

## **Gender and Educational Involvement on the Earnings of Young Workers in Taiwan**

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### **Abstract**

Using youth employment data from a national representative sample of 4,012 young Taiwanese workers aged 15 to 29 years, this study investigated the effects of gender and educational involvement on the earnings of young workers of various career seniorities. The results indicated dissimilar earning patterns for young male and female workers. When young male and female workers initially entered the labor market, their earnings were similar; however, the gender gap in earnings rapidly widened as career seniority progressed. Educational involvement, primarily higher education attainment and on-the-job training, benefited the earnings of young workers, regardless of gender and career seniority. Career seniority benefited the earnings of young male workers but not those of their female counterparts. The findings present implications for educational institutes and government agencies attempting to improve employment outcomes of young workers.

**Keywords:** gender, educational involvement, workplace learning, earnings, young workers, Taiwan

### **1. Introduction**

Around the world, female workers exhibit substantially lower labor participation rates and lower earnings than male workers do. The International Labour Organization (ILO) informed that after the global financial crisis, gender gap in earnings has gradually widened and called for the attention international society (ILO, 2013). Gender gaps in earnings vary depending on specific social contexts that contextualize workplaces. The cultures and traditions of numerous Asian

countries are rooted in Confucianism, which emphasizes gender segregation in both private and public domains (Ryu & Cervero, 2011), and Taiwan is one of these countries.

A phenomenon that high educational attainment coincides with a high unemployment rate in Taiwan has raised serious public concern. Because of the rapid expansion of higher education (HE) in Taiwan in the 1990s, the educational attainment of Taiwanese young people has been markedly raised. The total number of college graduates in Taiwan was 70,748 in 1996 and 230,198 in 2008 (Ministry of Education of Taiwan, 2013a), which is an increase of 325.38%. However, the raised educational attainment does not appear to facilitate youth employment. The unemployment rate of young Taiwanese with an education level of college or higher was 7.16% in 1996 and 9.34% in 2008 (Tian & Cheng, 2009), which is an increase of 2.18%. Taiwanese society thus questions whether education facilitates youth employment.

This study addressed the effects of gender and educational involvement on the earnings of young workers. Young workers in the study were further divided into three cohorts according to career seniority to observe patterns of the aforementioned effects. The study asked two research questions: (1) What are the gender distribution, educational involvement, and earnings of young Taiwanese workers of various career seniorities? (2) How do gender and educational involvement affect the earnings of young Taiwanese workers of various career seniorities?

## 2. Literature Review

### 2.1 Gender and Employment Development and Outcomes

Modern countries have officially prohibited gender discrimination; however, numerous Asian societies embedded in Confucian tradition still practice gender segregation (Ryu & Cervero, 2011). The Confucian tradition assigns the role of men to the workplace and that of women to the home (*nán zhǔ wài, nǚ zhǔ nèi*), and ranks men's social standing higher than that of women (*nán zūn nǚ bēi*). Young female workers in Asia frequently reported to experience conflicts between career establishment and child bearing and raising as well as pressures from concurrent commitments to professional and domestic roles (Nordhaug, et al., 2010)

In recent years, Taiwanese women appeared to increase and equal males regarding public participation and performance. For example, women constituted 49.09% of Taiwanese college students in the 2012 school year (Ministry of Education of Taiwan, 2013b). However, a close scrutiny of gender statistics revealed a different gender distribution in Taiwan. In the workplace,

women attained only 45% of managerial positions, but at home, women served 2,133% more as homemakers and 533% more as child caregivers than did men (DGBAS, 2013). The effect of gender on employment development and outcomes of young workers in Taiwan, a modern society contextualized in Confucian traditions, cannot be overlooked.

## **2.2 Educational Involvement and Earnings**

Educational attainment is generally associated with employment outcomes. The effect of educational attainment on employment outcomes is attributed to information signals of newcomers in the job market whom employers have not yet directly observed and evaluated (Bills, 2003). High levels of educational attainment signify strong possibilities of job performance and trainability.

Among the levels of educational attainment, HE has received much research attention (Jacobson & Mokher, 2009). The public expects HE to function as an incubator for skillful professionals for industries. Nevertheless, HE states its mission to cultivate intellectuals who demonstrate liberal minds and critical thinking rather than task-specific skills (Astin & Antonio, 2012). HE's role and ability in transitioning students from campus to the workplace has thus been questioned and debated (Billett, 2005). Relevant literature primarily addresses the impact of HE at labor market entry (Hu & Wolniak, 2010; Liu, Thomas, & Zhang, 2010; Tian & Cheng, 2009). Studies on the effect of HE on employment outcomes at various stages during the career course is limited. This study contributes to the literature by investigating the long-term effects of educational attainment on the earnings of young workers at various stages of career seniority.

