논문 13

노동조합이 인적자원개발에 미치는 영향에 관한 연구
Effect of Unions on Human Resource Development in Korea
: Do Unions Increase Training and Improve Firm Competitiveness?

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요 약

한국경제의 성장에 있어서 노동조합의 역할을 빼놓고 이야기할 수는 없을 것이다. 그 동안 노동조합은 조합원의 임금, 고용, 복리후생 등의 개선과 향상을 위해 많은 노력을 기울여 왔다. 하지만 최근 들어 조합원들의 임금수준은 기업에 대한 부담으로 작용한다는 비판도 있다. 본 연구에서는 '조합원들이 높은 수준의 임금에도 불구하고 더 많은 인적자원개발에 대한 투자로 생산성 향상에 긍정적인 역할을 할 것이다' 라는 가설을 실증적으로 검증하고자 하였다. 먼저 조사대상 기업에 대해 단순비교를 한 결과 노동조합이 결성되어 있는 경우에 상대적으로 노동비용이 높다는 가설은 통계적으로 지지하는 결과를 보였다. 다만 본 연구의 핵심가설은 노동조합이 있는 경우 더 많은 인적자원개발, 즉 교육훈련비를 지출할 것이라는 것이기 때문에 이에 대해서는 단순비교와 함께 다른 요인들을 통제한 이후에 과연 노동조합이 교육훈련비와 양의 관계를 보이는 지를 둘 다 확인하고자 하였다. 단순 비교의 경우에 노동조합이 있는 경우 교육훈련비는 많았지만 규모, 업종 등을 통제한 이후 노동조합은 교육훈련비에 통계적으로 의미있는 관계를 보이지 않았다. 통제변수 중에는 기업의 규모변수가 특히 높은 영향력을 보이고 있었다. 즉 노동조합이 결성된 경우 노동조합보다는 오히려 대기업이 상대적으로 높은 교육훈련비를 지출하고 있다는 결론을 얻게 되었다. 세 번째의 가설은 노동조합, 교육훈련비 등이 기업의 성과에 미치는 영향을 살펴보는 것이었다. 그 경우에 직무수행역량이나 의욕제고로 측정한 기업의 성과에 대해서 교육훈련비는 성과와 양의 관계를 보였으나 노동조합은 통계적으로 의미가 없었다. 일인당 부가가치나 매출에 대해서도 교육훈련비는 긍정적인 관계를 보였으나 노동조합은 통계적인 의미가 없었다. 결국 본 실증연구에서는 노동조합이 높은 노동비용과는 관계를 보였으나 인적자원개발, 즉 교육훈련의 확대나 이를 바탕으로 한 기업의 생산성향상과는 통계적인 관계를 보이지 못했다. 이러한 잠정적인 연구결과를 확정하기 위해서는 좀 더 많은 연구가 필요할 것이다.

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I. Introduction

The development of the Korean economy is heavily influenced by labor union activity. Many large Korean companies, except in a few rare cases, are unionized, attributed greatly by the *1987-1989 Great Labor Offensive* period (Lee and Lee, 2005). In general, unions in Korea have had strong impact on improving the life of workers, including wage level, job security, and working conditions. This strong impact, however, also increased labor cost and may have actually hindered companies' competitiveness in the market, particularly the global market.

It is generally assumed that union members in Korea enjoy higher wages and improved working conditions over nonunion members. Empirical researches on the effect of unions on wages have demonstrated that unions have increased wages for the last several decades in Western countries, although the effect on Korea is not consistent with the previous researches (Park, 1984; Bae, 1990; Cheong, 1991; Kim, 1991; Phang, 1997; Cho and Yoo, 1997; Kim, Seong, and Choi, 2004; Ryu, 2005).

The next question is how do unionized companies with higher labor costs survive in the market? This classical question has been investigated for a long time. Freeman (1980) argued the union with higher labor cost compensated companies' competitiveness by higher productivity with active participation in workplace decision-making processes. In particular, globalization remains a challenge for activities relating to education and training of workers. To maintain competitive advantage in the highly competitive global market, highly qualified human resources, and continual upskilling in training and development, are necessary conditions. Cooperative industrial relations culture and commitment to the company may also represent additional factors for competitiveness.

The next question is whether the worker's participation, promoted by the union, in training and development guarantees productivity improvement. One of evidences to this question is the fact that many unionized companies have survived for over a century, this means unionization is not necessarily a burden for management. To answer this question directly, however, the research should test whether unionized companies are more active in training union members and this results in greater knowledge and higher competency that brings higher productivity.

