연 구 논 문

노동시장 진입 시점 경기상황이 청년층의 임금과 고용에 미치는 영향*

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본 연구는 1~22차 한국노동패널 조사자료를 활용하여 18~30세 청년층의 노동시장 진입 시점 경기상황이 노동시장 단기 및 장기 성과에 미치는 영향을 실증분석하였다. 분석결과, 청년실업률이 높은 해에 졸업한 경우 첫 직장 임금 수준, 졸업한 해에 취업할 확률, 첫 직장이 전일제 혹은 정규직일 가능성과 부의 관계가 있었다. 또한 취업, 전일제 취업, 정규직 취업까지의 기간은 청년실업율이 높은 해에 취업한 것과 정의 상관관계가 있었다. 첫 임금은 이후 10년까지의 임금 수준과 양의 상관관계가 있었고 특히 첫 임금의 설명되지 않은 요인과 연관이 있었다. 금융위기 이후에 졸업한 코호트는 노동시장 참여, 전일제 및 정규직 취업에서 위기 이전 코호트에 비해 취약한 것으로 나타났다. 이러한 결과는 불리한 경기상황 및 임금 결정의 불확실성하에서 노동시장에 진입하는 청년층이 고임금의 안정적인 일자리로 상향이동해 갈 수 있도록 청년층 맞춤형의 직업훈련 및 고용서비스를 적극 지원할 필요성을 시사한다.

핵심용어 : 신규대졸자, 노동시장 진입 시점, 청년실업률, 한국노동패널

I. Introduction

The long-term or "scarring" effects of initial labor market conditions on workers' wage and employment in later career have been explored for several decades. Empirical literature focused on business cycles to compare labor market outcomes of recession entrants and boom entrants, using national or regional unemployment rates as a proxy of entry conditions (Brunner and Kuhn, 2014; Han, 2018; Okun, 1973; Schwandt and von Wachter, 2019). Recent studies take advantages of major economic crises such as the Great Depression and Asian Financial Crisis as a natural experiment of an unexpected negative shocks to entry cohorts. These studies uniformly confirmed substantial persistent penalties of exceptionally poor labor market entry conditions among recession cohorts in terms of earnings, employment prospects, skill match and various non-labor market outcomes (Oyer, 2006; Raaum and Roed, 2006; Stevens, 2007; Kwon et al., 2010; Hoynes et al., 2012; Del Bono et al., 2012; Currie and Schwandt, 2014; Altonji et al., 2016; Liu et al., 2016; Maclean et al., 2016; Autor et al., 2019; Choi et al., 2020; Oh and Lee, 2021).

When cyclical fluctuations of macroeconomic condition yield to a long-term divergence in wage profiles between recession and boom cohorts (Krebs, 2007; Han, 2018), the effect is unequal *within* entry cohorts by level of education, gender, and employer-specific factors (Kondo, 2007; Genda et al., 2010; Hoynes et al., 2012; van den Berge, 2018). For example, uncertainty (or "luck") in the entry wage determination is often associated with firm- or industry-specific factors, leaving a persistent gap between lucky entrants and unlucky ones of the same cohort (Parent, 2000; von Wachter and Bender, 2006; Gruetter and Lalive, 2009; Gan et al, 2010; Sullivan, 2010). The extent of severity and persistency of wage loss within

the recession cohorts may also depends on the individual-specific quality of job search, job mobility, and skill mismatch that differ by college majors (Oreopoulos et al., 2012; Altonji et al., 2016; Liu et al., 2016).

These long-term negative effects of adverse entry conditions are pervasive across EU countries, U.S., Japan, and South Korea, with variations in estimates subject to the country-specific labor market structure. Regulatory features of a labor market such as wage rigidity and strong collective bargaining account for heterogeneity in results across countries (Genda et al., 2010; Fernadez-Kranz and Rodriguez-Planas, 2018). Loss in earnings and employment among recession entrants is unlikely to recover if the labor market is fabricated with strict worker protection policies (Cockx, 2016). When the labor market imposes certain framework of rules that instruct job mobility and wage determination processes, there is little guarantee that the government support adequately restores wage reductions among recession cohorts (Schwandt and von Wachter, 2019). Despite accumulated evidence on the importance of entry conditions among young workers, exact sources of persistent negative effects are far from definitive and thus effective policy devices to support unlucky cohorts remain contextual.

Previous studies paid limited attention to the causal loop of recession at graduation into long-term labor market outcome via *entry*-level labor market outcomes. This study extends the literature by empirically examining the effects of graduation during recession on entry-level outcomes, and then the subsequent effects of entry outcomes on later labor market outcomes of young adults in South Korea. The labor market hardship among young adults has aroused in South Korea since the Asian financial crisis and the slowdown of economic growth afterwards (see Figure 1). The South Korean labor market registers a high and elevating unemployment rate of workers of aged 15-29 (see Figure 2). The rigidity of the South Korean labor market may fuels the bad macroeconomic condition or other early career shocks to leave irretrievable

scar on new entrants (Cockx and Ghirelli, 2016). This context signifies the need of empirical evidence of the magnitude and persistency of entry conditions on later labor market outcomes of recession cohorts in South Korea. Knowledge on mechanisms and heterogeneity in entry condition effects is critical for the South Korean government to build up labor and welfare policies to mitigate the lifetime loss of unlucky entrants.

〔Figure 1〕 Real GDP growth rate（South Korea, 1970-2020）

〔Figure 2〕 Unemployment（Quarterly, 1990-2021, South Korea）
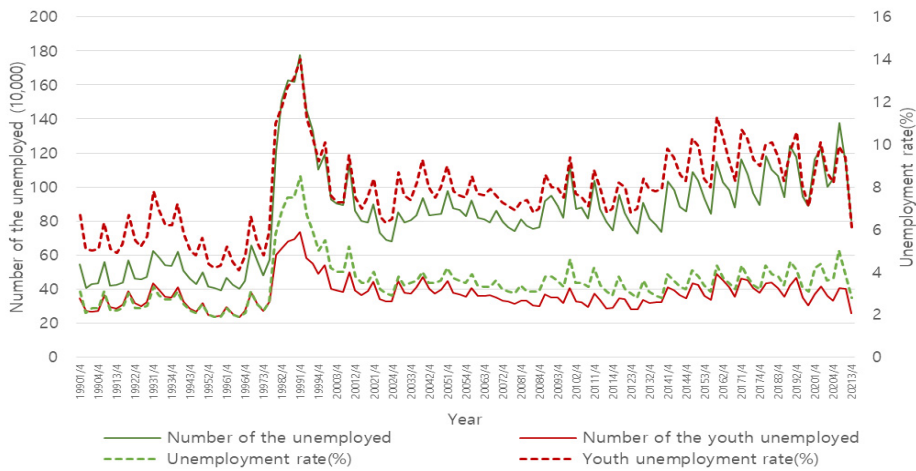
Using data from the Korean Labor and Income Panel Survey of 1998-2019 waves, we identify the year of graduation of the final education among sample individuals of aged 18-30. Based on the GDP growth rates, graduation cohorts are categorized into pre-crisis cohort of 2000-2007, in-crisis (or recession) cohort of 2008-2009 and post-crisis cohort of 2010-2019.