Learning should not be restricted to formal education at schools. In the era of knowledge economy, workplace learning after school has become a widely discussed issue concerning employment development and outcomes (OECD, 2003). However, empirical information on workplace learning is less available than that on formal education. Involvement in workplace learning is generally assumed to lead to increased earnings for workers. In fact, a great diversity, such as levels of depth and intensity, exists among forms of workplace learning (Hawley, Sommers, & Meléndez, 2005), resulting in heterogeneity among the effects of workplace learning on earning growth (Haelermans & Borghans, 2012). Moreover, understanding of the effects of workplace learning on earnings at various career stages is mixed. Some scholars have indicated that workplace learning benefit only young workers newly entering the job market (Albert, Garcia-Serrano, & Hernanz, 2010), but others have argued that it persistently benefits senior workers until late career stages (Haelermans & Borghans, 2012).

### **2.3 Worker Cohorts of Various Career Seniorities and Earnings**

Research on employment has mainly focused on the performance of individual workers in the job market and less on the performance of worker cohorts. Worker cohorts represented not only variances of work experience, task-specific skill, and stage of career development, but more importantly, variances of economic condition at job market entry. Worker cohorts entering the job market during economic downturns are more likely to encounter arduous career beginnings, such as unemployment, job mismatching, and underpayment, compared with their counterparts entering the job market in thriving economies. The economic condition at job market entry was reported to profoundly affect employment, which could persist during the career course, particularly for the young worker group (Kahn, 2010; Raaum & Røed, 2006). Without comparing worker cohorts, the effect of the economic condition at job market entry on the earnings of young workers is difficult to observe and often is omitted when addressing the employment development and outcomes of young workers.

## **3. Research Method**

### **3.1 Data Source and Sample**

The data analyzed in this study were derived from the 2008 Survey of Youth Employment (SYE) sponsored by the Council of Labor Affairs (CLA) of Taiwan. The SYE archives data of young workers aged 15 to 29 years for use by educational institutes and government agencies for scheming policies and analyzing issues on youth employment (CLA, 2013). All of the young workers were employed full-time and registered at the Bureau of Labor Insurance. The survey practiced stratified random sampling, which randomly selected samples within the stratifications of geography, industry, and firm size. During sample collection, the returned samples were regularly tested for goodness-of-fit to population distributions of industry and gender to promptly modify the directions of sample collection until no significant variations between the distributions of sample and population were observed. Consequently, the effective sample size of the 2008 SYE was 4,012 (Tian & Cheng, 2009).

Among the sampled 4,012 young Taiwanese workers, more than half were women (58.3%). Slightly more than half attained educational levels of HE and higher (51.0 %), followed by high school (38.0 %), and less than high school (11.1 %). Regarding workplace learning, more of the young workers participated in professional certificate attainment (58.5%) than in on-the-job training (42.5 %). The young workers' current and initial earnings were NT\$27,890 and NT\$23,109, respectively. One New Taiwan dollar equals approximately 0.03 United States dollars. On average, the young workers were 25.5 years of age and worked 43.0 hr per week. Approximately one-fifth (18.7 %) of the young workers worked in Taipei, the capital city of Taiwan.

### **3.2 Variables**

The dependent variable used in this study was the current monthly earnings of the young workers. The independent variables in this study consisted of four categories: gender, educational involvement, career seniority, and controlled variables. Gender comprised male and female. Educational involvement contained the levels of formal educational attainment and workplace learning forms. Career seniority was divided into three career stages: 0–2, 3–5, and  $\geq 6$  years since job market entry. The small divisions of career seniority suited the short employment history of the young workers. The controlled variables were initial earnings, age, work hours, and work location, which were not primary concerns of the study but have been strongly suggested as considerations when addressing worker earnings (Albert et al., 2010; Hu & Wolniak, 2010).

### **3.3 Data analyses**

To answer Research Question 1, the young workers were divided into three cohorts according to career seniority to observe and reveal variations in characteristics among the three cohorts. The three cohorts were Cohorts A, B, and C; Cohort A was the most junior and Cohort C was the most senior regarding career seniority. ANOVA and chi-square test were adopted to calculate contrasts among the cohorts to confirm statistically significant differences. A post-hoc Scheffe's test was used to determine the exact locations of significant differences.