Research on unions in Korea have focused on their effects on wages, employment, job security and working conditions (Bae, 1990; Cho, 1992; Yoon et al, 2001; Yim, 2005; Ryu, 2005). However, this kind of research does not explain directly why unionized companies with higher labor cost survive in the product market, if other conditions are identical. There are many reasons that explain the success of unionized companies in

the market. In this paper, plausible reasons will be analyzed empirically. The question is: does the union actively ask the company to train and develop union members, to compensate for the increased labor cost, in order to have higher productivity in this knowledge-based economy? To empirically test this argument, three hypotheses are investigated in this paper.

The first hypothesis is the labor cost per capita is higher in unionized companies than in nonunionized companies. This hypothesis needs to be supported to test the next and main hypothesis of this paper. The second and main hypothesis is the training cost per capita is higher in unionized companies than that of nonunionized ones. The third hypothesis is firm performance, including productivity, is not lower in unionized companies than that of nonunionized ones. This means unions with higher wages compensate for management burden, by productivity improvement with more training.

The subsequent section explains the conceptual and empirical research on unions and training. Empirical analysis onthe relationship between unions and training at a company level in the Korean manufacturing sector, is presented in Section 3. The implications from empirical analysis are presented in the last section.

II. Union and Human Resource Development

The research on the relationship between union and human resource development, including training and development, has had a long history. Oswald (1985) mentioned critically that unions seek to raise member wages at the expense of nonunion labor and firm efficiency, under the utility-maximizing theories of a monopoly.

Traditionally, the union was neither active in developing human resources nor training in a company, because it may lead to differentiation in performance and result in differentiated compensation, resulting in a negative effect on union solidarity. The exception is craft unions. Craft unions, in particular, throughout their existence, have been intimately involved with regulation of the apprenticeship system (Turner, 1962; Price, 1980). Therefore, labor unions in general have long recognized that proper education and training for officials, activists, and members in general, assist in making the union a more effective provider of services to its members. But, the training of members as employees has traditionally been low on the list of trade union priorities (Costine and Garavan, 1995).

The global and informational workplaces, however, make training and development a required activity to workers in general (Claydon and Green 1994; Castells, 1996). This new workplace creates demands beyond that of the old workplace, and can no longer be met by the standard training or development (Payne, 2001). It results in upheavals in working lives and makes it necessary for a firm to have substantial involvement in training and development.

In responding the this change, trade unions have increasingly emerged as major partners in the development of lifelong learning, as well as such issues as change management, productivity improvement, communications and personnel function, although many other unions are still reluctant to acknowledge the value of learning and training in the workplace (Smith, 2003; Trade Union Congress(TUC), 1999). For example, the Union Learning Fund in U.K., which assists unions in helping workers benefit from learning opportunities at work, started in 1998 with £4 million, and was instrumental in allowing unions to appreciate the role of learning in their activities (Taubman, 2004). Taubman firmly argues that learning should be the key concept in twenty-first century union activities. In doing so, both attempt to defend the interests of their members, as well as contribute towards the profitability of individual companies, and the general wealth of the country.

1. Unions and Training

Examination on the impact of unions on training and development must begin with the key distinction between general and firm-specific human capital. These two types of human capital differ considerably in the entity that pays for training, and that entity that reaps the rewards, as well as having different implications for job stability. The standard human capital theory states that workers will invest in human capital, but firms will not. Workers must pay for the investment in human capital by accepting lower wages during the training period, when productivity is reduced because they are taking time out for training(Gilbert, 2003). Firm-specific human capital, in contrast, is valuable only at a particular firm. This implies firms invest in this type of human capital, without fear of losing trained workers.

Becker (1964) adds a new position that firms will optimally share the investment because workers may leave the company, without loss, if they do not invest at all in training. However, Hashimoto (1981) and Barron et al. (1999) counter-argue that firms carry the full burden of specific human capital investment, and also reap the rewards.

With these conflicting arguments, the net effect of unions on human capital investment is uncertain.

Another research stream on the relationship between unions and training takes an industrial relations perspective. As Freeman and Medoff (1984) mentioned, the two faces model of the union suggests that unions propel companies to increase their education and training investment, while the monopoly face model of unions implies unions increase wages above competitive labor-market levels. Due to higher wages in unionized companies, they can generate a larger hiring queue and hence be more selective in hiring higher quality workers. In other words, the company selects applicants with better initial job skills or those with higher ability to be trained.

This is a reason that unionized companies invest more heavily in worker training for higher productivity, in order to compete with nonunionized competitors paying lower wages and providing less benefits. In addition, because companies with unions seeking higher wages tend to replace workers with capital, unions are interested in assisting employers in improving worker productivity, to avoid loss of employment.

