「지방정부연구」 제18권 제4호(2015 겨울): 369-391
The Korean Journal of Local Government Studies, Vol.18 No.4 (2015 Winter)

College and Job Location Choice Behavior and Spatial Wage Differences of the College Graduates in Korea*

Kim, Jae Hong**
Doh, Soogwan***
Kim, Seung-Nam****

Abstract

This study investigates spatial dependence between attended high school, college, and job location choice and analyzes the reasons of the wage differences due to college and job locations of the new college graduates in Korea. In this study, it is assumed that location is separated into two regions in Korea: the capital region (CR) and the non-capital region (NCR). Given the high school location, the college and job location choice behaviors are estimated by a sequential probit model with the sample selection. The estimation results show that college location choice is usually determined by location and type of the attended high school, family wealth and parental education level. This indicates that the colleges located in the CR are preferred by the high school graduates with higher human capital and higher family wealth. Job location choice is also determined by college location and individual human capital such as foreign language ability, experience of abroad study, and internship. This study reveals spatial dependence between the CR colleges and the CR jobs regardless of the high school location and also shows the evidence of selective migration for better colleges and jobs. Finally, wages vary with locations for high school, college, and job. Wages of the CR jobs are usually higher than those of the NCR jobs given the location of colleges graduated. However, some of the CR college graduates with higher human capital who attended the CR high school tend to occupy the highest paying jobs in the NCR. This shows that they selectively target specific NCR labor markets providing higher wage and higher skill occupations concentrated in specific NCR cities.

Key Words: Location Choice, Spatial Dependence, Selective Migration

* This study was supported by the 2012 UOU research fund.
** 제1저자
*** 제2저자
**** 교신저자

Ⅰ. Introduction

Recently college and job location choices are considered to be the important sources of inter-regional migration especially from the non-capital region (NCR) to the capital region (CR) in Korea (Kwon and Ma, 2012; Shim and Kim, 2012; Champion, 2012; Faggian et al., 2013). About 70~80% of the Korean top 20 colleges placed in the various college rankings are concentrated in the capital region and the talented high school students in the NCR tend to migrate in order to enter the reputable colleges in the CR. They also tend to stay and get jobs in the CR. If it is the case, such brain drains due to selective migration lead to serious regional disparity in human capital accumulation (Kim and Lee, 2003; Ryu, 2005; Kim, 2010; Faggian et al., 2013) and thus bring about accelerating regional uneven development and growing spatial inequality as shown in the Myrdal's concept of circular cumulative causation (Nakamura, 2008; Abel and Deitz, 2012; Winter, 2011).

Ryu (2005) points out the three stages of the brain drain process from the NCR to the CR in Korea as follows: The first stage is student migration to enter the colleges in the CR after graduating high schools in the NCR; the second stage is to transfer colleges from the NCR to the CR; and the third stage is to get jobs in the CR after graduating colleges in the NCR. This kind of brain drain process is not remarkable only in Korea, but the similar phenomena are shown between the south-east region and the others in the UK (Faggian et al., 2007; Champion, 2011; Abreu et al., 2014) and between metropolitan and non-metropolitan areas in the US (Winters, 2011; Abel and Deitz, 2012).

In the knowledge economy, the regional economic growth is closely associated with the site specific quality of accumulated human capital (Champion, 2011) and thus high wage and high skill jobs also tend to be concentrated in the specific cities and regions rather than simply urban areas in general (Faggian et al., 2013). As Nakamura (2008) suggests, the fact that only small number of dominant urban centers tend to provide the highest skill and wage jobs is not only true in small countries like Denmark and Ireland, but also in many medium-sized countries such as the UK, France and Japan. That is, because the spatial job distribution is clearly not even, job searches for the high skill and high wage jobs are biased towards particular locations and thus job migration tend to be uni-directional (Faggian et al., 2013). This also seems to be same in Korea. Given the deep concentration of reputable colleges and higher skill and wage jobs are dominant in the CR in Korea, college and job migration from the NCR to the CR is not surprising.

College graduates tend to be more mobile than those of the same generation with fewer years of schooling (Abreu et al., 2014). However, college graduates at the escalator regions[1] where

1) The escalator region is originally set out by Fielding (1992) and is defined as the region in which talented young

both reputable colleges and descent jobs are concentrated tend to stay and to get jobs at the region (Hickman, 2009; Champion, 2012; Faggian et al., 2013). This is a kind of spatial dependence, which is defined as the degree of staying on at the settled place after migration (Kwon and Ma, 2012). As Faggian et al. (2013) suggested the similar phenomenon in the UK regions, there seems to exist something of a center-periphery phenomenon in terms of the spatial pattern of the graduate employment opportunities generated especially in the case of Korean regions.

This study investigates the subsequent college and job location choice behavior by the attended high school location and analyzes the factors of the spatial wage differences by the sequential migration types due to locations of the graduated college and the chosen job of the new college graduates in Korea. The purposes of this paper are as follows: First, to find the determinants of college location choice to reveal whether selectivity in college migration exist; second, to reveal whether spatial dependence between college and job location exist; third, to consummate_whether wage differentials exist according to the sequential migration types by high school, college, and job location and what factors affect the spatial wage difference.

The rest of the paper begins with describing the conceptual framework and methodologies related to college and job migration for the present study in section Ⅱ. The details are given of the data used in this study and descriptive statistics are presented and analyzed in section Ⅲ. Empirical estimates of the models and results based on a sequential probit model with the sample selection are examined in section Ⅳ. Finally, conclusion and some implications of this study are provided in section Ⅴ.

Ⅱ. Conceptual Framework and Methodology

1. Conceptual Framework

Most of migration studies suggest the human capital investment models that an individual inter-regional migration tends to be positively associated with the human capital characteristics of the individual as well as inter-regional differences of wages and job opportunities (Winters, 2011; Faggian et al., 2007; Abreu et al., 2014). However, the spatial job search models also provide a variety of knowledge to understand the rationales of the inter-regional migration of individuals (Maier, 1985; Pissarides, 1985; Faggian et al., 2009). The important factors of the spatial job

persons and college graduates are attracted to ‘step on’ in life in order to achieve readily their promotions and ambitions (Champion, 2012; Faggian et al., 2013). Seoul and capital region seem to be the representative example of the escalator region in Korea like London and South East region in UK,

search model such as individual reservation wage, length of search, spatial search boundary and cost are related to both quality and quantity of individual human capital. Therefore the spatial job search model can be combined with the human capital investment model.

The higher education is strongly associated with the higher human capital and thus with the better jobs. College graduates are a special category of job seekers in that they are highly educated and highly mobile (Abreu et al., 2014). Graduates of the better colleges tend to have more opportunities to search and get the higher wage jobs as a return to their higher human capital. Therefore to enter the more reputable colleges may be a key to the more descent jobs. In Korea, the better colleges and the higher wage jobs are spatially unevenly distributed and tend to be concentrated in the capital region as an escalator region. Thus it has been clearly established that college search is the start point of job search at least in Korea. If it is the case, college and job migration behavior from domicile to college location and on to job location can be modeled as various types of sequential location choices based on the locations of the attended high school, graduated college and employment of an individual.