The entry-level labor market outcomes are defined by monthly earnings in the first job, employment status at graduation, life-time labor force participation status, and binary indicators for full-time and permanent employment in the first job. Delay in career development are proxied by years to the first job since graduation, years to the first full-time and the first permanent employment. The long-term labor market outcomes are measured by monthly earnings up to 10 years of work experience, full-time employment status and permanent employment status, and are estimated as a function of recession effects and entry-level outcomes.

The potential endogeneity of entry-level outcomes is dealt with the two-stage least squares (2SLS) method and the nonparametric IV method (Li and Racine, 2004; Gan et al., 2010). In these IV estimations, we decompose entry earnings into the predicted component and the random component (so called, "luck") to assess which component is primarily responsible for the long-term effects of entry earnings. If the role of "luck" is non-negligible in the linkage of entry earnings and post earnings, unlucky cohorts with lower entry earnings are likely to carry on the long-lasting penalties of bad start as "luck" is hard to systematically tackle.

Findings show that entry earnings and employment conditions degrade with higher youth unemployment rates at graduation. Differentials in entry earnings are found to lead to differentials in post-earnings up to 10 years of work experience. The unexplained random component of entry earnings is found persistently significant in the determination of post earnings.

The remainder of the paper is organized as follows. Research methods are

described in Chapter Ⅱ and Chapter Ⅲ presents estimation results. Chapter Ⅳ concludes the study with policy implications and suggestions for further studies.

Ⅱ. Research Method

1. Data Source and Variables

We use a panel data of the Korea Labor and Income Survey (KLIPS) for the period of 1998-2019. The KLIPS is a national longitudinal survey of households, annually administered by the Korea Labor Institute. The first survey consisted of the original sample of 5,000 households (13,321 individuals aged 15 and older) residing in urban areas (excluding Jeju island). 1,415 households are supplemented in the 12th wave of 2009 (the 2009 complied sample of total 6,721 households and 14,489 individuals) and 5,044 households in the 21st wave of 2018 (the 2018 complied sample of total 12,134 households and 23,972 individuals). In the 22nd wave, 65.3% of the 1998 original sample and 82.1% of the 2009 complied sample are retained.

Questionnaires provide comprehensive household- and individual-level information on demographic characteristics, socioeconomic conditions, and detailed labor market activities and work history. From individual-level survey and work history component, we can trace changes in employment status, type of employment (full-time or part-time; permanent or temporary), and firm characteristics (firm size and location), earnings and non-wage compensations such as social security, severance pay, and fringe benefit. We organize dependent and control variables based on the conceptual framework of the relationship between economic conditions at labor market entry, entry-level labor market outcomes, and long-term outcomes (see Figure 3). The key independent

variables are national-level youth unemployment rates at graduation and at the year of the first employment. Unlike Choi et al. (2020) and Han (2018) which explore national or local unemployment rate as proxies for the entry-level economic condition, this study looks at youth unemployment rate to better capture the labor market conditions directly relevant for new entrants..

The entry-level labor outcomes are monthly earnings at the first job, type of employment at the first job (full-time, permanent), and life-time labor force participation status. We speculate that bad job market conditions at the time of graduation may lead to delay in employment, which are measured by employment status at graduation, years to the first job since graduation, years to the first full-time and the first permanent employment. The long-term labor market outcomes are monthly earnings up to 10 years of experience, and type of employment. We model the long-term labor market outcomes as a function of entry earnings, through which the long-term effect of youth unemployment rate at labor market entry may rise.

〔Figure 3〕 Conceptual framework
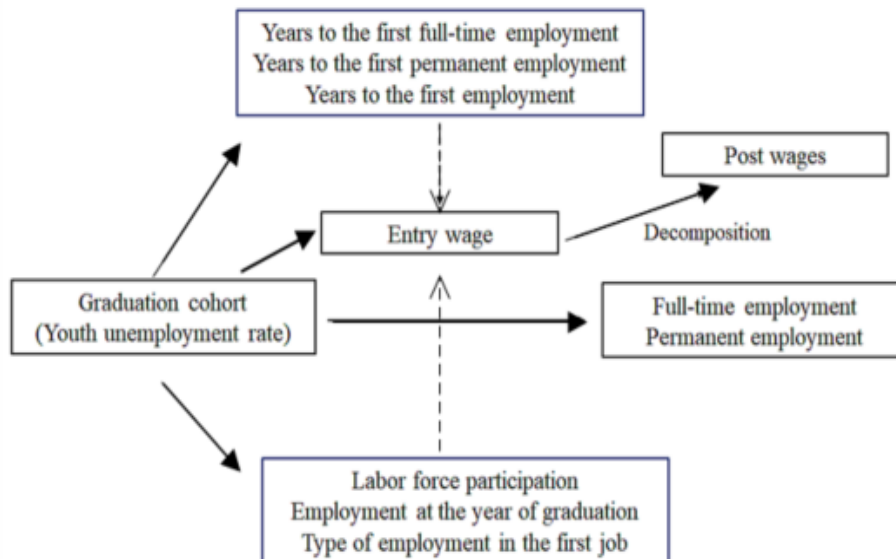
Control variables are a set of individual-specific and job characteristics (von Wachter and Bender, 2006; Gruetter and Lalive, 2009). Individual-specific factors include age, gender (being female), marital status (married with spouse), level of education (college graduation or not), years of experience, annual household income, and region of residence. Annual household income and monthly earnings are in real value adjusted to 2015 prices. Job-specific factors are type of employment (full-time; permanent), firm size as the number of employees and location of job. Cohort-fixed effects and year dummies are controlled to incorporate time-specific effects of overall macroeconomic conditions.

2. Sample Definition

We select the study sample as those who completed their education in 2000 or thereafter at age 18-30. The graduation cohort of 2000-2007 is the pre-crisis group, whose labor market entry occurs before the global financial crisis with solid GDP growth rates of 4.3-5.8% (see Figure 1). The in-crisis group is the graduate cohort of 2008-2009 (Jeong, 2012; Kim, 2021). The GDP growth rates seemed severely hit by the global economic crisis during the 4th quarter of 2008 to the first three quarters of 2009. The graduate cohort of 2008 may be under the influence of the presage of forecasted economic crisis. Graduates of 2010 and later years up to 2019 are the post-crisis group. Total sample size is 64,172 of an unbalanced panel of 7,755 individuals including 3,893 of the pre-crisis cohort, 793 of the in-crisis cohort and 3,069 of the post-crisis cohort. Summary statistics are given in <Table 1>.