The collective voice face of unionism, argued by Freeman and Medoff (1984), explains the union's power to resolve disputes at the workplace, using negotiations with employers, and providing workers with a voice as an alternative to quitting. As unionization reduces the turnover rate and increases the tenure of workers, this leads to lower hiring and newly hired worker training costs. The employers with lower risk of losing human capital investment, tends to have incentives for firm-specific skill improving investment. This may lead to higher productivity in unionized companies.

However, union ideology in general, favors applying the seniority principle in staffing, promotion, and other personnel decisions. Union contracts have typical clauses that senior employees must fill the higher level vacancies while new hires are limited to entry-level jobs. Unions tend to resist formal company training that advantage some categories of workers than others. Then, the heavy reliance on length of tenure in allocating jobs reduces productivity, by placing less qualified, but senior union workers, in higher positions.

Older union workers, however, may be willing to provide informal training and assistance to younger workers because their seniority brings rewards, according to tenure and not by individual effort and performance. Thus, seniority may enhance firm productivity (Knoke & Ishio, 1994).

In addition, there are several reasons trade unions take a positive approach to training and development (Costine and Garavan, 1995). First, companies increasingly favor a more flexible workforce, with individual workers able to perform a range of

tasks. This means additional training. Second, an increasing number of companies are varying the size of their workforce in response to patterns and demand levels. The union should work for peripheral (usually part-time, temporary, and subcontractors) workers, and assist in maintaining a resource of skill in the market. Third, the pace of technological change demands that skills be consistently updated. New technology may also lead to deskilling. Forth, employers investing in employee learning must also make considerable effort to provide employment security, in order to protect their investment. Fifth, a large number of people require time and facilities for retraining during their working lives, in order to keep up with changing work requirements. Sixth, education and training not only affects industry and commerce, but overall economic welfare.

In summary, unions have a conflicting incentive for the involvement in training and development. It is important to find which of these incentives dominates.

One argument to consider prior to analyzing this question was raised by Smith and Dowling (2001). It was argued that the relationship between the labor-management partnership and education and training investment at the company is an inversed U-shape. This is because the investment is focused to collective relationships, if the partnership level is very high or very low.

Another point consider in analyzing the union and training relationship is companies' traditionally negative attitude towards unionization and training and developing workers if unionized. Many companies still remain at bestsuspicious and at worst hostile to unions (Logan, 2001; Dundon, 2002). In addition, management in general continues to view education and training in a company as a management prerogative (Constine and Garavan, 1995). In U.K., for example, regular quarterly reviews of workplace education and training (the Labor Force Survey) revealed only 1.1% training activity growth during the 1990s although training activity increased from 10.5% of the workforce to 15.9% between 1986 and 1999 (DfEE, 2000: 20).

For example, in the steel industry, a traditional, low skill, heavy industry, much higher levels of skills are required of the relatively small numbers of workers who remain in the industry (Payne, 2001). It is also the case that those leaving the industry must learn new skills in order to seek alternative employment. The Institute of Scientific and Technical Communicators (ISTC) is involved in an attempt to change the culture of the industry from one based on physical strength and prowess to a culture of lifelong learning, in an environment where employers are still showing reluctance to concede that education and training is a suitable subject for negotiations with the union (Payne, 2001). When an interest in training is taken, it is usually narrow training related to current requirements rather than addressing the long-term skill requirements

of the industry, or may become a response to employees facing possible redundancy.

There are, however, examples from the other positive side. A joint action between the trade unions and management at Ford Motor Company (Ford EDAP) is one of the most successful employee development schemes (Baettie, 1997). Another example is UNISON's Open College in U.K., which provides accredited learning pathways for Unison members, ranging from short induction courses through to level four university degree opportunities (Kennedy 1995). Ed – Please check, is this what you intended? It is of particular importance for women in general and part-time and less skilled women, in particular. In the printing industry, with its long craft traditions, there appears to be broader acceptance on the part of both employers and employees, of the need to upskill the workforce with future skill requirements (Payne, 2001). For GPMU, it is a matter of ensuring that members are equipped with the skills that are going to be the demand from employers.

2. Empirical Evidence on Unions and Training

The research on the effect of unions on human resource development have several directions, including skill formation or development, technology change and automation process, team work, and high performance/involvement work systems. The focus in this paper is on the direct relationship between unions and training.

Many empirical researches on unions and training, based on samples of individuals, reveal a negative relationship. Duncan and Stafford (1980, 366), using the 1975–1976 Time Use Survey, found that blue-collar union respondents received substantially fewer hours of weekly training, occurring jointly as part of regular work, than did nonunion workers. Similarly, the amount of training taken separately from usual work, but during the work period, was also lower for union workers, this is in contrast to that of nonunion workers.