For Research Question 2, regression analyses were performed to evaluate the independent effect of individual variables while considering the concurrent effects of all variables. Separated regression equations were calculated for young workers as a whole, between genders, and among career seniorities to observe patterns of variable effect. The regression equations were calculated using the natural logarithm of current and initial earnings. Using the natural logarithm form on earning data is a standard operation procedure in regression analyses based on the earnings function; more importantly, it reduces heteroskedasticity (Barreto & Howland, 2006).

## **4. Results**

Regarding gender distribution, a higher percentage of women than men was observed in all three cohorts of young workers. The post-hoc comparison indicated that more senior cohorts exhibited significantly higher percentages of women compared with more junior cohorts. In other words, women in more senior cohorts exhibited higher participation rates in the labor market.

The post-hoc comparisons also indicated significant differences of educational involvement, particularly with educational attainment, among the three cohorts of young workers. The more junior cohorts showed significantly higher percentages of well-educated workers. The three

career-seniority cohorts were more similar in workplace learning than in formal education. The post-hoc comparisons indicated one significant difference between Cohorts C and B regarding on-the-job training, and no significant difference among the cohorts regarding professional certificate attainment was observed. Overall, the results for educational involvement indicated an apparent tendency of young Taiwanese workers to advance their educational attainment; the younger cohorts were observed to attain higher levels of educational attainment. The young workers' involvement in workplace learning was generally unchanged among the cohorts. All of the young workers preferred professional certificate attainment to on-the-job training.

The current earnings of Cohort B were significantly higher than those of Cohorts A and C. This result could likely be attributed to the initial earnings of the cohorts, because the initial earnings of Cohort B were also significantly higher than those of Cohort C. Cohort B was estimated to enter the labor market in approximately 2004, considering that the data used in this study were collected in 2008 and Cohort B was of career seniority of 3–5 years. According to the Economic Statistic Annual (ESA) report of Taiwan, the economic growth rate in 2004 was 6.19%, which was the highest for the decade of 1998–2008 (ESA, 2012). This result is consistent with that of previous studies that have observed that the earnings of young workers are closely linked to the economic condition at labor market entry and that the effect of the economic condition yields profound consequences on the employment outcomes of young workers (Kahn, 2010; Raaum & Røed, 2006). The correspondence of current earnings and initial earnings supports the design of the study to control potentially influencing variables when addressing the effects of gender and educational involvement on the earnings of young workers.

Regarding the rest of the controlled variables in the study, the average ages of the three cohorts conformed to their career seniority. The workers in Cohort C were significantly older than those in Cohort B, and those in Cohort B were significantly older than those in Cohort A. Regarding work hours, the result indicated that more senior cohorts worked significantly longer hours than those of more junior cohorts. This result illustrated a trend of young Taiwanese workers significantly increasing their work hours after entering the labor market. The increase in work hours is likely because of the young workers' advancements in occupational hierarchy and responsibility as career seniority progressed. The post-hoc comparison indicated that a significantly higher percentage of workers in Cohort A, compared with those in Cohorts B and C, worked in Taipei, suggesting a tendency of young workers to start their careers in metropolises.

(TABLE 1 ABOUT HERE)

Table 2 presents the results for the effects of gender and educational involvement on the earnings of young workers obtained from separated regression equations calculated for young workers as a whole, between genders, and among career seniorities. The regression models substantially explained 32.3% to 54.1% of the variance in the earnings of young workers.

The results indicated that all of the controlled variables, namely initial earnings, age, work location, and work hours, significantly and positively affected the earnings of young workers as a whole, between genders, and among career seniorities, supporting the design of the research to control these variables when examining the effects of gender and educational involvement on the earnings of young workers. Among the controlled variables, initial earnings appeared to be the most influential in affecting the earnings of young workers, because its coefficients were far higher than those of the other controlled variables among all of the models. The influence of initial earnings persisted even after  $\geq 6$  years since labor market entry. A metropolitan work location appeared to be much more beneficial for earnings of young female workers ( $\beta = .159$ ) than those of their male counterparts ( $\beta = .088$ ).

The gender model indicated that career seniority significantly benefited earnings for young male workers but not for female workers. Regarding educational involvement, HE attainment and on-the-job training significantly benefited the earnings of young workers across genders. Educational involvement, in general, appeared to be more beneficial to young female workers than to male workers.

The career seniority model indicated a rapidly widening gender gap in earnings of young workers as career seniority progressed. At labor market entry, the difference in the earnings of young male and female workers was observed to be nonsignificant. However, as career seniority progressed, significant earnings gaps between genders emerged and widened markedly.