〈Table 1〉 Summary statistics

	At the year of graduation		At the first year of employment	
	Mean	SD	Mean	SD
Youth unemployment rate	8.28	0.852	8.55	0.891
Monthly earnings at the first year of employment			199.3	111.5
Full-time employment at the first job			0.915	0.279
Permanent employment at the first job			0.731	0.444
Years to the first employment since graduation			4.38	5.04
Years to the first full-time employment since graduation			4.35	4.95
Years to the first permanent employment since graduation			4.60	4.93
Control variables				
Age at the graduation	23.3	3.17	28.0	5.54
Female	0.479	0.500	0.458	0.498
Married	0.036	0.187	0.321	0.467
College education	0.669	0.471	0.771	0.420
Household income (annual)	4472.4	3723.1	4230.4	3328.5
No. of observations	3,623		5,781	

Notes : Monthly earnings and annual household income are in KRW10,000 at the 2015 price.

<Table 2> presents descriptive statistics of entry-level labor market outcomes by the level of national youth unemployment rate at graduation. We compare the low (7%) unemployment cohort of 2002 and 2008, the 8% cohort of 2009 and 2010, and the high (10%) cohort of 2016 and 2017 to illustrate the potential association between the youth unemployment rate at graduation and the entry labor market outcomes. Cohorts of higher unemployment rates at graduation receive on average lower entry earnings, take the first job at smaller-sized firms, and are less likely to have full-time and permanent employment at the first job than those of lower unemployment rates, whereas cohorts of lower unemployment rates take longer year to the first employment, the first full-time and permanent employment.

〈Table 2〉 Youth unemployment rate and entry labor market outcomes

Subgroups by Youth Unemployment Rate at Graduation	7% group (2002, 2008 graduates)	8% group (2009, 2010 graduates)	10% group (2016, 2017 graduates)
Monthly earnings at the first job	208.4 [121.3]	202.9 [95.9]	180.7 [73.9]
Full-time employment at the first job	0.927 [0.261]	0.935 [0.246]	0.874 [0.332]
Permanent employment at the first job	0.767 [0.423]	0.752 [0.432]	0.678 [0.468]
Years to the first employment since graduation	5.30 [5.55]	3.89 [3.60]	0.985 [0.921]
Years to the first full-time employment since graduation	5.29 [5.49]	3.87 [3.58]	1.020 [0.926]
Years to the first permanent employment since graduation	5.53 [5.46]	3.98 [3.50]	1.12 [0.991]
Firm size at the first job	2.76 [1.04]	2.68 [1.02]	2.61 [1.09]
No. of observations	765	589	397

Notes : The 7% group is the 2002(7.0%) and 2008(7.1%) graduates, the 8% group is the 2009(8.0%) and 2010(7.9%) graduates and the 10% group is the 2016(9.8%) and 2017(9.8%) graduates. Monthly earnings are in KRW10,000 at the 2015 price. Means and standard deviations in brackets are reported.

3. Estimation Models

The regression model of entry earnings adopts the standard Mincer's wage equation as given below :

$$Entry\ wage_i = \beta_0 + \beta_1 Recession_i + \gamma_1 X_i + \mu_i + \varepsilon_{1i} \tag{1}$$

where *Entrywage* denote monthly earnings at the first job. *Recession* are a set of indicators for entry economic conditions such as youth unemployment rate at graduation, youth unemployment rate at the first year of employment and the cohort fixed-effects (pre-crisis cohort of 2000-2007; in-crisis cohort of 2008-2009; post-crisis cohort of 2010-2019). *X* is a set of control variables for individual-specific factors and job characteristics. To correct potential inconsistency in estimates caused by non-random selection into labor force

participation, the Heckman sample selection method is applied. The first stage probit model of the labor force participation status uses household income as the exclusion restriction.

We conduct logistic regressions for binary entry-level outcomes (employment status at the year of graduation; life-time labor force participation status). The type of the first employment is estimated by a multinomial logit regression model, where 0 indicates part-time contract-based, 1 contract-based full-time, and 2 full-time permanent. The transitions to the first employment (years to the first employment since graduation, years to the first full-time employment, and years to the first permanent employment) are estimated by the negative binomial count models.

In Equation 2, we measure the persistent effects of entry conditions (*Entry*) on post labor market outcomes (*Post*), given as below :

$$Post_{it} = \delta_0 + \delta_1 Entry_{it} + \gamma_2 \text{cohort}_i + \gamma_3 Z_{it} + \alpha_i + \text{year}_t + \varepsilon_{2it} \qquad (2)$$

where *Post* indicates labor market outcomes in the post-period at t such as monthly earnings, full-time employment and permanent employment status. *Entry* is the entry condition variables such as monthly earnings in the first job, and youth unemployment rate at graduation. *Cohort* is cohort dummies with pre-crisis as base. Z includes the set of control variables. α_i and year_t are time-invariant individual-specific effects and year fixed effects. Equation 2 is estimated yearly up to the 10th year of experience to assess the persistent effects of entry-level outcomes on post-period outcomes.

Consistent estimation of δ_1 in Equation 2 is subject to the primary econometric complication if two error terms in Equations 1 and 2 are correlated. This endogeneity between entry earnings and post earnings may occur due to unobserved relevant omitted variables such as job matching quality, firm-specific screening process for new hires, and other individual-level career choices such as job mobility and training investment. To address this

issue, we first try the two stage least square estimation (2SLS) to obtain the predicted entry wage in the first stage estimation with instruments (youth unemployment rate at graduation, youth unemployment at the first year of employment, years to the first employment, and cohort effects), and then measure the association of the predicted entry earnings and post earnings in the second-stage estimation.

For the purpose of separating out the effects of observables and of unobservable factors (so-called "luck") on post earnings in Equation (3) below, we decompose entry earnings into the predicted component (*Observed_entrywage*) and the random component (*Random_entrywage*) using both 2SLS and the nonparametric IV kernel regression estimation models (Li and Racine, 2004; Gan et al. 2010). Unlike 2SLS model, the nonparametric model has an advantage of avoiding the linearity assumption when estimating the predicted value of potentially endogenous entry earnings, thus robust to the exclusion restriction, and produces the predicted value of entry earnings as an efficient instrument (Li and Racine, 2004).

$$
\begin{aligned}
Postwage_{it} &= \delta_0 + \delta_1 Observed_{entrywage_{it}} + \delta_1 Random_{entrywage_{it}} + \gamma_2 cohort_i + \gamma_3 Z_{it} + \alpha_i + year_t + \varepsilon_{3it}
\end{aligned}
$$

(3)

Finally, the panel random-effects estimations of post-outcomes are conducted to examine whether entry conditions overall matter for post-period labor outcomes.

Ⅲ. Results

1. Effects of graduation during recession on entry labor market outcomes

<Table 3> shows the relationship between youth unemployment rates at graduation and monthly earnings in the first job. Youth unemployment rates at the year of graduation and at the first year of employment, and years to the first employment since graduation have statistically significant negative associations with monthly earnings at the first job. It implies that the bad economic conditions for graduates and delay in the first employment lower earnings in the first job. The entry earnings are found positively associated with full-time and permanent employment, firm size, location of firms in Seoul, Incheon and Gyeonggi area (SIG). These results are confirmed robust to selection into the labor force in the Heckman sample selection estimation (column 4). Monthly earnings get lower by KRW12,810 per 0.1% higher youth unemployment at graduation. One year delay in the first employment leads to a decline in monthly earnings by KRW42,700.

