the employed (5.3 percent per year).

The Tables 10 and 11 present estimate of a regression model of worker's monthly earnings by the employment status for male and female. It can be found that risk-taking behavior pays significantly higher only to employed female.

Table 8. Estimates of Earnings Functions- by Gender

	All Sample		Male		Female	
Intercept	4.2465	(.0709)***	4.2715	(.0857)***	4.0257	(.1095)***
RTI	0.0449	(.0255)*	0.0213	(.0284)	0.1295	(.0598)**
Part-time work	-0.5000	(.0330)***	-0.5775	(.0565)***	-0.4549	(.0408)***
Nonstandard work	-0.2863	(.0201)***	-0.2673	(.0284)***	-0.2926	(.0287)***
Tenure	0.0209	(.0013)***	0.0198	(.0015)***	0.0251	(.0025)***
Experience (male)	0.0311	(.0049)***	0.0299	(.0050)***		
Square of Experience (male)	-0.0010	(.0002)***	-0.0010	(.0002)***		
Experience (female)	-0.0126	(.0056)**			-0.0094	(.0057)*
Square of Experience (female)	0.0005	(.0002)**			0.0004	(.0002)*
Highest grade completed	0.0576	(.0029)***	0.0589	(.0036)***	0.0571	(.0049)***
Health: Excellent	0.0408	(.0357)	0.0921	(.0431)**	-0.0764	(.0641)
Good	0.0196	(.0158)	0.0510	(.0201)**	-0.0327	(.0255)
Bad	-0.2025	(.0292)***	-0.2366	(.0386)***	-0.1551	(.0449)***
Worse	-0.4570	(.1161)***	-0.3333	(.1415)**	-0.7026	(.2027)***
Firm Size: no employee	-0.1129	(.0322)***	-0.0855	(.0386)**	-0.2024	(.0592)***
1~4	-0.0115	(.0330)	-0.0035	(.0406)	-0.0555	(.0583)
5~9	-0.0389	(.0347)	-0.0321	(.0426)	-0.0806	(.0610)
10~49	-0.0418	(.0319)	-0.0169	(.0388)	-0.1051	(.0566)*
50~99	0.0040	(.0387)	-0.0031	(.0467)	0.0056	(.0697)
300~499	0.0871	(.0523)*	0.0603	(.0640)	0.1194	(.0912)
500+	0.1290	(.0358)***	0.1419	(.0430)***	0.0696	(.0655)
Never Married Male	-0.2941	(.0256)***	-0.3047	(.0267)***		
Ever Married Male	-0.1453	(.0454)***	-0.1442	(.0457)***		
Never Married Female	-0.3202	(.0416)***			-0.1314	(.0368)***
Married Female	-0.1614	(.0475)***			-0.0669	(.0375)*
Ever Married Female	-0.1983	(.0598)***				
The Sample Size	5,348		3,392		1,956	
Adjusted R-square	0.4709		0.3762		0.4017	
F-Statistics	79.02***		37.51***		25.77***	

Note: The sample is workers who have positive earnings. Experience is defined as (Age)-(Highest grade completed)-6-(Tenure at current job). ***, **, and * stand for the significance level of 0.01, 0.05, and 0.10, respectively. The numbers in parentheses are standard errors. Estimates of dummy variables for industry and location of workplaces are not reported.