The career seniority model also indicated that educational attainment significantly benefited the earnings of young workers during their career course. In particular, HE attainment was observed to exhibit significant benefits across career seniorities. Regarding workplace learning, on-the-job training also exhibited consistent benefits in the earnings of young workers across career seniorities. Taken together, HE attainment consistently exerted greater beneficial effects than did on-the-job training on the earnings of young workers, by comparing all of the models of young workers as a whole, between genders, and among career seniorities.

(TABLE 2 ABOUT HERE)



## 5. Discussion and Conclusion

This study revealed that the gender gap in earnings rapidly widened during the career course of young Taiwanese workers. This result is consistent with the findings of previous research in various contexts (Del Bono & Vuri, 2011; Guo et al., 2010). Explanations for the prominent and widening gender gap in earnings might be rooted in gender segregation in horizontal and vertical social constructions. Regarding gender segregation in horizontal social construction, after entering adult society, men and women have engaged in adult activities in the workplace and household domains (Becker, 2009), and thus differently prioritize the two domains. Societies have traditionally supported male workers in focusing on pursuing career prospects and expected female workers to bear multiple responsibilities both at work and home (Gandapur & Rehman, 2008). Thus, young female workers often do not rank fast earnings and promotion as the top considerations for job choices (Nordhaug et al., 2010). When encountering major life events, such as marriage, child raising, and elder caring, men are more likely to be encouraged to persist in the career path and work harder to obtain earning growth, whereas women are suggested to interrupt their careers to meet household demands. This distinct development in career paths between men and women when confronting major life events might also explain why the study found that career seniority benefited only the earnings of male workers and not female workers. The career seniority of women, although equal in quantity to that of men, is likely less consistent in quality and thus less beneficial to earnings.

Regarding gender segregation in vertical social construction, practices of assigning women to “sex appropriate” occupational positions that disempower and devalue women are still frequently observed (Becker, 2009), despite the official prohibition of gender discrimination in contemporary workplaces. Employers often regard men as more qualified for managerial positions and associate men with stronger attachment to jobs than women (Guo et al., 2010). Men and women holding comparative qualifications are consequently placed in distinct occupational positions, causing negative implications for the earnings of women relative to men. This gender segregation in horizontal and vertical social constructions, although having been documented in workplaces in various countries, might be further amplified in the case of Taiwan, which is contextualized in Confucian values presuming that men are breadwinners and women are homemakers and that men are superior to women.

For the effect of education on earnings, this study indicated a consistent benefit of HE attainment on the earnings of young workers across genders and career seniorities. Previous research investigated the effect of HE attainment on employment at career entry (Hu & Wolniak, 2010; Liu et al., 2010) and attributed the benefit of HE attainment to its function of signaling the potential of job performance and trainability of career freshmen, whom employers have not yet



directly observed and evaluated (Bills, 2003). Accordingly, the signaling function of HE attainment on the earnings of young workers at a later stage of career seniority should disappear considering that the young workers' job performance and trainability were already exposed to employers. However, the benefit of HE attainment on the earnings of young workers in the current study was not confined to the entry stage; it expanded until the last stage of  $\geq 6$  years of career seniority. The consistent benefit of HE attainment across stages of career seniority suggested that HE equips young workers with more than a vantage point at labor market entry. It provides young workers with a long-term competitive edge during most of their career course. A explanation for this result might lie in the emphasis of HE to cultivate critical thinking competences (Astin & Antonio, 2012). In a contemporary workplace featuring knowledge intensiveness and constant changes, workers require critical and innovative thinking competences to continuously discover, create, and maintain their competitive edges during the course of their careers.

Regarding workplace learning, the results of this study are consistent with those of previous research indicating heterogeneity among the benefits of various workplace learning forms for earning growth (Haelermans & Borghans, 2012; Hawley et al., 2005). Workplace learning forms with higher levels of depth and intensity, on-the-job training in this case, were more able to benefit earnings than those without. On-the-job training generally directly accommodates the actual demands of job sites and is characterized by long-term and in-depth mastering of job-specific skills (Whitfield, 2000). By contrast, professional certificate attainment requires practical skills and also academic theories that do not always contribute to the depth and intensity of job-site knowledge and competences. This study also yielded that young Taiwanese workers preferred professional certificate attainment to on-the-job training. This study's empirical result of the consistently higher benefits of on-the-job training, compared with those of professional certificate, on the earnings of young workers across genders and career seniorities urged young Taiwanese workers to re-evaluate their preference of professional certificate attainment to on-the-job training.