〈Table 3〉 Graduation during recession and entry earnings

Dependent variable=Monthly entry earnings	(1) OLS	(2) OLS	(3) OLS	(4) Heckman model
Youth unemployment rate at graduation	-8.402 (3.69)**	-6.998 (3.44)**	-9.668 (4.30)**	-12.81 (7.16)*
Years to the first employment since graduation	-6.554 (1.059)***	-4.487 (0.994)***	-6.846 (1.29)***	-4.270 (1.33)***
Youth unemployment rate at the first year of employment			91.91 (27.5)***	-2.624 (4.08)

〈Table 3〉-continued

Dependent variable=Monthly entry earnings	(1) OLS	(2) OLS	(3) OLS	(4) Heckman model
Graduation cohort (base=2000-2007)				
In-crisis cohort (2008-2009)			-16.56 (10.2)	7.133 (8.88)
Post-crisis cohort (2010-2019)			-27.45 (13.1)**	22.40 (6.96)***
Demographic factors				
Age	8.555 (1.029)***	7.070 (0.973)***	7.098 (0.962)***	8.779 (0.957)***
Female	-38.16 (4.44)***	-33.09 (3.90)***	-33.12 (3.90)***	4.434 (6.34)
Married	57.76 (5.46)***	45.58 (4.96)***	44.64 (4.79)***	-3.044 (9.21)
College education	22.90 (5.78)***	13.04 (5.48)**	12.40 (5.34)**	32.12 (9.45)***
Job characteristics				
Full-time employment		47.34 (7.92)***	47.67 (7.91)***	55.95 (6.12)***
Permanent employment		47.10 (3.67)***	46.87 (3.64)***	32.48 (3.47)***
Firm size (base=500 or more)				
1-9 employees		-71.14 (5.20)***	-70.98 (5.20)***	-39.42 (5.10)***
10-99 employees		-57.66 (4.41)***	-57.83 (4.39)***	-28.47 (3.57)***
100-499 employees		-37.29 (4.73)***	-36.92 (4.71)***	-8.36 (4.04)**
Location of job (base=others)				
Metropolitan city		-2.26 (4.55)	-2.20 (4.52)	-5.82 (4.62)
SIG		13.51 (4.71)***	13.87 (4.65)***	5.02 (4.17)
No. of observations	3,021	3,009	3,009	2,265
Adjusted R-squared	0.286	0.391	0.393	§

Notes : In the first-stage estimation, the labor force participation indicator is defined as 1 if an individual have ever been employed and 0 if otherwise. The selected sample size is 1,427 and the non-selected sample size is 838. Monthly earnings are in KRW10,000 at the 2015 price. Metropolitan city indicates Busan, Daegu, Daejeon, Gwangju and Ulsan. SIG includes Seoul, Incheon, and Gyeonggi province. Year fixed-effects are controlled. Robust standard errors are in parentheses. * $p<0.1$, ** $p<0.05$, *** $p<0.01$.
§ : Wald Chi-squared test statistics are 718.44 for overall specification and 56.17 for the null hypothesis of no sample selection bias.

<Table 4> reports results from the logistic regressions of career choice. Youth unemployment rate and graduation during the in-crisis period are negatively associated with employment at the year of graduation (OR=0.503, p<0.01) and the life-time labor force participation status (OR=0.651, p<0.01). Post-crisis cohorts are more likely to be employed at the year of graduation (OR=1.997, p<0.01), and show a lower likelihood of life-time labor force participation (OR=0.502, p<0.01). Estimates of household income quantile dummies (bottom 20 percent as base) show that those with high household income at the 4th and top quantiles are less likely to be in the labor force (OR=0.560, p<0.01; OR=0.418, p<0.01, respectively).

〈Table 4〉 Graduation during recession and career choice (Logistic regression)

Dependent variable=	(1) Employed at the year of graduation	(2) Life-time labor force participation
Youth unemployment rate	0.503 (0.031)***	0.651 (0.039)***
Graduation cohort(base=2000-2007)		
In-crisis cohort (2008-2009)	0.779 (0.099)**	0.741 (0.135)*
Post-crisis cohort (2010-2019)	1.997 (0.221)***	0.502 (0.058)***
Age	0.679 (0.011)***	1.130 (0.022)***
Female	0.536 (0.044)***	1.557 (0.146)***
Married	0.427 (0.058)***	0.384 (0.104)***
College education	4.202 (0.488)***	1.536 (0.175)***

〈Table 4〉-continued

Dependent variable=	(1) Employed at the year of graduation	(2) Life-time labor force participation
Household income(base=bottom quantile)		
2nd quantile	0.736 (0.089)**	0.758 (0.128)*
3rd quantile	0.935 (0.112)	0.765 (0.129)
4th quantile	1.145 (0.134)	0.560 (0.089)***
Top quantile	0.962 (0.110)	0.418 (0.064)***
Region of residence(base=others)		
Metropolitan city	1.283 (0.132)**	1.030 (1.129)
SIG	1.057 (0.093)	0.998 (0.106)
No. of observations	5,780	3,620
Pseudo R-squared	0.322	0.124

Notes : Youth unemployment rate and control variables are measured at the year of the first employment in column 1 and at the year of graduation in column 2. The odds ratios (OR) and robust standard errors in parentheses are reported. * $p<0.1$, ** $p<0.05$, *** $p<0.01$.

In <Table 5>, results from the multinomial logistic estimation model of three types of the first employment (part-time contract-based job as base, full-time contract-based job and full-time permanent job) show that higher youth unemployment rates at graduation and at the first year of employment have negative associations with full-time employment (RRR=0.738, p<0.01) and permanent employment in the first job (RRR=0.758, p<0.01). There are no statistically significant cohort effects whereas male graduates and those with college education are more likely to find the first job as full-time permanent.