Table 9. Estimates of Earnings Functions- by the Employment Status

	The Employed		Own Account Worker		Employer	
Intercept	4.2935	(.0626)***	4.7312	(.3000)***	6.1618	(.7261)***
RTI	0.0546	(.0231)**	0.0428	(.1005)	-0.0723	(.1033)
Part-time work	-0.4763	(.0262)***				
Nonstandard work	-0.2454	(.0171)***				
Tenure	0.0239	(.0012)***	0.0012	(.0040)	0.0196	(.0059)***
Experience (male)	0.0277	(.0043)***	0.0152	(.0276)	0.0223	(.0256)
Square of Experience (male)	-0.0009	(.0001)***	-0.0008	(.0008)	-0.0007	(.0008)
Experience (female)	-0.0079	(.0047)*	-0.0097	(.0365)	0.0556	(.0479)
Square of Experience (female)	0.0001	(.0002)	0.0005	(.0011)	-0.0010	(.0015)
Highest grade completed	0.0528	(.0026)***	0.0456	(.0103)***	0.0289	(.0145)**
Health: Excellent	0.0142	(.0307)	0.0521	(.1807)	0.2973	(.1750)*
Good	-0.0094	(.0141)	0.0255	(.0597)	0.2411	(.0740)***
Bad	-0.1044	(.0277)***	-0.3936	(.0875)***	-0.2382	(.1403)*
Worse	-0.3551	(.1122)***	-0.8405	(.3169)***	0.1257	(.6550)
Firm Size: no employee	-0.0727	(.0305)**				
1~4	-0.2033	(.0281)***			-1.2839	(.6576)*
5~9	-0.1283	(.0281)***			-1.0338	(.6629)
10~49	-0.0836	(.0254)***			-0.8206	(.6661)
50~99	-0.0047	(.0306)			-0.9764	(.8079)
300~499	0.0925	(.0412)**				
500+	0.1212	(.0284)***				
Never Married Male	-0.2319	(.0219)***	-0.5001	(.1311)***	-0.0257	(.1723)
Ever Married Male	-0.0869	(.0428)**	-0.3131	(.1367)**	0.0161	(.2178)
Never Married Female	-0.2776	(.0346)***	-0.3141	(.3152)	-0.6765	(.4406)
Married Female	-0.1391	(.0391)***	-0.4367	(.3643)	-0.5421	(.4171)
Ever Married Female	-0.0805	(.0518)	-0.6907	(.3764)*	-0.9191	(.4524)**
The Sample Size	4,162		752		434	
Adjusted R-square	0.6025		0.2663		0.2334	
F-Statistics	106.10***		6.56***		3.54***	

Note: See Note in the Table 8.

Table 10. Estimates of Earnings Functions- by the Employment Status: Male Workers

	The Employed		Own Account Worker		Employer	
Intercept	4.2762	(.0753)***	5.0439	(.3256)***	6.1932	(.7548)***
RTI	0.0395	(.0255)	0.0769	(.1039)	-0.1470	(.1113)
Part-time work	-0.5461	(.0440)***				
Nonstandard work	-0.2195	(.0240)***				
Tenure	0.0225	(.0014)***	-0.0026	(.0046)	0.0175	(.0067)***
Experience	0.0272	(.0043)***	0.0174	(.0268)	0.0262	(.0263)
Square of Experience	-0.0009	(.0001)***	-0.0009	(.0008)	-0.0009	(.0008)
Highest grade completed	0.0572	(.0033)***	0.0354	(.0122)***	0.0230	(.0171)
Health: Excellent	0.0392	(.0370)	0.1511	(.2021)	0.3342	(.1881)*
Good	0.0059	(.0181)	0.1418	(.0675)**	0.2495	(.0857)***
Bad	-0.1471	(.0368)***	-0.4047	(.1066)***	-0.0870	(.1762)
Worse	-0.1551	(.1339)	-1.0191	(.4006)**	0.0093	(.6698)

Firm Size: no employee	-0.0852	(.0376)**				
1~4	-0.2354	(.0356)***			-1.2580	(.6683)*
5~9	-0.1462	(.0343)***			-1.0628	(.6740)
10~49	-0.0715	(.0304)**			-0.7945	(.6777)
50~99	-0.0173	(.0362)			-0.9018	(.8225)
300~499	0.0641	(.0494)				
500+	0.1295	(.0334)***				
Never Married	-0.2368	(.0225)***	-0.5460	(.1289)***	-0.0426	(.1786)
Ever Married	-0.0782	(.0422)*	-0.3061	(.1336)**	0.0286	(.2250)
The Sample Size	2,516		537		339	
Adjusted R-square	0.5297		0.2256		0.1658	
F-Statistics	52.49***		4.63***		2.49***	
Note: See Note in the Table 8.						