Using pooled 1968–1978 Panel Study of Income Dynamics (PSID), Mincer concluded that total training is not as common in union firms (1983, 238-41). He also found that union workers were exposed to significantly less training than nonunion workers. Based on the 1983 Current Population Survey (CPS) and the 1966-1981 NLS young men, young women, and older men cohorts, Lillard & Tan (1992) demonstrated that union membership (a) increased the probability of company training for obtaining a job, for CPS men, (b) decreased the probability of company training for improving job skills, for CPS men, (c) had no impact on either type of company training, for CPS women, (d)

decreased the probability of company training, for mature NLS men; but (e) had no effect on company training for young NLS men and women.

Knoke & Kalleberg (1994) analyzed the 1991 National Organizations Survey (NOS) and found that the likelihood of an establishment providing a formal training program was greater if core production workers were represented by a union and where a higher percentage of industry workers were unionized. However, neither union measures remained statistically significant after controlling size, formal structure, and environmental factors.

In 1991 NOS, more than two thirds (72%) of all establishments reported some formal training during the preceding 2 years. In the case of training, establishments spent a median of $15,000 (the mean was $344,885, indicating a substantial positive skew). The median establishment trained 55% of its workforce (mean=63.8%).Finally, the median values of per-capita training expenditure measures were $56 and $365, respectively (means=$392 and $1,206).

Using 943 manufacturing companies in Korea, Kim and Nho (2003) analyzed the factors affecting training and development at the company level and found the union dummy variable is statistically negatively correlated with the average annual education and training time measured by hours in both Tobit and OLS models, with other variables controlled. However, the cooperative culture of industrial relations, which is measured by 5-point Likert-style scale, and information sharing between labor and management, are positively related to training.

There is, however, evidence relating to the positive relationship between unions and training. Knoke & Ishio (1994) analyzed the 1991 NOS and concluded that the presence of labor unions representing core workers in wage negotiations not only was associated with greater firm-provided training efforts, but also appeared to offset the adverse effects of an absent or poorly developed internal market, for all types of workers. Unionized establishments are more likely than nonunionized workplaces to provide training to core workers recruited from outside the organization. Unionized employers lacking fully developed internal markets, are nonetheless more likely to offer core employee training than similar nonunionized companies. The importance of job training for employee promotion is much greater in unionized than nonunionized establishments, where internal markets are not as developed.

Osterman (1995) found that unions and a firm's investment in education and training is positively related. In a survey conducted by the MSF trade union, Hayes and Stewart (1998), found a positive correlation between trade union involvement in enterprise decisions regarding training, and the amount of training taking place in the

firm. Using the British 1998 Workplace Employee Relations Survey, Böheim and Booth (2005), found a positive correlation between workplace union recognition and private sector employer-provided training. In addition, they reported that the various types of collective-bargaining institutions have no separate effect.

In research by Whitfield (2000) and Ryu (1997), no relationship was found between unions and training. Recent research on unions and training, conducted by Gilbert (2003), using 1998 Adult Education and Training Survey on Canadian workers, revealed that union effects on training incidence are typically small and negative, and generally not statistically significant. It was mentioned that the majority of differences in the union effects across subgroups, can actually be accounted for by differences between nonunionized workers in other characteristics. In summary, it was concluded that overall unions were found to have weak direct effects on training incidence and funding, to the extent that unions generate greater job stability, however, according to the results, they have a positive indirect effect on involving firms in paying for the training undertaken by workers.

Other aspect to consider in analyzing the relationship between the union and education and training at the national level, is the fact that trade unions are not represented in many workplaces. At a global level, it is obvious that union membership and power have diminished. Korea is not the exception. This is largely due to changes in the workplace (the decline in the traditional manufacturing industry and the growth of service sector employment; the large number of small and medium-sized enterprises (SMEs) without union representation; the growth of individual contracts and of self-employment; the existence of a large peripheral labor market (within which employment is low paid and insecure) exacerbated by the legislative and rhetorical trade union movement (Payne, 2001). Sutherland and Rainbird (2000) argue that a move towards an entitlement to learning would benefit a large number of people.

III. Empirical Analysis on the Effect of Unions on Human Resource Development

1. Samples Used in the Analysis

To test the arguments mentioned in Section II, the Human Capital Company Panel Data in 2006, which is organized and collected by the Ministry of Labor and Korea Research Institute of Vocational Education and Training (KRIVET) are used. This panel data surveyed both manufacturing and financial institution sectors. This paper, however, used only manufacturing sector data for sample homogeneity. The number of sample is 303 companies, as seen in <Table 1>: 169 are unionized ones and 134 are not unionized ones. Among manufacturing sector, petroleum and chemicals industry, metal and non-metal materials and motor vehicles and transportation vehicles industry is represented more by unions than other industry while electrical industry is represented less by unions.