〈Table 5〉 Graduation during recession and the entry employment type (Multinomial logit regression)

Base=Part-time contract employment in the first job	Full-time contract employment in the first job	Full-time permanent employment in the first job
Youth unemployment rate at graduation	0.738 [-0.007] (0.076)***	0.758 [-0.009] (0.070)***
Youth unemployment rate at the first year of employment	0.840 [0.003] (0.086)*	0.812 [-0.014] (0.073)**
Graduation cohort (base=2000-2007)		
In-crisis cohort (2008-2009)	0.750 [0.177] (0.152)	0.748 [0.740] (0.134)
Post-crisis cohort (2010-2019)	0.970 [0.180] (0.165)	0.968 [0.754] (0.148)
Demographic factors		
Age	0.975 [-0.003] (0.018)	0.996 [0.003] (0.016)
Female	0.442 [0.018] (0.056)***	0.360 [-0.076] (0.041)***
Married	0.607 [-0.097] (0.097)***	1.285 [0.103] (0.172)*
College education	1.793 [-0.076] (0.234)***	3.303 [0.154] (0.384)***
Household income (base=bottom quantile)		
2nd quantile	0.695 [0.195] (0.136)*	0.657 [0.717] (0.117)**
3rd quantile	0.777 [0.193] (0.149)	0.754 [0.729] (0.131)
4th quantile	0.903 [0.187] (0.172)	0.927 [0.748] (0.160)
Top quantile	0.939 [0.147] (0.188)	1.322 [0.804] (0.239)
Region of residence (base=others)		
Metropolitan city	0.892 [0.198] (0.149)	0.932 [0.735] (0.142)
SIG	0.733 [0.162] (0.099)**	0.979 [0.771] (0.119)
No. of observations	5,728	
Wald Chi-squared test statistic	543.7	

Notes : Monthly earnings are in KRW10,000 at the 2015 price. Year fixed-effects are controlled. The relative-risk ratios (RRR) and robust standard errors in parentheses are reported. The estimated marginal effects at means are in the bracket. * $p<0.1$, ** $p<0.05$, *** $p<0.01$.

<Table 6> reports results from the negative binomial count models for delay in employment. A 1% higher youth unemployment rate at graduation are likely to cause longer years to the first employment by a factor of 1.253, to the first full-time employment by a factor of 1.240 and to the first permanent employment by a factor of 1.194. Post-crisis graduates experience the opposite, expecting to have a rate of 0.752, 0.741, and 0.704 times shorter than other cohorts. College education and the top quantile household income are associated with shorter years to the first employment, the first full-time and the first permanent employment.

〈Table 6〉 Graduation during recession and delay in employment (Negative binomial regression)

Dependent variable=	(1) Years to the first job	(2) Years to the first full-time job	(3) Years to the first permanent job
Youth unemployment rate at the first year of employment	1.253 (0.018)***	1.240 (0.018)***	1.194 (0.020)***
Graduation cohort (base=2000-2007)			
In-crisis cohort (2008-2009)	0.981 (0.023)	0.976 (0.024)	0.969 (0.029)
Post-crisis cohort (2010-2019)	0.752 (0.022)***	0.741 (0.022)***	0.704 (0.024)***
Age	1.143 (0.004)***	1.141 (0.004)***	1.126 (0.004)***
Female	1.193 (0.021)***	1.212 (0.023)***	1.234 (0.026)***
Married	1.378 (0.028)***	1.348 (0.028)***	1.332 (0.030)***
College	0.526 (0.013)***	0.501 (0.013)***	0.528 (0.15)***
Household income(base=bottom quantile)			
2nd quantile	1.021 (0.033)	1.025 (0.035)	1.031 (0.040)
3rd quantile	0.965 (0.028)	0.968 (0.030)	0.990 (0.034)

〈Table 6〉-continued

Dependent variable =	(1) Years to the first job	(2) Years to the first full-time job	(3) Years to the first permanent job
4th quantile	0.923 (0.027)***	0.936 (0.028)**	0.945 (0.031)*
Top quantile	0.919 (0.029)***	0.928 (0.028)**	0.924 (0.030)**
Region of residence(base=others)			
Metropolitan city	0.939 (0.023)***	0.943 (0.024)**	0.961 (0.027)
SIG	1.008 (0.020)	1.020 (0.021)	1.019 (0.023)
No. of observations	5,780	5,463	4,809
Pseudo R-squared	0.220	0.208	0.174

Notes : Control variables are measured at the year of the first employment. The incidence-rate ratios (IRR) and robust standard errors in parentheses are reported. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

2. Effects on entry outcomes on later labor market outcomes

<Table 7> presents the OLS and 2SLS sample selection estimation results on the relationship between entry earnings and post earnings. Results show that entry earnings are positively associated with post earnings, and this positive association is persistent up to 10 years of work experience. It indicates that recession cohorts bear the cost of bad luck at entry in terms of lower earnings in later career as well in the first job.

〈Table 7〉 Effects of entry earnings on post earnings (OLS and 2SLS sample selection estimations)

Monthly earnings at t years of experience t	OLS	Adj. R² [No. of obs.]	2SLS sample selection	Adj. R² [No. of obs]
2	0.442 (0.130)***	0.609 [2,474]	0.530 (0.064)***	0.597 [1,796]

〈Table 7〉-continued

Monthly earnings at t years of experience t	OLS	Adj. R² [No. of obs.]	2SLS sample selection	Adj. R² [No. of obs]
3	0.305 (0.115)***	0.481 [1,703]	0.449 (0.072)***	0.401 [1,148]
4	0.416 (0.149)***	0.142 [1,422]	0.578 (0.069)***	0.097 [915]
5	0.286 (0.113)**	0.490 [1,263]	0.503 (0.075)***	0.478 [810]
6	0.248 (0.114)**	0.499 [1,062]	0.569 (0.075)***	0.415 [648]
7	0.454 (0.088)***	0.582 [886]	0.639 (0.077)***	0.606 [540]
8	0.445 (0.089)***	0.264 [781]	0.620 (0.086)***	0.173 [460]
9	0.506 (0.056)***	0.553 [615]	0.472 (0.130)***	0.544 [347]
10	0.388 (0.110)***	0.486 [504]	0.565 (0.135)***	0.507 [201]

Notes : Dependent variable is monthly earnings at the t year of experience in KRW 10,000 at the 2015 price, where t=1 in the first year of employment. Age, gender, marital status, education level, full-time and permanent employment status, firm size, location of job, and year fixed-effects are controlled. Instruments in the 2SLS sample selection GMM regression are youth unemployment rates at the year of graduation and at the first year of employment, years to the first employment, cohort dummies, individual-specific and job characteristics at the first year of employment. The estimated inverse Mills' ratio is included to address the sample selection bias. Robust standard errors in parentheses are reported below the estimated coefficients. * p<0.1, ** p<0.05, *** p<0.01.

In <Table 8>, we decompose entry earnings into the observed component and the random component. The decomposition is implemented using the 2SLS model and nonparametic IV method, for comparison. Results show that both observed and random components of entry earnings have persistent positive associations with post earnings, and the effect of the random components exceeds that of the observed component. If the unobserved randomness ("luck") at entry generates persistent gaps in post earnings, these gaps would

not be readily attenuated through individuals' career choices in later careers.