In this study, it is assumed that location is separated into two regions in Korea: the capital region (CR) and the non-capital region (NCR). As described before, better colleges, higher wage jobs, and thicker markets for skilled labor seem to be more concentrated to the CR than the NCR in the Korean context. If it is the case, it is naturally expected that talented young persons and selective college graduates tend to choose their colleges and jobs in the CR. However, individual decision of college migration and/or job migration may depend on his/her academic and financial abilities, domicile economic conditions and so on. Considering origins and destinations of college and job migration, therefore, the four possible sequential migration categories are generated, as shown in Table 1: *non-migrants* are persons who both acquire college education and also find first employment at their origin domicile; *college stayers* are persons who leave their domicile region for higher education and then find first job in the same region with their college locations; *leak migrants* are persons who complete colleges education at the domicile region and then get first jobs in a different region; and *return migrants* are those who return to find first employment at their domicile region after graduating colleges in a different region. These four categories of sequential migration can be distinguished by the origin region (high school location) of the NCR or CR, and thus eventually eight categories may be created.

〈Table 1〉 Sequential College and Job Migration Types by High School Location

High School Location	College Location and Migration Type	Job Location and Migration Type	Sequential Migration Type
Non-Capital Region (NCR)	NCR Stayer	Not-Employed	na
		NCR Stayer	Non-migrant
		CR mover	Leak Migrant
	CR Mover	Not-Employed	na
		NCR mover	Return Migrant
		CR Stayer	College Stayer
Capital Region (CR)	NCR Mover	Not-Employed	na
		NCR stayer	College Stayer
		CR mover	Return Migrant
	CR Stayer	Not-Employed	na
		NCR mover	Leak Migrant
		CR stayer	Non-migrant

2. Methodology

In order to estimate the sequential college and job migration behavior, various choice models are utilized. Firstly, three probit models are applied to estimate college location choice models using the full sample and the subsample divided by the domicile region (NCR and CR sample). In the full sample model, spatial dependence between high school and chosen college location as well as individual characteristics is focused, while the different determinants of choice behavior varying with the domicile region are compared in the NCR and CR subsample models. Secondly, three probit models are estimated to reveal the effect of high school and college locations on individual job location choice, and then four probit models are estimated to find behavioral differences of individual job location choice at the given high school and college location. Thirdly, the eight wage equations using the Heckman's two stage sample selection method (Heckman, 1979) are estimated for the sequential migration types based on the locations of high school, college and job as shown in Table 1.

Heckman's two stage sample selection model is applied as follows:

$$Z_i^* = H_i\gamma + u_i \tag{1}$$

$$Z_i = \begin{cases} 1 \text{ if } Z_i^* > 0 \\ 0 \text{ if } Z_i^* < 0 \end{cases}$$

$$E(W_i|X_i, Z_i = 1) = E(W_i|X_i, H_i\gamma + u_i > 0) \quad (2)$$
$$= X_i\beta_1 + \rho_1\sigma_{e1}\sigma_u\frac{\phi(H_i\gamma)}{\Phi(H_i\gamma)} = X_i\beta_1 + \theta_1\lambda_i$$

$$E(W_i|X_i, Z_i = 0) = E(W_i|X_i, H_i\gamma + u_i < 0) \quad (3)$$
$$= X_i\beta_0 + \rho_0\sigma_{e0}\sigma_u\frac{-\phi(H_i\gamma)}{1-\Phi(H_i\gamma)} = X_i\beta_0 + \theta_0\lambda_i$$

At the first stage, job location choice model (equation 1) is estimated using a probit model, and then the inverse Mill's ratio ($\theta_1 = \frac{\phi(H_i\gamma)}{\Phi(H_i\gamma)}$ or $\theta_0 = \frac{-\phi(H_i\gamma)}{1-\Phi(H_i\gamma)}$) is calculated as a variable to correct the sample selection bias.[2] At the second stage, the wage equations (equation 2 and 3) including the relevant inverse Mill's ratio at the given job location are estimated with Ordinary Least Squares (OLS).

Finally, the wage decomposition method initiated by Oaxaca (1973) and Blinder (1973) are applied to find the factors affecting wage differentials among the sequential migration types. The original Oaxaca-Blinder method as shown in equation 4 decomposes the difference in mean wage between two groups into two portions: one portion by attribute differences and the other portion by different returns to those attributes.

$$\overline{\ln W_i} - \overline{\ln W_j} = \beta_i(\overline{X_i} - \overline{X_j}) + (\beta_i - \beta_j)\overline{X_j} \quad (4)$$

In equation 4, $\overline{\ln W}$ indicates the mean of the natural log of predicted wages; $\overline{X}$ denotes a vector of mean personal attributes; β represents a vector of the estimated coefficients; and subscripts i and j denote comparable categories. However, equation 4 can be rewritten as follows:

$$\overline{\ln W_i} - \overline{\ln W_j} = \beta_j(\overline{X_i} - \overline{X_j}) + (\beta_i - \beta_j)\overline{X_i} \quad (5)$$

The left hand sides of equations 4 and 5 are exactly same, but the two terms of the right hand sides are different each other due to the different reference wage function (Lemieux, 2006), although the two approaches are considered equally correct. In this paper, a weighted averaging method is applied to solve so-called the index number problem as follows:

$$\overline{\ln W_i} - \overline{\ln W_j} = \frac{(\beta_i N_j + \beta_j N_i)(\overline{X_i} - \overline{X_j})}{N_i + N_j} + \frac{(\beta_i - \beta_j)(\overline{X_i}N_i + \overline{X_j}N_j)}{N_i + N_j} \quad (6)$$

2) $\phi(\bullet)$ and $\Phi(\bullet)$ indicate a standard probability density function (pdf) and a cumulative density function, respectively.

In equation 6, N_i and N_j are the sample size of sub-samples i and j, respectively. In the second term of RHS in equation 6, the weighed mean attributes of the two sub-samples, $(\overline{X}_j N_j + \overline{X}_i N_i)/(N_i + N_j)$ is equal to the overall sample mean attributes $\overline{X}_{i+j}$.

Ⅲ. Data and Descriptive Analysis

1. Data

Our data in the present paper come from the Graduates Occupational Mobility Survey (GOMS) conducted in 2011 by the Korea Employment Information Service. For the survey in 2011, total 18,085 college graduates in August 2009 and February 2010 are selected and surveyed on several subject items including not only educational and occupational mobility from high school via college to job location, school life, language test score, vocational training, internship, and so on, but also individual attributes and family information. For the survey the Computer Aided Telephone Interview (CATI) was administered to find out their intention to participate in the survey and to verify the basic information on name, address and so on. And then an interviewer visited the house (or workplace) to carry out a face-to-face interview (KEIS, 2012).

This paper uses the validated sample composed of 18,017 college graduates excluding the 68 persons graduated their high schools or colleges at the foreign countries. The GOMS data provides a variety of individual information on their courses of performance from high school to occupation. However, it is the important flaw that the College Scholastic Ability Test (CSAT) score and name of college are masked in the public data, because the two variables are considered to take the most important roles on college and job entries in Korea.

2. Descriptive Analysis

Table 2 shows frequencies and percentages of the relevant sub-samples and summarizes the mean wage of each type of sequential migration. As shown in Table 2, the 57.64% of the sample graduated their high schools in the NCR (HN) and the 79.13% of them graduated their colleges in the NCR (HN-CN), while the 81.24% of the high school graduates in the CR (HC) chose their college in the CR (HC-CC). This indicates that college location choice is usually dependent on the attended high school location.