Table 11. Estimates of Earnings Functions- by the Employment Status: Female Workers

	The Employed		Own Account Worker		Employer	
Intercept	4.1264	(.0968)***	4.0281	(.4640)***	3.8737	(1.1786)***
RTI	0.0870	(.0529)*	-0.2507	(.3471)	0.5558	(.4078)
Part-time work	-0.4303	(.0332)***				
Nonstandard work	-0.2539	(.0248)***				
Tenure	0.0294	(.0024)***	0.0055	(.0081)	0.0311	(.0164)*
Experience	-0.0052	(.0050)	-0.0239	(.0395)	0.1055	(.0611)*
Square of Experience	0.0001	(.0002)	0.0007	(.0013)	-0.0022	(.0019)
Highest grade completed	0.0478	(.0045)***	0.0606	(.0195)***	0.0566	(.0355)
Health: Excellent	-0.0448	(.0542)	-0.3252	(.4032)	1.3728	(.9597)
Good	-0.0303	(.0225)	-0.3402	(.1281)***	0.2548	(.1872)
Bad	-0.0553	(.0424)	-0.4472	(.1594)***	-0.4677	(.2615)*
Worse	-0.7503	(.2009)***	-0.6642	(.5382)	0.	
Firm Size: no employee	-0.0791	(.0535)			0.	
1~4	-0.1839	(.0482)***			-0.2128	(.6408)
5~9	-0.1068	(.0497)**			0.4893	(.7550)
10~49	-0.1136	(.0459)**				
50~99	0.0191	(.0565)				
300~499	0.1170	(.0739)				
500+	0.0729	(.0531)				
Never Married	-0.1095	(.0318)***	0.1459	(.2338)	-0.1245	(.4369)
Ever Married	0.0293	(.0356)	-0.2952	(.1300)**	-0.2184	(.2418)
The Sample Size	1,646		215		95	
Adjusted R-square	0.5283		0.1563		0.2706	
F-Statistics	35.76***		2.10***		1.94*	
Note: See Note in the Table 8.						

Conclusion

During urbanization process in 1960s, industrialization process in 1970s and 1980s, shift of industrial focus from manufacturing to service since 1990s, self-employment has played important roles in the Korean labor market as a chance of exploiting entrepreneurial skills as well as the last resort for those who have difficulties in finding waged and salaried work and, therefore, its still higher share out of workers is one of the main characteristics in the labor market. Despite its importance, there have been a few empirical studies on self-employment in Korea and, mainly due to lack of appropriate information, risk preference has never been considered in the previous studies. It has been recognized since Knight (1921) that self-employment is riskier than paid employment due to uncertainty and the risk of business failure.

The seventh wave of the KLIPS provide information on individual's risk preference and this study utilizes it investigate the relationships between risk preference and choice of employment status and between risk-taking behavior and economic performance of self-employment in terms of earnings in order to prove two hypotheses that risk-takers would be more likely to be their own boss and that entrepreneurship measured by the risk-taking indicator would play an important role in the economic performance of self-employment.

The results of this study can be summarized as follows. First, females are less likely to take risks as expected and their tendency to take risk does not depend on age, the education level, and marital status but on the health status and existence of financial assets and debts while males' depends only on age, the education level, the health status.
Second, after controlling determinants of the choice of the employment status such as age, education, marital status, health status, home ownership, family financial status, family income by sources, and residential regions, risk-takers are more likely to be their own boss, especially to significantly choose self-employment with employees rather than to be employed, but not to significantly choose self-employment without employees, which implies that the risk-taking indicator constructed from three experimental questionnaires would be appropriate to measure entrepreneurship.
Third, even though, compared with the employed, earnings of the self-employed with employees are much higher and those of own account workers are slightly higher and the risk-taking indicator has an additional and significant effect on earnings when all samples are considered, there is no evidence of a significant positive effect of risk-taking behavior on earnings of the self-employed, which implies that entrepreneurship does not pay or the risk-taking indicator would not be a proper measure of entrepreneurship.

Further study on economic/pecuniary as well as non-pecuniary performance of the self-employed is required to investigate its positive relationship with entrepreneurship with more appropriate identification of entrepreneurship.

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