〈Table 8〉 Effect of entry earnings effect on post earnings : Decomposition

Monthly earnings at t year of experience t	2SLS model		Nonparametric model	
	Observed component	Random component	Observed component	Random component
	coeff. (SE)	coeff. (SE)	coeff. (SE)	coeff. (SE)
2	0.019 (0.005)***	0.069 (0.028)**	0.152 (0.018)***	0.357 (0.145)**
3	0.018 (0.004)***	0.049 (0.016)***	0.141 (0.025)***	0.201 (0.107)*
4	0.026 (0.006)***	0.072 (0.016)***	0.218 (0.065)***	0.343 (0.209)
5	0.008 (0.003)**	0.045 (0.010)***	0.075 (0.031)**	0.228 (0.150)
6	0.008 (0.004)*	0.027 (0.015)*	0.076 (0.032)**	0.205 (0.154)
7	0.020 (0.004)***	0.062 (0.010)***	0.136 (0.031)***	0.570 (0.075)***
8	0.019 (0.006)***	0.043 (0.011)***	0.186 (0.076)**	0.377 (0.136)***
9	0.016 (0.005)***	0.038 (0.010)***	0.109 (0.040)***	0.527 (0.093)***
10	0.018 (0.005)***	0.045 (0.012)***	0.115 (0.045)**	0.519 (0.128)***

Notes : Dependent variable is monthly earnings in KRW10,000 at the 2015 price at the year t of employment where t=1 in the first year of employment. Specification of the 2SLS model is identical to <Table 7>. For the nonparametric decomposition, the local linear kernel estimator is used specifying an Epanechnikov and the Li and Racine (2004)'s kernel density functions for continuous and discrete control variables. In both estimations, the estimated inverse Mills' ratio is included to address the sample selection bias. Robust standard errors in parentheses are reported below the estimated coefficients. * $p<0.1$, ** $p<0.05$, *** $p<0.01$.

<Table 9> presents results of the panel random-effects 2SLS estimations of post earnings (columns 1 and 2) and the panel random-effects logistic regression of employment type (columns 3 and 4). Results show that entry earnings and post earnings are positively associated, and that this relationship remains intact in the nonparametric decomposition model, much contributed by the random component. Higher youth unemployment rates at graduation and at the first year of employment are found to decrease the likelihood of the full-time and permanent employment (OR=0.582, p<0.01; Or=0.806, P<0.05). Graduation during and after the global financial crisis is associated with a lower likelihood of full-time employment (OR=0.366, p<0.01; OR=0.266, p<0.01), implying that overall employment opportunities are deteriorated since the crisis and the part-time employment becomes more prevalent.

〈Table 9〉 Panel estimation of entry labor market outcomes :
Monthly earnings and employment type

Dependent variables=	(1) Monthly post-earnings (2SLS)	(2) Monthly post-earnings (NP decomposition)	(3) Full-time employment	(4) Permanent employment
Monthly earnings in the first job	0.578 (0.059)***	0.139 (0.018)***		
Random component of entry earnings		0.315 (0.130)**		
Youth unemployment rate at graduation			0.582*** (0.079)	0.806** (0.080)
Youth unemployment rate at the first year of employment			0.805* (0.101)	1.056 (0.092)
Graduation cohort(base=2000-2007)				
In-crisis cohort (2008-2009)	1.966 (5.267)	-0.585 (4.923)	0.366*** (0.095)	0.749 (0.140)
Post-crisis cohort (2010-2019)	13.75 (6.975)**	11.11 (6.122)*	0.266*** (0.0695)	0.674* (0.137)
Age	2.589 (0.999)***	4.472 (0.919)***	0.978 (0.0257)	1.058*** (0.021)

〈Table 9〉-continued

Dependent variables=	(1) Monthly post-earnings (2SLS)	(2) Monthly post-earnings (NP decomposition)	(3) Full-time employment	(4) Permanent employment
Female	-29.00 (4.085)***	-43.04 (4.056)***	0.128*** (0.0215)	0.353*** (0.0411)
Married	17.71 (5.500)***	33.68 (5.313)***	0.469*** (0.084)	1.289* (0.168)
College education	3.378 (10.42)	-12.35 (11.56)	26.98*** (5.351)	13.30*** (2.029)
Years of exper.	8.653 (1.272)***	3.143 (0.893)***		
(Years of experience)^2	-0.041 (0.095)	-0.035 (0.069)		
Full-time employment	33.95 (5.508)***	57.78 (5.811)***		
Permanent employment	21.66 (4.364)***	33.60 (3.415)***		
Firm size(base=500 or more)				
1-9 employees	-43.85 (4.783)***	-62.62 (3.823)***		
10-99 employees	-34.42 (4.026)***	-47.87 (3.658)***		
100-499 employees	-27.87 (3.783)***	-32.78 (3.066)***		
Location of job(base=others)				
Metropolitan city	1.454 (3.113)	2.673 (3.315)	1.055 (0.231)	0.789 (0.129)
SIG	12.14 (3.399)***	17.30 (3.415)***	1.024 (0.198)	1.117 (0.158)
No. of obs. (No. of panels)	10,599 (3,009)	12,236 (3,401)	28,996 (5,765)	28,807 (5,778)
Overall R-squared	0.4821	0.3898		
Wald Chi-squared	6776.6		520.56	639.79

Notes : The estimated inverse Mills' ratio is included to address the sample selection bias in columns 1 and 2. Monthly earnings in KRW10,000 at the 2015 price. Year fixed-effects are controlled. Robust standard errors are reported in parentheses. * p<0.1, ** p<0.05, *** p<0.01.

Ⅳ. Conclusions

This study examines the effects of recession graduation on entry- and post-labor market outcomes among young adults in South Korea with a special attention to the global financial crisis. Findings show that graduation at years of high youth unemployment rates negatively affects entry earnings, full-time and permanent employment in the first job, and life-time labor force participation status. We also find that high youth unemployment rates at the year of the first employment are related with delayed employment to the first job, to the first full-time, and to the first permanent job. From the 2SLS and nonparametric IV estimations of post earnings, we find that lower entry earnings are linked to lower later earnings up to 10 years of work experience. The decomposition analysis discovers that this relationship is substantially attributed by the unobserved random component of entry earnings. It implies that individual-level career choices may not suffice to compensate for loss of unlucky entry.

Overall labor market conditions and various career choices during the education-job transition stage are the key to lifetime career development, gravely exposing recession cohorts to long-term effects of macroeconomic downturn. Experience of job displacement during the early years of career, short job tenure and a smaller firm size at the first job have adverse effects on earnings and later labor market outcomes (Lee, 2002; Park et al., 2011; Hwang and Kim, 2012; Park and Lim, 2013). These results, although drawn from different data source and econometric methods, are consistent with main implications of this study. Job mobility is one of the possible prescriptions to escape from initial misfortune. If a graduate moves on large firms and jobs of high quality matching, or settles down to the permanent job, earnings gap at

the entry level may be reduced (Moon and Hong, 2017).

It is, however, uncertain to individuals whether the loss in entry outcomes are due to exogenous misfortune or own qualifications. Hiring process is often subject to incomplete information on workers' capacity and firms use the first job specifications as credentials. If this mechanism contributes to the long-lasting association between entry-level outcomes and long-term outcomes, workers' own efforts, then, are insufficient to break down the scarring effect of recession graduation. In this regard, institutional supports are warranted for young adults to improve efficiency of job search, to foster labor market mobility into better jobs, to enhance re-training and upskilling, and to promote fair and transparent hiring process. Unlucky graduates, if granted with opportunities for job upgrade and skill enhancement, can anticipate recovery from negative effects of recession entry. Active labor market policies such as unemployment insurance benefit, employment service and vocational training programs should be enhanced to accommodate the needs of recession cohorts to catch up with lucky cohorts in long-term labor outcomes (Park et al., 2011).