〈Table 2〉 Comparison of Frequency and Mean Wage among Sequential Migration Type

High School Location	College Location	Employment Status and Job Location Frequency (%)		Sequential Migration Type	Monthly Wage Mean (S.D.)
HN 10,385 (100.0) (57.64)	CN 8,218 (79.13)	Not-Employed 1,664 (20.25)		na	na
		Employed 6,554 (79.75)	JN 5,199 (79.33)	Non-migrant	188.49 (132.33)
			JC 1,355 (20.67)	Leak Migrant	202.69 (92.16)
	CC 2,167 (20.87)	Not-Employed 469 (21.64)		na	na
		Employed 1,698 (78.36)	JN 526 (30.98)	Return Migrant	200.57 (138.53)
			JC 1,172 (69.02)	College Stayer	227.35 (105.56)
HC 7,632 (100.0) (42.36)	CN 1,432 (18.76)	Not-Employed 271 (18.99)		na	na
		Employed 1,160 (81.01)	JN 225 (19.40)	College Stayer	183.00 (129.40)
			JC 935 (80.60)	Return Migrant	187.81 (110.94)
	CC 6,201 (81.24)	Not-Employed 1,254 (20.22)		na	na
		Employed 4,947 (79.78)	JN 227 (4.59)	Leak Migrant	242.01 (163.03)
			JC 4,720 (95.41)	Non-migrant	197.27 (127.69)

HN, HC: high school located in Non-Capital region and Capital region, respectively
CN, CC: college located in Non-Capital region and Capital region, respectively
JN, JC: job located in Non-Capital region and Capital region, respectively
Not-Employed: including both the unemployed and the economically inactive
Monthly Wage: monthly wage in Korean Won(10 thousand KRW)

The percentages of the not-employed are not much various with the categories classified by high school and college location. However, the job location of the employed tend to be usually dependent on the graduated college location except the group attended their high school in the CR (HC) but graduated their colleges in the NCR (CN).

The percentage of the job choosers in the CR (JC) among high school graduates in the NCR (HN) ((1355+1172)/10385=23.33%) is around fourfold higher than that of job chooser in the NCR (JN) among high school graduates in the CR (HC) ((225+227)/7632=5.92%) regardless of college location. The fact that especially the 69.02% of the college graduates in the CR (CC) and 20.67% of the college graduates in the NCR (CN) among the employed persons attended their high schools in the NCR (HN) get jobs in the CR explains the serious brain drain from the NCR to the CR because people with higher human capital tend to be able to get job in the CR. This may be one of the important sources to accelerate the regional gap of human capital accumulation between the CR and the NCR.

The monthly wage of the college graduates in the CR (CC) tends to be higher than that of the

college graduates in the NCR (UN) and also the monthly wage of the job takers in the CR (JC) is usually higher than that of the job takers in the NCR (JN) given college location regardless of high school location. However, the monthly wage of the leak migrants from the CR (HC-CC-JN) is significantly higher than that of the non-migrants within the CR (HC-CC-JC). What's happening in this category? This may intimate that the group tends to get some of the highest paying jobs offered from the NCR even though the capital region leak migrants (HC-CC-JN) share only 4.59% of the employed persons graduated both high schools and colleges in the CR (HC-UC).

Except the case of the capital region leak migrants (HC-CC-JN), the mean wage of the group with college and job in the CR (CC and JC) are higher those of their counterparts (CN and JN). If it is the case, talented young human resources in the NCR will leave continually for the CR in order to enter the better colleges and then to get better jobs in the CR. Thus it is very important to stop the brain drain by keeping excellent students at the NCR. However, the problem is "how" and "what" kind of the policy measures although policy measures are expected such as much more supporting major local colleges, creating better jobs in NCR, applying a kind of affirmative action like employment quota system to the public enterprises and governments and so on.

The summarized descriptive statistics for the main variables used in this study are presented in Table 3. The sample includes 18,017 college graduates in August 2009 and February 2010 in Korea. Some variables have been re-scaled to help the presentation of the results. For example, GPA is converted into the 100 point scale due to various grade point systems, and also various English test scores are transformed into the equivalent TOEIC score as shown in the variable TOEIC. The reported summary statistics reflect the scaling used in the estimation models to follow.

〈Table 3〉 Variable Definition and Descriptive Statistics

Variables	Definition	Mean (S.D.) N=18,017
SC_HS	if science high school 1, otherwise 0	0.0032 (0.0566)
FL_HS	if foreign language high school 1, otherwise 0	0.0139 (0.1172)
SELF_HS	if self-financed high school 1, otherwise 0	0.0073 (0.0850)
LIB_HS	if liberal arts major in general high school 1, otherwise 0	0.4527 (0.4978)
IND_HS	if industrial high school 1, otherwise 0	0.1544 (0.3613)
M_EDU	mother's educational level (No Schooling=1, ... ,Graduate School=7)	3.8616 (1.2514)
FINC_ENT	Family income level at the time of college entrance (7 levels form lowest(1) to highest(7))	3.7723 (0.4632)
PRV_COL	if private college 1, otherwise 0	0.8064 (0.3952)
EDU_COL	if college of education 1, otherwise 0	0.0155 (0.1235)

Y2COL	if two year technical college 1, otherwise 0	0.3117 (0.4632)
HS_MAJOR	if major in humanities or social sciences 1, otherwise 0	0.3818 (0.4858)
EDU_MAJOR	if major in education 1, otherwise 0	0.0707 (0.2563)
MED_MAJOR	if major in medicine or pharmacy 1, otherwise 0	0.0696 (0.2545)
AP_MAJOR	if major in fine art or sports 1, otherwise 0	0.1136 (0.3174)
SEX	if male 1, female 0	0.5307 (0.4991)
AGE	real age	27.721 (6.1486)
GPA	grade point average (converted into the 100 point scale)	81.784 (13.416)
TOEIC	English test score (conversed by TOEIC scale)	240.97 (357.37)
WORKEXP	if work experience before college graduation 1, else 0	0.6804 (0.4664)
AB_STUDY	if abroad study experience 1, otherwise 0	0.1789 (0.3833)
JOB_EDU	if job education 1, otherwise 0	0.1804 (0.3845)
N_CERT	number of certificates obtained	1.7658 (1.8948)
INTERN	if experience of internship 1, otherwise 0	0.1711 (0.3766)
METRO	if college located in a metropolitan city 1, otherwise 0	0.4566 (0.4981)
REGULAR	if regular worker 1, otherwise 0	0.4837 (0.4997)
WORKTIME	weekly total work hours	36.435 (21.847)
JOB_LENGTH	incumbent length since joining a company	16.824 (35.143)
WM_MATCH	degree of job-major matching (5 levels form never match 1, ..., well match 5)	2.5330 (1.7361)
UNION	if union member 1, otherwise 0	0.0673 (0.2506)
LARGE	if number of employees $\geq$1,000 1, otherwise 0	0.2348 (0.4239)
MIDSIZE	if 1000 > number of employees $\geq$300 1, otherwise 0	0.0917 (0.2886)
CR_HSCH	if the attended high school in CR 1, else 0	0.4236 (0.4941)
CR_COL	if the graduated college in CR 1, else 0	0.4645 (0.4987)
HC_CC	if both high school and college in CR 1, else 0	0.3442 (0.4751)
HC_CN	if high school in CR and college in NCR 1, else 0	0.0794 (0.2704)
NN_CN	if both high school and college in NCR 1, else 0	0.4561 (0.4981)
HN_CC	if high school in NCR and college in CR 1, else 0	0.1203 (0.3253)

Ⅳ. Empirical Results

1. Probit Estimation Results of the College Location Choice Model

The college location choice equations are estimated for the entire sample, the sub-samples with the persons attended their high schools in the CR (HC) and in the NCR (HN), respectively. The probit estimation results from the three sample groups are presented in Table 4.