A few general characteristics of the sample companies are also presented in <Table 1>. Thirty-three percent of companies in the sample are subcontractors. For the foreign ownership of the company, majority of samples or 55% are not involved in foreign ownership. Thirty-four percent of the sample companies are owned by foreign investors but they are not involved in management. Most of the sample companies export at least some of their products. Thirty-one percent of the companies export more than half of the products overseas. For governance structure, whether the owner of the company also manages the company or not, the majority of the sample companies are managed by the owner without professional CEO while only 15% of the companies are managed by professional CEOs. The data shows the companies with professional CEOs are more likely to have unions.

The second set of variables is about market situation. Three variables for market situation are originally measured by 5-point Likert-style scale the company managers. These variables are recoded as 0 or 1 dummy variable if the change for the last three years are significant, which means 4 or 5 out of 1 to 5 scale. The first variable is the market share change. Only 4% of the companies answered the market share changes significantly for the last three year period. However, 20% of the companies mentioned the change in R&D for the last three year period was significant. Thirty-five percent of the companies mentioned the organizational structure changed significantly for the last

three year period.

One variable on industrial relations is used in the analysis. This variable is measured by 5-point Likert-style scale. The average is 3.97, which means the overall industrial relations is somewhat cooperative. As expected, however, nonunionized companies have higher cooperation level in industrial relations that unionized ones. The average size of the companies is 906. Among workers, about ten percent workers are contingent workers. Company size tends to be larger with unions.

⟨Table 1⟩ Simple Statistical Descriptions for Samples: 2004

Variable			means and t-value				
category	names	definition	total	union	no union	t-value	
unionization	union	trade union dummy	0.56	1.00	0.00	.	
industry	ind1	food and beverages	0.08	0.10	0.05	-1.63	
	ind2	textiles, sewn cloth and fur articles	0.04	0.04	0.04	0.12	
	ind3	petroleum and chemicals	0.14	0.17	0.09	-2.19	**
	ind4	rubber and plastics	0.05	0.06	0.04	-0.91	
	ind5	metals and non-metal materials	0.18	0.24	0.10	-3.40	***
	ind6	machinery and equipment	0.08	0.06	0.11	1.58	
	ind7	computers and office machines	0.02	0.00	0.04	2.27	
	ind8	electrical	0.07	0.04	0.10	1.83	*
	ind9	electronics	0.22	0.10	0.36	5.37	***
	ind10	motor and transportation vehicles (base)	0.13	0.18	0.07	-2.80	***
subcontract	subcon	subcontractors	0.33	0.25	0.43	3.39	***
foreign ownership	fown1	ownership only dummy	0.34	0.34	0.35	0.24	
	fown2	ownership & technical support dummy	0.09	0.08	0.09	0.21	
	fown3	management dummy	0.02	0.03	0.01	-1.46	
	fown4	no foreign ownership dummy (base)	0.55	0.54	0.55	0.13	
export in sales	res1	ratio of export in sales < 10% dummy	0.26	0.31	0.20	-2.13	
	res2	ratio of export in sales 10 to 30% dummy	0.20	0.20	0.22	0.45	
	res3	ratio of export in sales 30 to 50% dummy	0.15	0.15	0.15	0.03	***
	res4	ratio of export in sales > 50% dummy	0.31	0.27	0.37	1.98	**
	res5	no export dummy (base)	0.07	0.07	0.06	-0.39	
governance structure	gs1	owner ownership only	0.45	0.32	0.62	5.41	***
	gs23	high intervention by professionals dummy	0.29	0.40	0.20	-3.14	***
	gs4	low intervention by professionals dummy	0.11	0.13	0.08	-1.36	
	gs5	only professional managers dummy (base)	0.15	0.18	0.10	-2.19	**
market instability	ms	market instability	0.04	0.04	0.05	0.7	
	rds	R&D instability	0.20	0.14	0.28	2.84	***
	os	organizational instability	0.35	0.31	0.39	13.4	
indust. relations	lm	overall labor-management relations	3.97	3.72	4.29	6.06	***
company size	nw	number of workers (thousands)	0.91	1.31	0.04	-4.64	***
	nwr	number of regular workers (thousands)	0.81	1.17	0.04	-4.50	***
	nwc	number of contingent workers (thousands)	0.10	0.14	0.04	-2.55	***
	size1	size between 100~299 dummy	0.43	0.31	0.58	4.85	***
	size2	size between 300~999 dummy	0.42	0.46	0.37	-1.57	
	size3	size between 1000~1999 dummy	0.08	0.11	0.04	-2.58	**
	size4	size m.t.2000 dummy (base)	0.07	0.12	0.01	-3.84	***

note : two-tailed test, *** (p<0.01), **(p<0.05), * (p<0.1)

The average training and development cost per capita in 2004 is 0.35 million won: 0.37 for unionized companies and 0.32 for nonuionized ones. Sample distribution among manufacturing sector is presented in <Table 1>.