The COVID-19 cohorts of 2020-2022 newly enter to the global labor market. A growing number of studies confirm that the labor market undergoes fundamental restructuring due to the COVID-19 over the course of massive job displacement, job restructuring and postponed hiring and that the impacts of COVID-19 are unequal by gender, sector, and skill subgroup (Albaseni and Kim, 2021; Hoshi et al., 2022). This study provides an updated assessment on difficulties of recession cohorts, and can be a useful presage on potential long-term negative effects of COVID-19 on pandemic cohorts.

This study comes with limitations. We are unable to explore roles of life-time career paths, such as occupational choice, job tenure, training investment, experience of involuntary displacement and retirement decisions, when comparing labor market outcomes between lucky cohorts and unlucky cohorts. Underlying mechanisms of randomness in entry earnings and its persistent effect on post earnings warrant further study. Empirical study needs

to extend its scope to effects of graduation during recession on life-time labor market outcomes such as duration of employment, full-time and permanent employment of the prime-age workers and their full retirement decisions.

References

Albanesi, S. and J. Kim(2021). "Effects of the COVID-19 Recession on the US Labor Market : Occupation, Family and Gender". *Journal of Economic Perspectives* 35 (3) : 3~24.

Altonji, J. G., L. B. Kahn and J. D. Speer(2016). "Cashier or Consultant? Entry Labor Market Conditions, Field of Study, and Career Success". *Journal of Labor Economics* 34 (S1) : S361~S401.

Autor, D., D. Dorn and G. Hanson(2019). "When Work Disappears : Manufacturing Decline and the Falling Marriage Market Value of Young Men". *American Economic Review : In- sights* 1 (2) : 161~178.

Brunner, B. and A. Kuhn(2014). "The Impact of Labor Market Entry Conditions on Initial Job Assignment and Wages". *Journal of Population Economics* 27 (3) : 705~738.

Choi, E. J., J. Choi, and H. Son(2020). "The Long-Term Effects of Labor Market Entry in a Recession : Evidence from the Asian Financial Crisis". *Labour Economics* 67.

Cockx, B(2016). "Do Youths Graduating in a Recession Incur Permanent Losses?". *IZA World of Labor.*

Cockx, B. and C. Ghirelli(2016). "Scars of Recessions in a Rigid Labor Market". *Labour Economics* 41 : 162~176.

Currie, J. and H. Schwandt(2014). "Short- and Long-Term Effects of Unemployment on Fertility". *Proceedings of the National Academy of Sciences* 111 (41) : 14734~14739.

Del Bono, E., A. Weber and R. Winter-Ebmer(2012). "Clash of Career and Family : Fertility Decisions After Job Displacement". *Journal of the European Economic Association* 10 (4) : 659~683.

Fernandez-Kranz, D. and N. Rodrigues-Planas(2018). "The Perfect Storm : Graduating during a Recession in a Segmented Labor Market". *ILR Review* 71 (2) : 92~524.

Gan, L., J. Shin and Q. Li(2010). "Initial Wage, Human Capital and Post Wage Differentials". *Hitotsubashi Jounral of Economics* 51 (2) : 23~42.

Genda, Y., A. Kondo and S. Ohta(2010). "Long-Term Effects of a Recession at Labor Market Entry in Japan and the United States". *Journal of Human Resources* 45 (1) : 157~196.

Gruetter, M. and R. Lalive(2009). "The Importance of Firms in Wage Determination". *Labour Economics* 16 (2) : 149~160.

Han, J.(2018). "Long-Term Effects of Labour Market Entry Conditions : The Case of Korea". *Global Economic Review* 47 (4) : 434~463.

Hoshi, K., H. Kasahara, R. Makioka, M. Suzuki and S. Tanaka(2022). "The Heterogenous Effects of COVID-19 on Labor Markets : People's Movement and Non-Pharmaceutical Interventions". *Journal of the Japanes and International Economics* 63 : 110~170.

Hoynes, H., D. L. Miller and J. Shaller(2012). "Who Suffers During Recessions?". *Journal of Economic Perspectives September* 2012, 26 (3) : 27~48.

Hwang, N. and C. Kim(2012). "Firm-Size of the First Job and Wage Differentials Among Young Adults with College Degree". *Korean Journal of Policy Analysis and Evaluation* 22 (4) : 217~236.

Jeong, I.(2012). "Assessment and Prospects of Employment Policies after Global Financial Crisis". Ministry of Employment and Labor.

Kim, M.(2021). "Labor Market Adjustments during Global Financial Crisis". *Monthly Public Finance Forum 2021-1*. Korea Institue of Public Finance.

Krebs, T.(2007). "Job Displacement Risk and the Cost of Business Cycles". *American Economic Review* 97 (3) : 664~686.

Kwon, I., M. Milgrom and S. Hwang(2010). "Cohort Effects in Promotions and Wages : Evidence from Sweden and the United States". *Journal of Human Resources* 45 (3) : 772~808.

Kondo, A.(2007). "Does the First Job Really Matter? State Dependency in Employment Stats in Japan". *Journal of the Japanese and International Economics* 21 (4) : 379~402.

Lee, B(2002). "Persistent Effects of Early Experience in the Labor Market Transition". *Quarterly Journal of Labor Policy* 2 (1) : 1~18.

Li, Q. and J. S. Racine(2004). "Cross-validated Local Linear Nonparametric Regression". *Statistica Sinica* 14 : 485~512.

Liu, K., K. G. Salvanes and E. Sorensen(2016). "Good Skills in Bad Times : Cyclical Skill Mismatch and The Long-Term Effects of Graduating in a Recession". *European Economic Review* 84 : 3~17.

Maclean, J. C., R. Covington and A. S. Kessler(2016). "Labor Market Conditions at School-Leaving : Long-Run Effects on Marriage and Fertility". *Contemporary Economic Policy* 2016, 34 (1) : 63~88.

Moon, Y. and J. Hong(2017). "Youth Employees Turnover Determinants by Business Scale and Wage Effects". *Korean Journal of Labor Studies* 23 (2) : 195~230.

Oh, S. and S. Lee(2021). "The Short- and Long-Term Effects of High Unemployment Rates at Labor Market Entry Among College Graduates". *BOK Issue Note* 2021-2, Bank of Korea.

Okun, A. M.(1973). "Upward Mobility in a High-Pressure Economy". *Brookings Papers of Economic Activity* Issue No. 1: 207~252. Washington, DC : Brookings Institution.

Oreopoulos, P., T. von Wachter and A. Heisz(2012). "The Short- and Long-Term Career Effects of Graduating in a Recession". *American Economic*

Journal : Applied Economics 2012, 4 (1) : 1~29.