〈Table 4〉 Probit Estimation Results of the College Location Choice Model by High School Location

Variables	All Sample	High School in Capital Region (HC)	High School in Non-Capital Region (HN)
	College Location Choice (CC=1 vs. CN=0)	College Location Choice (CC=1 vs. CN=0)	College Location Choice (CC=1 vs. CN=0)
CONSTANT	-1.327 (-29.688)***	0.536 (7.491)***	-1.460 (-25.573)***
SEX	0.060 (2.744)***	-0.118 (-3.437)***	0.186 (6.424)***
SC_HS	0.029 (0.168)	-1.027 (-3.158)***	0.428 (2.170)**
FL_HS	0.576 (5.463)***	0.510 (3.308)***	0.623 (4.383)***
SELF_HS	0.275 (2.283)***	-0.221 (-0.958)	0.446 (3.270)***
LIB_HS	0.034 (1.395)	-0.045 (-1.201)	0.086 (2.767)***
IND_HS	-0.127 (-3.703)***	0.096 (1.761)*	-0.297 (-6.318)***
M_EDU	0.086 (8.833)***	0.065 (4.341)***	0.102 (7.914)***
FINC_ENT	0.042 (6.483)***	0.039 (4.062)***	0.041 (4.745)***
CR_HSCH	1.663 (75.917)***	-	-
N	18,017 (CC=8,268, CN=9,749)	7,632 (CC=6,201, CN=1,431)	10,385 (CC=2,167, CN=8,218)
Log Likelihood	-8,842.026	-3,632.720	-5,143.803
Chi_sq	7,201.658***	100.624***	350.462***
Pseudo R_sq	0.289	0.014	0.033

* p<0.1, ** p<0.05, *** p<0.01

The highly significant CR_HSCH indicates that the graduates from the high schools in the CR prefer the colleges in the CR to those in the NCR and also denotes that college location choice is usually dependent on the attended high school location as shown in the estimation result of the entire sample. The coefficients of FL_HS, M_EDU, and FINC_ENT are positive and statistically significant for all three groups. This indicates that regardless of location of the attended high school, the graduates of the foreign language high schools have increasing likelihood to choose their colleges in the CR; family income at the time of college entrance and mother's educational attainment are positively associated with the likelihood of choosing their colleges in the CR and this implies the possibility of selective migration in college location choice due to intergenerational transfer of wealth.

However, the types of attended high school show the different effects on the college location choice among the three samples. SC_HS is significantly negative in the HC sample, while significantly positive in the HN sample, but insignificant in the entire sample. The students attended science high schools usually tend to enter KAIST or POSTECH located in the NCR. However, the probability of choosing KAIST or POSTECH of the science high schools graduates in the CR is greater than the probability of choosing colleges in the NCR of the science majoring students of general high schools in the CR, while the probability of choosing colleges in the CR of the science high schools graduates in the NCR is greater than that of choosing colleges in the CR of the science majoring students of general high school in the NCR.

The industrial high school graduates (IND_HS) have a tendency to choose local junior colleges regardless of HS location; thus positive in the HC sample but negative in the HN sample. SELF_HS (self-financed high school) and LIB_HS (liberal art majoring in general high school) are significant and positively associated with choosing colleges in the CR for the HN sample, but insignificant for the HC sample. This may be due to the different distribution of SELF_HS and LIB_HS relative to the science majoring students in the general high school between two samples.

2. Probit Estimation Results of the Job Location Choice Model

Table 5 summarizes the probit estimation results of the job location choice models for the entire sample. Three models are different in the use of the college and high school location dummy variables: Model 1 uses only the college location dummy (CR_COL); model 2 employs both college and high school location dummies (CR_COL and CR_HSCH); and model 3 utilizes the dummy variables for the combination of college and high school location. For all three models, the college graduates in the capital region (CR_COL in model 1 and 2; and HN_CC and HC_CC in model 3) have the significantly higher probability of getting job in the capital region. However, the high school location has stronger impacts on the probability of getting job in the capital region than the college location as shown in model 2 and 3 in Table 5. This results show that the college migrants from the NCR to the CR are more likely to stay and get jobs in the CR (college stayers), but the college migrants from the CR to the NCR tend to return more likely to the CR for jobs (return migrants).

The variables such as PRV_COL, MED_MAJOR, AP_MAJOR, TOEIC, WORKEXP, AB_STUDY, and INTERN increase significantly the propensity to get a job in the CR, while the graduates from educational colleges (EDU_COL) and two year junior colleges (Y2COL) and the college graduates with higher age and more certificates are more likely to get job in the NCR. Most of variables have the expected signs. Contrary to our expectations, however, GPA and N_CERT (number of certificates) are negatively related with the probability of getting jobs in the CR. The negative GPA

may be due to the unprincipled grade inflation in many colleges. The significantly negative N_CERT may stem from the fact that the jobs for college graduates with science and technology related majors usually require job-related certificates and also those job are more frequently supplied by manufacturing or construction plants in the NCR.

〈Table 5〉 Probit Estimation Results of Job Location Choice for the Entire Employed Sample

Variables	Model 1 (JC=1 vs. JN=0)	Model 2 (JC=1 vs. JN=0)	Model 3 (JC=1 vs. JN=0)
CONSTANT	-0.254 (-2.363)**	-0.562 (-4.858)**	-0.557 (-4.804)***
PRV_COL	0.395 (11.851)***	0.190 (5.389)***	0.187 (5.247)***
EDU_COL	-0.193 (-1.705)*	-0.372 (-3.043)***	-0.376 (-3.069)***
Y2COL	-0.180 (-5.825)***	-0.181 (-5.322)***	-0.151 (-4.424)***
HS_MAJOR	0.004 (0.148)	0.047 (1.420)	0.040 (1.208)
EDU_MAJOR	-0.085 (-1.437)	-0.009 (-0.146)	-0.022 (-0.346)
MED_MAJOR	0.011 (0.229)	0.163 (3.065)***	0.149 (2.786)***
AP_MAJOR	0.207 (4.714)***	0.182 (3.784)***	0.170 (3.547)***
SEX	0.004 (0.149)	0.023 (0.793)	0.021 (0.731)
AGE	-0.013 (-6.385)***	-0.011 (-4.867)***	-0.013 (-5.503)***
GPA	-0.002 (-2.136)**	-0.001 (-1.256)	-0.001 (-1.377)
TOEIC	0.16E-3 (3.942)***	0.19E-3 (4.421)***	0.19E-3 (4.392)***
WORKEXP	0.140 (5.020)***	0.126 (4.167)***	0.126 (4.159)***
AB_STUDY	0.141 (4.027)***	0.133 (3.565)***	0.132 (3.521)***
JOB_EDU	-0.018 (-0.570)	-0.055 (-1.651)*	-0.051 (-1.514)
N_CERT	-0.055 (-8.318)***	-0.052 (-7.295)***	-0.052 (-7.196)***
INTERN	0.174 (5.031)***	0.197 (5.267)***	0.199 (5.325)***
METRO	-0.142 (-5.533)***	-0.002 (-0.064)	0.026 (0.932)***
CR_COL	1.662 (62.868)***	1.082 (35.125)***	-
CR_HSCH	-	1.431 (43.587)***	-
HN_CC	-	-	1.240 (33.060)***
HC_CN	-	-	1.686 (35.253)***
HC_CC	-	-	2.425 (65.652)***
N	14,359 (JC=8,182, JN=6,177)	14,359 (JC=8,182, JN=6,177)	14,359 (JC=8,182, JN=6,177)
Log Likelihood	-6,753.819	-5,714.351	-5,685.553
Chi_sq	6,117.279***	8,196.216***	8,253.812***
Pseudo R_sq	0.312	0.418	0.421