2. Do the Unionized Companies Pay More (Cost More)?

Now we move to the hypothesis testing. As mentioned in the previous section, unions work for higher wages and companies with unions are expected pay more or cost more in labor-related expenses. This expectation may be a simple assumption based on previous researches on unions, but difficult to answer. Total annual labor cost per worker in sample companies is 32.31 million won in 2004 while the maximum is 260.22 million won among 294 companies. The per worker training and development cost in 2004 based on the number of regular workers is 0.35 million won in 2004 while the maximum is 3.69 million. As shown in <Table 2> unionized companies show higher par capita labor cost while the difference in training and development cost by unions is not statistically significant. Regarding the unemployment insurance premium, unionized companies pay less the premium while the refund amount is larger.

〈Table 2〉 HR-related Expenses

(unit : thousand won)

HR-related Expenses in 2004	Per Worker Cost			
	Union	No Union	t-value	
Total Labor Costs	36,370.6	27,526.5	-3.07	***
Total Education and Training Costs	373.7	320.8	-0.88	
Total Premium Paid for Job Ability Development of Unemployment Insurance	197.0	457.9	0.79	
The Amount Refund from the Above Premium	49.4	26.8	-2.08	**

Note : two-tailed test, *** (p<0.01), **(p<0.05), * (p<0.1)

Total labor cost is composed of both direct labor cost such as base wage, allowances, and incentives and indirect cost such as four legally required insurance premium including national pension, workers' compensation, unemployment insurance, and medical insurance, and educational expenses, commuting expenses, recruiting expenses, dining expenses, clothing expenses, retirement reserve, and other benefit expenses. Training and development expenses include not only the refund by the employment insurance but

also all the expenses used for the job competency development including general moral education, industrial relations education, and industrial safety education, which is not refunded by the employment insurance. The expenses do not include those for hobbies and labor costs for the workers in HRD department of the company.

Another set of information on labor cost and education and training cost is from 2004 Korea Investors Service (KIS). The KIS on the Statement of Profit and Loss has the information on Sales(code number 12-1000), Revenue on Sales (code number 12-2000), Labor Cost (code number 12-4000), Education and Training Cost (code number 12-4223), Labor Cost and Production Labor Cost (code number 12-9540), and Education and Training Cost II (code number 12-9570). The Statement on the Cost of Production also has the information on education and training and development cost (code number 15-3236). The Financial Ratio Report has information on labor cost ratio to total cost (code number 19-2190), Value-added Per Worker (code number 19-5010), Sales Per Worker (code number 19-5020), Ordinary Revenue Per Worker (code number 19-5030), Net Revenue Per Worker (code number 19-5040), Labor Cost Per Worker (code number 19-5050).

Based on <Table 3>, all of per capita on financial performance measures, including value-added, sales, ordinary revenues, and net revenues, are higher and statistically significant in unionized companies than nonunionzed.

〈Table 3〉 Finance and Labor Information from Korea Investors Service: 2004

(unit : million won)

Information from KIS Data	Unionization Difference		
	Union	No Union	t-value
Total Sales	881,125.4	154,514.9	-3.24 ***
Total Revenue on Sales	699,055.9	126,059.9	-3.32 ***
Total Labor Cost	97,055.9	17,711.4	-2.59 **
Total Education and Training Cost	579.2	111.4	-2.07 **
Total Labor Cost and Production Labor Cost	53,587.0	11,953.3	-2.96 ***
Total Education and Training Cost II	902.7	172.6	-1.86 *
Total Education and Training and Development Cost	406.7	39.5	-1.95 *
Labor Cost Ratio to Total Cost	13.6	13.7	0.15
Per Capita Value-added	103.6	62.3	-3.69 ***
Per Capita Sales	495.9	354.8	-2.25 **
Per Capita Ordinary Revenue	35.9	18.7	-2.24 **
Per Capita Net Revenue	28.1	13.6	-2.34 **
Per Capita Labor Cost	43.4	30.3	-6.26 ***

note : two-tailed test, *** (p<0.01), **(p<0.05), * (p<0.1)

3. Are the Unionized Companies More Active in Training and Development?

3.1 Descriptive Statistics Comparison by Unionization in Training and Development

A few descriptive information about the union's activity in unionized companies on training and career development is provided on the panel data. First question is whether the union negotiate the training and career development issues in collective bargaining. Twenty-four or 14.2% of unions officially bargain training and development in collective bargaining process. Fifty-two or 30.8% of unions officially discuss training issues in works council. This reflects the low involvement of unions in training and development issues in Korea.