The results of this study suggested mutually independent benefits of formal education and workplace learning on young workers' career outcomes. Previous research has noted that educational attainment and workplace learning might cross-affect each other (Albert et al., 2010) and raised questions to their independent effects on employment outcomes. This study simultaneously considered educational attainment and workplace learning and revealed concurrently significant effects of HE attainment and on-the-job training on the earnings of young workers. Furthermore, formal education exhibited a stably higher return rate on the earnings of young workers than workplace learning did. The influences of HE attainment appeared to be more powerful than those of on-the-job training on the earnings of young workers as a whole, between genders, and among various career seniorities. Engaging in any educational involvement takes time

and money, which is not always affordable for young workers who are establishing both a career and family. The finding of various return rates of formal education versus workplace learning, and more specifically of on-the-job training versus professional certification attainment, is informative for young workers to strategically allot their time and money for educational investments.

Although the current study yielded results that exhibit valuable implications for educational institutes and government agencies attempting to improve the employment outcomes of young workers, it presented certain limitations. First, the study analyzed cross-sectional data and determined a snapshot of the earnings of young workers at a specific point in time. Additional studies analyzing longitudinal data are warranted to shed more light on trends and development of earnings. Second, the SYE questionnaire did not address other educational involvement that might affect the earnings of young workers, such as academic performance and part-time job experience during school years. Although this study has its limitations, it can serve as a basis for future studies addressing the gender and educational impacts on employment outcomes in various social and cultural contexts.

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**Table 1 Analyses of Taiwanese young workers as a whole and of various career seniorities**

	Whole N = 4,012	Career seniority			F / X <sup>2</sup>	Post-hoc comparison
		Cohort A N = 1,413	Cohort B N = 1,533	Cohort C N = 1,066		
<b>Gender</b> (female =1, male =0)	2,341 (58.3 %)	751 (53.1 %)	907 (59.2 %)	683 (64.1 %)	30.5***	C > B > A
<b>Educational involvement</b>						
<i>Educational attainment</i>						
HE & higher	2,045 (51.0 %)	970 (68.6 %)	834 (54.4 %)	241 (22.6 %)		A > B > C
High school	1,523 (38.0 %)	300 (21.2 %)	563 (36.7 %)	660 (61.9 %)	550.9***	C > B > A
Less than high school	444 (11.1 %)	143 (10.1 %)	136 (8.9 %)	165 (15.5 %)		C > B, A
<i>Workplace learning</i>						
On-the-job training	1,704 (42.5%)	598 (42.3%)	698 (45.5%)	408 (38.3%)	13.6***	B > C
Professional certificate attainment	2,347 (58.5%)	806 (57.0%)	934 (60.9%)	607 (56.9%)	6.0	--
<b>Dependent variable: Current earnings</b>	27,890 (9,717)	27,113 (10,126)	28,764 (10,257)	27,663 (8,148)	11.1***	B > A, C
<b>Controlled variables</b>						
<i>Initial earnings</i>						
	23,109 (8,060)	22,960 (8,199)	23,956 (8,016)	22,163 (7,929)	13.0***	B > C
<i>Age</i>	25.5 (2.7)	24.1 (2.8)	25.8 (2.3)	26.9 (1.8)	450.0***	C > B > A
<i>Work hours</i>	43.0 (7.6)	41.9 (7.9)	42.9 (6.9)	44.3 (8.1)	30.7***	C > B > A
<i>Work location (Taipei =1, others =0)</i>	752 (18.7%)	303 (21.4 %)	269 (17.5 %)	180 (16.9 %)	10.6***	A > B, C

\*\*\*  $p < .001$

**Table 2 Effects of gender and educational involvement on earnings of Taiwanese young workers of various career seniorities**

	Whole model	Gender model		Career seniority model		
		Male	Female	Cohort A	Cohort B	Cohort C
<b>Control variables</b>						
<i>Initial earnings</i>	.365***	.370***	.360***	.415***	.402***	.272***
<i>Age</i>	.201***	.240***	.182***	.200***	.155***	.166***
<i>Work hours</i>	.208***	.214***	.211***	.295***	.164***	.180***
<i>Work location (Taipei =1)</i>	.132***	.088***	.159***	.065**	.126***	.196***
<b>Career seniority</b>	.051***	.091***	.026	--	--	--
<b>Gender (female =1)</b>	-.143***	--	--	-.049	-.139***	-.253***
<b>Educational involvement</b>						
<i>Educational attainment</i>						
HE & higher	.214***	.152***	.282***	.119**	.240***	.148***
High school	.076***	.042	.125***	-.001	.071*	.088**
<i>Workplace learning</i>						
On-the-job training	.101***	.078***	.122***	.061**	.119***	.100***
Professional certificate	-.017	-.016	-.024	-.003	-.026	-.011
<i>Adjusted R<sup>2</sup></i>	.441	.438	.417	.541	.475	.323

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$