* p<0.1, ** p<0.05, *** p<0.01

Table 6 summarizes the probit estimation results on job location choice behavior of the four groups with the combination of college and high school locations. Most of variables have the different signs and significance depending on the groups, while some variables have the same signs regardless of

college and high school locations. The private college graduates (PRV_COL) are more likely to get their jobs in the capital region than their counterparts. This may be due to the fact that most of national or public colleges are located in the non-capital region. The educational college graduates (EDU_COL) tend to get their jobs closer to their college locations as coincident with the results of Shim and Kim (2012). Two year college graduates (Y2COL) tend to get jobs close to their origin domicile areas irrespective of college location. This may result from the fact that two year colleges usually provide educational programs for the local industrial and occupational demand.

Majors in college are shown to be important determinants of job location choice in all of the groups. The graduates majored in humanities and social sciences (HS_MAJOR) are more likely to find jobs close to their college locations (college stayers) except the HC-CN group which shows the highest probability of return migration regardless of majors. The graduates for all of the majors in the HC group tend to find jobs more likely in the capital region closer to their domicile areas than the graduates with science and technology major (the reference major group) do. For the HN group, HS_major graduates are more likely to get jobs closer to college location, while the graduates majored in medicine or pharmacy (MED_MAJOR) tend to find jobs in the capital region.

Females tend to choose their jobs closer to their domicile locations than their counterparts do. Even female remote movers for college entrance tend to return and to get jobs near their domicile areas. Older graduates (AGE) are usually found to have difficulties in getting jobs in the capital region irrespective of high school and college locations. GPA seems to be less important determinant in job location choice than expected in terms of statistical significance. Furthermore, the negative signs of GPA indicates that graduates with higher GPA are associated with the lower probability of getting jobs in the capital region even though only significant for the HC-CN group. English test score (TOEIC) appears to be an important variable to get a job in the capital region especially for the HN group, while it is insignificant for the HC-CC group. Work experience (WORKEXP) and abroad study experience (AB_STUDY) are significantly and positively associated with finding a job in the capital region only for the HN-CN group, while insignificant for the others. Job education experience (JOB_EDU) appears to have various effects on job location choice depending on the different four groups. Graduates with the higher number of certificates (N_CERT) tend to have their jobs in the non-capital region irrespective of high school and college locations. This may indicates that employment requiring certificates is much more supplied in the non-capital region than in the capital region. Internship is found to be a significant key to get a job in the capital region regardless of high school and college locations.

Finally, college graduates in the metropolitan city (METRO) tend to stay and to get jobs at the same city (college stayers). This implies that employment opportunity and job information are more concentrated in the metropolitan cities and thus college graduates in the metropolitan cities are more easily accessible to employment than those in the rural areas regardless of the capital and non-capital divide.

〈Table 6〉 Probit Estimation Results of Job Location Choice Model by Given High School and College Location

Variables	High School in CR (HC)		High School in NCR (HN)	
	College in CR (CC)	College in NCR (CN)	College in CR (CC)	College in NCR (CN)
	Job Location Choice		Job Location Choice	
	JC=1 vs. JN=0	JC=1 vs. JN=0	JC=1 vs. JN=0	JC=1 vs. JN=0
CONSTANT	1.562 (4.642)***	1.975 (5.093)***	-0.395 (-1.196)	-0.468 (-3.020)***
PRV_COL	0.495 (4.696)***	0.680 (5.205)***	0.444 (4.999)***	0.058 (1.297)
EDU_COL	-0.020 (-0.052)	-1.106 (-2.878)***	0.391 (1.406)	-0.737 (-3.373)***
Y2COL	0.339 (3.934)***	0.112 (0.865)	-0.096 (-0.968)	-0.295 (-6.278)***
HS_MAJOR	0.428 (5.393)***	0.295 (2.481)**	0.163 (2.032)**	-0.197 (-4.400)***
EDU_MAJOR	0.626 (2.391)**	0.810 (3.371)***	-0.096 (-0.603)	-0.289 (-3.346)***
MED_MAJOR	0.137 (0.814)	0.055 (0.291)	0.209 (1.435)	0.172 (2.564)**
AP_MAJOR	0.356 (3.025)***	0.418 (2.732)***	0.132 (1.043)	0.068 (1.024)
SEX	-0.327 (-4.311)***	0.045 90.452)	-0.014 (-0.189)	0.103 (2.630)***
AGE	-0.013 (-1.820)*	-0.042 (-6,022)***	0.36E-2 (0.605)	-0.008 (-2.536)**
GPA	-0.002 (-0.746)	-0.008 (-2.443)**	-0.82E-3 (-0.254)	-0.001 (-0.914)
TOEIC	-0.1E-3 (-1.089)	0.32E-3 (1.876)*	0.25E-3 (2.532)***	0.23E-3 (3.855)***
WORKEXP	0.079 (1.049)	-0.006 (-0.059)	0.119 (1.520)	0.177 (4.291)***
AB_STUDY	0.007 (0.079)	0.112 (0.832)	-0.022 (-0.247)	0.226 (4.459)***
JOB_EDU	-0.189 (-2.369)**	0.021 (0.195)	0.168 (1.751)*	-0.090 (-2.019)**
N_CERT	-0.022 (-1.199)	-0.040 (-1.880)*	-0.068 (-3.343)***	-0.053 (-5.332)***
INTERN	0.214 (2.419)**	0.315 (2.182)**	0.173 (1.866)*	0.202 (4.067)***
METRO	0.231 (3.330)***	-0.458 (-3.697)***	0.762 (10.08)***	-0.162 (-4.381)***
N	4947 (JC=4720, JN=227)	1160 (JC=935, JN=225)	1689 (JC=1172, jn=526)	6554 (JC=1355,J N=5199)
Log Likelihood	-842.575	-498.207	-917.423	-3149.286
Chi_sq	157.311***	144.845***	267.012***	381.404***
Pseudo R_sq	0.085	0.127	0.127	0.057

* p<0.1, ** p<0.05, *** p<0.01

3. Estimation Results of Wage Equations

The estimation results of our sample selection models for wage equations are given in Table 7 for the HC sample and Table 8 for the HN sample. The eight wage equations are separately estimated for the eight groups split by high school, college, and job locations. Our analysis begins with comparison of mean wages among the eight groups. While mean wages (average monthly income replaced by a logarithm) are various with the groups, it is common to all the groups except the HC-CC-JC (CR non-migrants) and HC-CC-JN (CR leak migrants) groups that wages of the jobs in the capital region (JC) are usually higher than those of the NCR jobs regardless of high school

and college locations. The exception is very interesting, however, in that the mean wage of the CR leak migrants is higher than that of the CR non-migrants and is also the highest among the eight groups. This implies that some of the CR college graduates with higher human capital who attended the CR high school (CR leak migrants) tend to occupy the highest paying jobs in NCR. This also shows that they selectively target the specific NCR labor markets providing higher wage and higher skilled occupations to be concentrated in the specific NCR cities.