〈Table 4〉 Union Involvement on Training and Development Issues

Union Involvement on Training and Development		Ratio	
		Only unions	Total Ratio
Training Issues in Collective Bargaining	Official Issues in Collective Bargaining	24(14.2%)	0.08
	Official Issues in Works Council	52(30.8%)	0.17
	Not Discussed	93(44.0%)	0.31
	No Union	134	0.44
Active Involvement in Companies' Training and Career Development Issues	Very Active Involvement	16(9.5%)	0.05
	Somewhat Active Involvement	64(37.9%)	0.21
	Next to No Involvement	89(52.7%)	0.29
	No Union	134	0.45

Another comparison of the investment in human resource development is presented here. First, the formal HRD program at the end of year 2004 is compared by the unionization. As seen in the 〈Table 5〉, Collective on-the-job and off-the-job training are used more in unionized companies in general but the difference is not statistically significant.

〈Table 5〉 Training Programs and Its Effectiveness

(unit: 5-point Likert-style scale)

	Official Program			Practical Effectiveness			Investment Level		
	Union	No Union	t-value	Union	No Union	t-value	Union	No Union	t-value
Collective On-the-job Training	0.86	0.81	-1.17	3.31	3.27	-0.44	3.03	3.06	0.55
Collective Off-the-job Training	0.82	0.79	-0.55	3.38	3.42	0.49	3.18	3.34	1.71*
Paid On-Leave for Training	0.07	0.12	1.41	3.54	3.35	-0.62	3.15	3.35	0.68
Career Development Training	0.19	0.13	-1.50	3.44	3.00	-1.83*	3.28	3.12	-0.67

note : two-tailed test, *** (p<0.01), **(p<0.05), * (p<0.1)

Second, the comparison of the participation ratio in HRD and direct per capita HRD cost are presented in <Table 6>. Union is not statistically significant factor in neither of training program participation nor training expenses.

〈Table 6〉 Investment in HRD

(unit : thousand won)

	Ratio of Workers Participated			Per Employee Expenses		
	Union	No Union	t-value	Union	No Union	t-value
(1) Collective On-the-job Training	1.30	1.22	-0.31	131.69	96.61	-1.28
(2) Collective Off-the-job Training	0.34	0.39	0.96	113.90	114.10	0.01
(3) E-Learning	0.47	0.41	-0.46	32.40	34.20	0.22

note : two-tailed test, *** (p<0.01), **(p<0.05), * (p<0.1)

A few more comparison of the investment in human resource development are presented. The investment level by the job category is presented in <Table 7>. This table shows that the union effect in detail by job category because the union in Korean manufacturing companies has commonly blue-color workers as members. The data shown is not statistically different by unionization.

〈Table 7〉 HRD Investment by Job Category

(unit : 5-likert score)

		Official Practice			Investment Level		
		Union	No Union	t-value	Union	No Union	t-value
non-Blue color workers	(1) R&D Section	0.84	0.83	-0.10	2.97	3.00	0.38
	(2) Sales and Service	0.85	0.78	-1.52	2.88	2.95	0.64
	(3) Engineers	0.92	0.88	-1.03	2.88	2.98	1.13
	(4) Management Section	0.96	0.91	-1.89*	2.81	2.84	0.42
Blue-color workers		0.86	0.80	-1.49	2.80	2.77	-0.36

note : two-tailed test, *** (p<0.01), **(p<0.05), * (p<0.1)

The next simple comparison of the investment in various human resource development programs is presented on the <Table 8>. The table shows the various HRD programs by unionization.

⟨Table 8⟩ HRD Programs by Unionization

	Official Practice				Practical Effectiveness				Investment Level			
	Union	No Union	t-value		Union	No Union	t-value		Union	No Union	t-value	
(1) Learning by Ind'l Interaction	0.13	0.05	-2.41	**	3.51	3.42	-1.06		2.21	2.13	-0.71	
(2) Job Rotation	0.63	0.45	-3.01	***	3.16	2.93	-1.80	*	2.46	2.43	-0.24	
(3) Individual Projects	0.22	0.22	-0.05		3.32	3.41	0.46		3.00	2.86	-0.55	
(4) Self-Learning by Doing	1.00	1.00	0.00		3.41	3.29	-1.56		2.22	2.17	-0.52	
(5) Mentoring/Coaching	0.38	0.39	0.19		3.53	3.26	-2.08	**	2.89	2.58	-1.69	*
(6) OJT	0.86	0.79	-1.65	*	3.49	3.51	0.27		2.83	2.93	0.95	
(7) TFT	0.61	0.60	-0.08		3.54	3.61	0.67		3.31	3.24	-0.49	
(8) Action Learning	0.22	0.26	0.85		3.59	3.37	-0.93		3.13	2.66	-1.63	
(9) QC	0.71	0.54	-2.397	***	3.48	3.59	1.08		3.12	3.08	-0.31	
(10) Suggestion System	0.85	0.76	-1.97	**	3.41	3.29	-1.11		3.09	3.09	0.01	
(11) Knowledge Mileage Program	0.16	0.10	-1.42		3.33	3.21	-0.39		3.26	3.29	0.08	
(12) 6-Sigma	0.36	0.40	0.85		3.43	3.46	0.19		3.35	3.26	-0.52	

note : two-tailed test, *** (p<0.01), **(p<0.05), * (p<0.1)