Oyer, P.(2006). "Initial Labor Market Conditions and Long-Term Outcomes for Economists". *The Journal of Economic Perspectives* 20 (3) : 143~160.

Parent, D.(2000). "Industry-Specific Capital and the Wage Profile : Evidence from the National Longitudinal Survey of Youth and the Panel Study of Income Dynamics". *Journal of Labor Economics* 18 (2) : 306~323.

Park, J., Y. Kim and J. Jun(2011). "The Long-Term Effects of Small and Medium-sized Enterprises Experiences in 4-year College Graduates". *Quarterly Journal of Labor Policy* 11 (4) : 29~53.

Park, J. H. and H. Lim(2013). "Economic Fluctuations and Labor Performance For College Graduates in 2005 and 2008 : The Effect of Wage". *Legislation and Policy Studies* 5 (2) : 165~192

Raaum, O. and K. Røed(2006). "Do Business Cycle Conditions at the Time of Labor Market Entry Affect Future Employment Prospects?". *The Review of Economics and Statistics* 88 (2) : 193~210.

Schwandt, H. and T. von Wachter(2019). "Unlucky Cohorts : Estimating the Long-Term Effects of Entering the Labor Market in a Recession in Large Cross-Sectional Data Sets". *Journal of Labor Economics* 37 (S1) : S161~S198.

Stevens, K.(2007). "Adult Labour Market Outcomes : the Role of Economic Conditions at Entry into the Labour Market". *University College London.*

Sullivan, P.(2010). "Empirical Evidence on Occupation and Industry Specific Human Capital". *Labour Economics* 17 (3) : 567~580.

van den Berge, W.(2018). "Bad Start, Bad Match? The Early Career Effects of Graduating in a Recession for Vocational and Academic Graduates". *Labour Economics* 53 : 75~96.

von Wachter, T. and S. Bender(2006). "In the Right Place at The Wrong Time : The Role of Firms and Luck in Young Workers' Careers". *The American Economic Review* 96 (5) : 1679~1705.

〔Appendix〕

〈Table A1〉 Cohort size, youth unemployment rate, and entry wage(2000-2019)

Year	Cohort size	Youth unemployment rate (%)	Entry earnings (No. of obs.)
2000	505	8.1	185.5 (378)
2001	526	7.9	184.4 (409)
2002	567	7.0	202.5 (432)
2003	477	8.0	195.5 (363)
2004	488	8.2	203.5 (354)
2005	491	8.0	218.2 (376)
2006	454	7.9	207.1 (363)
2007	385	7.2	227.2 (289)
2008	407	7.1	216.2 (326)
2009	386	8.0	208.8 (301)
2010	358	7.9	196.6 (285)
2011	304	7.6	205.8 (246)
2012	345	7.5	193.3 (264)
2013	302	8.0	211.2 (225)
2014	312	9.0	186.0 (234)
2015	316	9.1	184.9 (241)
2016	289	9.8	179.4 (185)
2017	309	9.8	181.8 (209)
2018	209	9.5	177.9 (168)
2019	225	8.9	183.8 (79)
Total	7,755	8.23 (average) 8.11 (weighted average)	197.5 (average) 199.3 (weighted average)

Note : Entry earnings are monthly earnings at the first job in KRW 10,000 at the 2015 price.

〈Table A2〉 The First-stage result of 〈Table 7〉 (2SLS at t=2)

Entry Earnings	Coeff. (Std.Err)
Age	-15.12
	(3.756)***
Female	-23.34
	(7.362)***
Married	19.70
	(13.07)
College education	-9.924
	(16.98)
Full-time employment	10.74
	(10.40)
Permanent employment	6.711
	(5.910)
Firm size(base=500 or more)	
1-9 employees	-34.79
	(8.929)***
10-99 employees	-36.73
	(7.347)***
100-499 employees	-19.18
	(7.770)**
Location of job(base=others)	
Metropolitan city	-8.325
	(11.25)
SIG	16.49
	(15.29)
Youth unemployment rate at the first year of employment	-97.01
	(30.36)***
Years to the first employment since graduation	-4.329
	(1.359)***
In-crisis cohort(2008-2009)	-14.54
	(11.99)
Post-crisis cohort(2010-2019)	-22.11
	(17.90)
Age at the first year of employment	19.70
	(3.326)***
Married at the first year of employment	35.59
	(11.99)***
Full-time employment in the first job	42.97
	(10.26)***
Permanent employment in the first job	46.61
	(6.178)***
Firm size at the first employment(base=500 or more)	
1-9 employees	4.351
	(7.548)

〈Table A2〉-continued

Entry Earnings		Coeff. (Std.Err)
	10-99 employees	18.77
		(8.632)**
	100-499 employees	48.76
		(8.201)***
Location of job at the first employment (base=others)		
	Metropolitan city	13.12
		(11.03)
	SIG	-0.709
		(15.86)
No. of Observation		1,795
Adj. R-sq.		0.374

Notes : The first-stage results of the 2SLS sample selection estimations for t=3-10 are omitted due to the page limit guideline by the journal, and available upon request to the author. Year fixed-effects are controlled. Robust standard errors are reported in parentheses. * $p<0.1$, ** $p<0.05$, *** $p<0.01$.

〈Table A3〉 Adjusted R^2 and number of observations of 〈Table 8〉

Monthly earnings at t year of experience _t_	2SLS model	Nonparametric IV model
	Adj. R^2 (No. of obs.)	Adj. R^2 (No. of obs.)
2	0.560	0.547
	(2,493)	(2,493)
3	0.438	0.431
	(1,726)	(1,726)
4	0.129	0.131
	(1,441)	(1,441)
5	0.463	0.453
	(1,284)	(1,284)
6	0.461	0.456
	(1,081)	(1,081)
7	0.542	0.544
	(901)	(901)
8	0.250	0.248
	(793)	(793)
9	0.474	0.486
	(626)	(626)
10	0.464	0.466
	(512)	(512)

Notes : Dependent variable is monthly earnings in KRW 10,000 at the 2015 price at the year t of work experience where t indicates the first year of employment.

Abstract

Graduation During Recession and Labor Market Outcomes of Young Adults in South Korea

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This study examines the effects of graduation during recession on labor market outcomes among young adults in South Korea. Results using data from the 1998-2019 Korean Labor and Income Panel Study show that a higher youth unemployment rate at graduation is likely to decrease entry earnings, the likelihood of employment at the year of graduation, full-time and permanent employment in the first job, and life-time labor force participation. We also find that youth unemployment rate at the first year of employment leads to delay in the first employment, the first full-time, and permanent employment. The 2SLS and nonparametric kernel IV estimations uniformly show that lower entry earnings leads to lower post earnings up to 10 years. As this relationship is partly attributed by unobserved random component of entry earnings, institutional supports are warranted to recuperate initial misfortune of recession cohorts.

Keywords : graduation during recession, youth unemployment rates, labor market outcomes, korean labor and income panel survey