〈Table 7〉 Estimation Results of Wage Equations from the HC Sample: Two Stage Sample Selection Model

Variables	High School in CR (HC)			
	College in CR (CC)		College in NCR (CN)	
	Job in CR (JC) Non-Migrant	Job in NCR (JN) Leak Migrant	Job in CR (JC) Return Migrant	Job in NCR (JN) College Stayer
CONSTANT	3.830 (30.199)***	2.009 (0.165)	4.246 (23.403)***	3.632 (0.681)
PRV_COL	-0.064 (-1.075)	-0.292 (-0.117)	-0.191 (-1.454)	-0.114 (-0.093)
EDU_COL	0.090 (0.846)	-0.208 (-0.359)	0.427 (1.489)	0.216 (0.113)
Y2COL	-0.129 (-4.199)***	-0.142 (-0.080)	-0.116 (-2.121)**	-0.299 (-1.191)
HS_MAJOR	-0.046 (-1.238)	-0.309 (-0.139)	-0.107 (-1.658)*	0.230 (0.422)
EDU_MAJOR	-0.009 (-0.146)	-0.047 (-0.015)	-0.014 (-0.098)	0.279 (0.192)
MED_MAJOR	0.184 (3.871)***	0.185 (0.255)	0.124 (1.463)	0.292 (1.200)
AP_MAJOR	-0.113 (-2.902)***	0.020 (0.011)	-0.181 (-2.163)**	-0.017 (-0.021)
SEX	0.099 (3.505)***	0.322 (0.188)	0.196 (4.360)***	0.135 (0.826)
AGE	0.017 (6.906)***	0.020 (0.281)	0.014 (1.802)*	0.008 (0.104)
GPA	0.7E-3 (0.938)	-0.3E-4 (-0.003)	0.46E-3 (0.278)	-0.005 (-0.331)
TOEIC	0.2E-4 (0.801)	0.76E-4 (0.132)	-0.43E-4 (-0.524)	-0.3E-3 (-0.473)
WORKEXP	-0.019 (-0.854)	0.107 (0.254)	-0.010 (-0.229)	0.117 (0.859)
AB_STUDY	0.041 (1.708)*	0.095 (0.764)	0.011 (0.194)	0.083 (0.299)
JOB_EDU	0.040 (1.474)	0.140 (0.146)	0.050 (1.038)	0.250 (1.694)*
N_CERT	0.011 (1.929)*	0.025 (0.215)	0.008 (0.662)	0.011 (0.140)
INTERN	0.033 (1.224)	-0.176 (-0.158)	-0.015 (-0.227)	-0.099 (-0.157)
METRO	0.068 (2.779)***	-0.083 (-0.070)	0.139 (1.380)	0.275 (0.343)
REGULAR	0.345 (18.741)***	0.331 (3.645)***	0.190 (5.521)***	0.364 (2.778)***
WORKTIME	0.010 (15.894)***	0.013 (3.138)***	0.008 (6.689)***	0.015 (3.537)***
JOB_LENGTH	0.003 (6.486)***	0.004 (2.047)**	0.003 (4.412)***	-0.26E-3 (-0.234)
WM_MATCH	0.014 (2.002)**	0.043 (1.187)	0.052 (3.982)***	-0.028 (-0.608)
UNION	0.102 (3.076)***	0.282 (2.410)**	0.201 (2.473)**	0.268 (1.131)
LARGE	0.182 (8.794)***	0.101 (0.929)	0.111 (2.651)***	-0.041 (-0.268)
MIDSIZE	0.056 (2.014)**	0.122 (0.894)	0.182 (3.135)***	-0.026 (-0.143)
LAMBDA	-0.586 (-1.453)	-0.797 (-0.131)	-0.658 (-1.668)*	-0.413 (-0.173)
N	4720	227	935	225
R_sq	0.252	0.214	0.239	0.239
Adjusted R_sq	0.249	0.116	0.218	0.144
F-value	63.42***	2.19***	11.41***	2.50***
Dep. Var. Mean (ln MINCOME)	5.121	5.316	5.115	4.925

* p<0.1, ** p<0.05, *** p<0.01

〈Table 8〉 Estimation Results of Wage Determination Equations from the HN Sample: Two Stage Sample Selection Model

Variables	High School in NCR (HN)			
	College in CR (CC)		College in NCR (CN)	
	Job in CR (JC) College Stayer	Job in NCR (JN) Return Migrant	Job in CR (JC) Leak Migrant	Job in NCR (JN) Non_migrant
CONSTANT	4.395 (8.867)***	3.392 (4.402)***	7.683 (1.440)	4.537 (16.112)***
PRV_COL	-0.140 (-1.227)	-0.125 (-0.336)	-0.137 (-0.550)	0.039 (0.988)
EDU_COL	-0.032 (-0.178)	0.001 (0.003)	2.120 (0.669)	-0.095 (-0.600)
Y2COL	-0.017 (-0.280)	-0.149 (-1.259)	0.619 (0.541)	-0.187 (-2.707)***
HS_MAJOR	-0.087 (-1.642)	-0.014 (-0.090)	0.481 (0.642)	-0.088 (-1.570)
EDU_MAJOR	0.076 (0.875)	0.161 (1.054)	0.883 (0.773)	-0.072 (-0.820)
MED_MAJOR	0.189 (2.090)**	0.186 (0.875)	-0.210 (-0.303)	0.208 (3.245)***
AP_MAJOR	-0.109 (-1.501)	0.026 (0.177)	-0.303 (-0.894)	-0.030 (-0.537)
SEX	0.128 (3.353)***	0.220 (3.266)***	-0.147 (-0.350)	0.252 (6.940)***
AGE	0.013 (3.302)***	0.010 (1.547)	0.032 (0.860)	-0.002 (-0.925)
GPA	0.32E-3 (0.192)	0.001 (0.333)	0.003 (0.453)	0.42E-4 (0.041)
TOEIC	-0.48E-4 (-0.676)	-0.12E-3(-0.468)	-0.5E-3 (-0.567)	0.16E-3 (2.127)**
WORKEXP	-0.044 (-0.928)	-0.011 (-0.094)	-0.416 (-0.612)	0.097 (1.998)**
AB_STUDY	0.085 (2.031)**	0.157 (1.862)*	-0.523 (-0.624)	0.238 (3.375)***
JOB_EDU	0.053 (0.926)	0.010 (0.058)	0.287 (0.781)	0.044 (1.160)
N_CERT	0.022 (1.121)	0.040 (0.699)	0.136 (0.671)	-0.012 (-1.029)
INTERN	0.067 (1.266)	-0.006 (-0.033)	-0.538 (-0.714)	0.073 (1.122)
METRO	-0.183 (-1.025)	-0.106 (-0.152)	0.390 (0.637)	-0.046 (-1.013)
REGULAR	0.387 (11.404)***	0.382 (6.149)***	0.239 (2.786)***	0.284 (12.138)***
WORKTIME	0.010 (9.582)***	0.008 (3.046)***	0.008 (2.589)***	0.009 (10.028)***
JOB_LENGTH	0.002 (3.358)***	0.17E-2(2.41)**	0.004 (1.991)**	0.002 (8.152)***
WM_MATCH	0.002 (0.165)	0.063 (2.604)***	0.015 (0.487)	0.042 (4.923)***
UNION	0.117 (2.429)**	0.084 (0.846)	0.045 (0.307)	0.118 (2.830)***
LARGE	0.256 (5.653)***	0.232 (3.510)***	0.189 (2.019)**	0.152 (5.558)***
MIDSIZE	0.072 (1.521)	0.177 (1.762)*	0.153 (1.279)	0.126 (3.431)***
LAMBDA	-0.490 (-1.029)	-0.368 (-0.296)	-3.251 (-0.666)	1.209 (2.214)**
N	1,172	526	1,355	5,199
R_sq	0.352	0.256	0.222	0.186
Adjusted R_sq	0.338	0.219	0.207	0.182
F-value	24.88***	6.90***	15.18***	47.25***
Dep. Var. Mean (ln MINCOME)	5.281	5.118	5.200	5.052

* p<0.1, ** p<0.05, *** p<0.01

In terms of the wage determinants, the employment related variables appear to be more important and influential than the individual characteristics do for all the eight estimation results. The type of college (PRV_COL and EDU_COL) has little significant effect on wage of all the groups, but merely Y2COL (two year college_graduates) is significant and negatively associated with the wage

setting of the non-migrant groups and the CR return migrants. The majors such as HS_MAJOR and EDU_MAJOR are not significant in all the groups except HS_MAJOR with significance at the 10% level for the CR return migrants. The graduates majored in medicine and pharmacy (MED_MAJOR) are found to earn significantly more money than the reference major group (science and technology major) at least in the three groups such as the CR non-migrants, the NCR college stayers, and non-migrants. The majors of fine art and sports (AP_MAJOR) are usually associated with the relatively lower wage, but significant in only two groups such as the CR non-migrants and the CR return migrants. Male and older graduates tend to have significantly higher wages than their counterparts as shown in most of human capital studies.

Most striking result is that individual job qualifying variables usually have much less significant effect on wage than our expectation. GPA is always insignificant in all the groups and English test score (TOEIC) and work experience (WORKEXP) are significant only for the NCR non-migrants. Job-related education (JOB_EDU), number of certificates (N_CERT), and internship (INTERN) are not statistically significant in all the groups at least at the 5% level. This indicates that individual specifications for job are not so much important for the wage setting even though those tend to play some roles on the employment location choice.

Contrary to the individual characteristics, most of employment related variables are usually significant irrespective of locations of the job markets. As shown in the usual labor market studies, regular workers (REGULAR), longer work time (WORKTIME), longer period of employment (JOB_LENGTH), more matching between work and major (WM_MATCH), union member (UNION), and larger size of enterprise (LARGE and MIDSIZE) are generally significant and positively related with higher wage in all the groups. Finally, the selection bias variable (LAMBDA) is significant in only two groups; negative in the CR return migrants and positive in the NCR non-migrants. The positive LAMBDA indicates that the estimated earnings of the group are higher than those of randomly drawn workers with identical characteristics. Nevertheless, the reason why wage of JC is higher than that of JN can be explained by the higher return for the significant attributes of the job choosers in the capital region (JC).

4. Analysis of Decomposition of Wage Differentials

Table 9 shows the differences in mean log wages and the decomposition of the differences among job locations of the capital and non-capital region given locations of high school and college attended, applying equation 6 in section Ⅱ. As shown column (A) in Table 9, among the college graduates who attended both high school and college in the non-capital region, the mean wage of workers in the capital region ($\overline{W}_{JC}$) is around 14.8 percent higher than that of the counterpart ($\overline{W}_{JN}$). The wage differences are decomposed of the negative portion by attributes (-0.392) and the larger positive

portion by returns (0.540). This indicates that if both groups of workers would have identical attributes, wage differentials would be much greater. This also indicates that the workers in the non-capital region would be better off if they could obtain jobs relevant to their personal characteristics in the capital region. Despite the smaller magnitude of the portions by attribute and by returns, the results of wage decomposition between workers in the capital region and those in the non-capital region (column B and C) seem to be similar to the trend as shown in that of column A in that the smaller negative portion by attributes are offset by the larger portion by returns.

〈Table 9〉 Decomposition of Wage Decomposition between Job Locations

Variables	$\ln \overline{W}_{JC} - \ln \overline{W}_{JN}$ given HN_CN (A)	$\ln \overline{W}_{JC} - \ln \overline{W}_{JN}$ given HN_CC (B)	$\ln \overline{W}_{JC} - \ln \overline{W}_{JN}$ given HC_CN (C)	$\ln \overline{W}_{JN} - \ln \overline{W}_{JC}$ given HC_CC (D)
Differences in Mean Log Wage	**0.148 (100.0%)**	**0.163 (100.0%)**	**0.190 (100.0%)**	**0.195 (100.0%)**
By Attributes	**-0.392 (-265.2)**	**-0.039 (-24.2)**	**-0.015 (-7.8)**	**0.312 (160.2)**
SEX	-0.005 (-3.2)	0.003 (1.6)	0.001 (0.5)	0.076 (39.1)
AGE	-0.034 (-23.6)	-0.005 (-2.8)	-0.036 (-18.9)	0.022 (11.1)
REGULAR	0.021 (14.3)	0.022 (13.7)	0.043 (22.5)	0.019 (10.0)
WORKTIME	0.015 (10.6)	0.003 (2.0)	0.035 (18.2)	0.012 (6.2)
JOB_LENGTH	-0.037 (-25.4)	-0.009 (-5.6)	-0.005 (-2.7)	0.012 (6.3)
UNION	-6.01E-0.5 (0.)	0.002 (1.2)	-0.006 (-2.9)	0.022 (11.1)
LARGE	0.012 (8.6)	0.014 (9.1)	0.5E-3 (0.3)	0.021 (10.7)
By Returns	**0.540 (365.1)**	**0.202 (124.2)**	**0.205 (107.8)**	**-0.117 (-60.2)**
SEX	-0.215 (-145.1)	-0.045 (-27.3)	0.034 (18.1)	0.116 (59.5)
AGE	0.966 (652.9)	0.058 (35.8)	0.172 (90.4)	0.080 (41.2)
REGULAR	-0.027 (-18.3)	0.003 (1.7)	-0.093 (-49.0)	-0.009 (-4.4)
WORKTIME	-0.046 (-31.0)	0.063 (38.6)	-0.322 (-169.4)	0.136 (69.9)
JOB_LENGTH	0.047 (31.7)	0.005 (2.8)	0.061 (32.3)	0.018 (9.0)
UNION	-0.006 (-4.1)	0.004 (2.2)	-0.003 (-1.7)	0.015 (7.6)
LARGE	0.010 (6.6)	0.009 (5.2)	0.035 (18.5)	-0.026 (-13.2)

Contrary to the previous three cases as shown in column A, B, and C, however, among the college graduates who attended both high school and college in the capital region (column D), the mean wage of workers in the non-capital region ($\overline{W}_{JN}$) is around 19.5 percent higher than that of the capital counterpart ($\overline{W}_{JC}$). This shows that the larger positive portion of attributes exceeds the negative portion by returns in column D. This may imply that the workers classified as the capital region leak migrants (HC-CC-JN) tend to get some of the highest paying jobs offered from the non-capital region due to their excellent individual and job related attributes. Even though they share only 2.7% of the new college graduates obtaining jobs in the non-capital region, they seem to be

important human resources to make up for the serious brain drain of the talented youth in the non-capital region. It is essential to retain such talented influx for the sustainable development of the non-capital region. However, it may be more important to create high quality jobs with high returns and to make a progress in quality colleges in the non-capital region for protection of brain drain and influx of the talented youth.

Ⅴ. Conclusion and Implications

This study investigates spatial dependence between attended high school, college, and job location choice and analyzes the reasons of the wage differences due to college and job locations of the new college graduates in Korea. In this study, it was assumed that location is separated into two regions in Korea: the capital region and the non-capital region. Given the high school location, the college location choice behavior is estimated by a probit model. And then the job location choice behavior and the wage equations according to the relevant job location are estimated by the sample selection model.

The empirical results of this study show that college location choice is usually determined by location and type of the attended high school, parental education level and family wealth. The colleges located in the capital region are preferred by the high school graduates with higher human capital and higher family wealth. Job location choice is also significantly determined by college location and individual human capital such as foreign language ability, internship, and study experience abroad. The variables related with individual human capital come to be more important for the job seekers from the non-capital region to obtain their jobs in the capital region. This study reveals spatial dependence between college and job locations regardless of the high school location and also shows the evidence of selective migration for better colleges and better jobs.

Finally, wages are various with locations for high school, college and job. Wages in the capital region are usually higher than those in the non capital region given the location of colleges graduated. However, some of the college graduates with higher human capital who attended both high school and college in the capital region tend to occupy the highest paying jobs in the non-capital region. This shows that they selectively target specific jobs in the non-capital labor markets providing higher wage and higher skill occupations to be concentrated in the specific cities of the non-capital region. The results of wage differentials decomposition show the similar pattern that the wage differences between the capital region and the non-capital region are decomposed of the negative portion by attributes and the larger positive portion by returns in the capital region. This indicates that the workers in the non-capital region would be better off if they could obtain jobs relevant to their personal characteristics in the capital region. This is the reason why the young students in the

non-capital region want to choose their colleges and jobs in the capital region.

In the context of national economic slowdown and increasing regional inequality, the findings of this study are of considerable policy relevance. As Champion (2012) points out, while attracting the influx of the talented youth seems to be the privilege of relatively few regions, retaining them is rather a jointly major challenge for the non-capital region. From such a stand, it is more important to generate and create quality jobs with high returns and to enhance the linkages between companies and colleges in the non-capital region for retention of the talented youth and for attraction of better human resources as well.

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Jae Hong Kim(金宰弘): He is a professor at the University of Ulsan, Korea. He received his Ph.D. from the Carnegie Mellon University, US in 1993. His research interests include urban and regional development, environmental policy and quantitative methodology. He published 12 books and more than 70 refereed papers in the various academic journals such as Urban Studies, International Review of Public Administration, International Journal of Urban Sciences, Korean Regional Science Association, Korean Spatial Planning Review, Korean Journal of Local Government Studies and so on. He is currently the president of the Korean Regional Science Association and a technical expert for the presidential advisory committee for regional development. (jhkim@ulsan.ac.kr)

Soogwan Doh(都守返): He is currently a professor of Public Administration at the Catholic University of Daegu. He received his Ph.D. from the George Mason University in the Unites States (Thesis: Impacts of Social Capital on Entrepreneurship, Innovation, and Economic Development in the Knowledge Economy, 2010). His research areas include social capital, social economy, social welfare and health policy, entrepreneurship, innovation, and regional economic growth. He has published 27 refereed papers in the major academic journals including the Research Policy (Government Support for SME Innovations in the Regional Industries: The Case of Government Financial

국문요약

대학 및 취업지역 선택 행태 및 대학졸업자의 공간적 임금차이 분석

김 재 홍
도 수 관
김 승 남

본 연구의 목적은 고등학교, 대학, 직장 소재지 선택 간의 공간적 의존성을 검토하고 대학졸업자의 대학소재지와 직장소재지에 기인한 임금격차를 분석하는 것이다. 이를 위해 본 연구에서는 지역을 수도권과 비수도권 지역으로 구분하며, 프로빗 모형을 활용하여 대학과 직장 소재지 선택 행위를 추정하고 표본선택모형을 활용하여 임금함수를 추정한다. 본 연구의 분석결과를 요약하면 다음과 같다. 첫째, 고등학교 소재지와 유형, 가구소득, 부모의 학력 등이 대학의 입지선택에 영향을 미친다. 특히, 인적자본과 가구소득, 부모의 교육수준이 높을수록 수도권 지역의 대학을 선호하는 것으로 나타났다. 둘째, 졸업한 대학의 소재지와 외국어능력, 해외학습 및 인턴경험 등의 개인 인적자본이 대학졸업자의 직장소재지 선택 행위에 유의한 영향을 미치는 것으로 나타났다. 특히, 본 연구의 분석결과는 수도권 대학 졸업과 수도권 소재 직장 선택간의 공간적 의존성을 잘 보여주고 있는데, 이는 보다 나은 대학과 직업을 선택하기 위한 선별적 인구이동 현상이 나타나고 있음을 뒷받침한다. 마지막으로, 임금수준은 고등학교, 대학교, 직장의 위치 등에 따라 다양하게 나타나고 있다. 수도권 지역에 위치한 직장의 임금은 비수도권에 비해 더 높은 것으로 나타났다. 그러나 수도권 지역에서 고등학교와 대학을 졸업한 인적자원 수준이 높은 일부는 비수도권 지역의 임금수준이 가장 높은 직장에 취직하는 경향이 나타나고 있다. 이러한 결과는 그들이 선별적 구직활동을 통하여 비수도권 노동시장에서 수도권에서보다 더 높은 임금을 제공하는 직장을 구하고 있음을 보여주고 있다.

주제어: 입지 선택, 공간의존성, 선별적 인구이동

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Seung-Nam Kim(金承楠): He received his Ph.D. degree in urban planning and design at Seoul National University and has been working for Architecture and Urban Research Institute as a associate research fellow. His research interests include urban transportation, environmental policy, and urban sustainability. He published 23 peer-reviewed papers including “The Seoul of Alonso: New Perspectives on Telecommuting and Residential Location from South Korea” (Urban Geography, 2012) and “The Effect of the Physical Environment on Walking Behavior, Medical Service Utilization, and EQ-5D Results of the Elderly in Rural Areas: A Multi-level Path Analysis with Complex Survey Data” (Journal of The Korean Official Statistics, 2014). (snkim@auri.re.kr)

〈논문접수일: 2015. 01. 09 / 심사개시일: 2015. 01. 24 / 심사완료일: 2015. 01. 24〉