3.2 Regression Analysis

Up to this point, a simple comparison and t-test are used to see the effect of unions on training and development. Now, the arguments is tested with other factors are controlled. First regression is about the effect of unions on training and development. Dependent variable in the regression analysis is log of per capita training and development cost. Several factors including size, industry, ratio of export, foreign ownership are controlled to see the effect of union on the education and training.

As seen in <Table 9> the effect of unions on per capita training and development cost is positive and significant in Model I when minimum number of variables are controlled but is insignificant when size dummy and other control variables are included in the Model III although the sign of the effect is positive. This result implies that training cost is higher in unionized companies not because of unionization but by the size of the companies.

⟨Table 9⟩ Regression on Education and Training Investment
(Dependent variable: log(Per Capita Training and Development Cost))

		Model I			Model II			Model III		
independent variable		coeff.	s.d.		coeff.	s.d.		coeff.	s.d.	
ms	market instability	0.06	(0.58)		0.05	(0.58)		0.11	(0.51)	
rds	R&D instability	0.91	(0.30)	***	0.88	(0.30)	***	0.54	(0.28)	**

os	organizational instability	0.34	(0.24)		0.34	(0.24)		0.40	(0.21)	***
union	trade union dummy	0.50	(0.24)	**	0.42	(0.26)	*	0.13	(0.26)	
lm	labor management relations	-0.14	(0.14)		-0.15	(0.14)		0.02	(0.12)	
type1	KOSPI				0.08	(0.45)		0.01	(0.28)	
type2	KOSDAQ							0.05	(0.29)	
uet21	training as CB issue				0.53	(0.52)		-0.29	(0.39)	
uet31	training as works council issue							0.54	(0.45)	
gs1	ownership only							0.40	(0.34)	
gs23	high professional intervention							0.76	(0.35)	**
gs4	low professional intervention							0.40	(0.41)	
subcon	subcontractors							-0.24	(0.25)	
size1	size between 100~299 dummy							-1.33	(0.47)	***
size2	size between 300~999 dummy		no			no		-0.91	(0.45)	**
size3	size between 1000~1999 dummy							0.03	(0.51)	
	9 industry dummy variables		no			no			yes	
	4 ratio of export dummy variables		no			no			yes	
	3 foreign ownership dummy variables		no			no			yes	
	__cons	4.93	0.61	***	4.99	0.62	***	4.41	(0.93)	***
	R-squared		0.056			0.060			0.276	
	Number		293			293			291	

Note:
1) Three size dummy, 9 industry dummy, 4 ratio of export dummy, and 3 foreign ownership dummy variables are controlled in the Model III but not presented in the table.
2) two-tailed test, *** ($p < 0.01$), **($p < 0.05$), * ($p < 0.1$)

Now, the question to test empirically lose its directions because the effect of unions on training cost is not significant. But, we move to the last and final test on the effect of unions on firm performance.

4. Does the Unionized Companies Show Higher Firm Performance through Education and Training?

For productivity-related variables, we have two sets of variables. First set is from the panel data and the variables in this set is attitude variables measured by management response with 5-point Likert-type scale. The statistics for the variables are presented in <Table 10>.

⟨Table 10⟩ Attitudinal Variables on Firm Performance from HCCP Data

	names	definition	total	union	no union	t-value
Attitudinal Variables on Firm Performance	jcomp	workers' job competency	3.08	3.05	3.13	1.17
	lpro	labor productivity	2.92	2.89	2.95	0.81
	image	company image upgrade	2.83	2.78	2.90	1.32
	motiv	workers' motivation	3.14	3.09	3.20	1.34

The above attitudinal performance variables are regressed on independent variables including union and training cost. The result is presented in ⟨Table 11⟩. As seen in the table, the effect of training cost is positive all of the attitudinal performance variables. But, the union variable is insignificant and negative for workers' motivation variable. The culture of labor-management relations has a clear and positive effect on the attitudinal firm performance variables.

⟨Table 11⟩ Effect of Union and Training on Company Performance I

(Dependent variable: Attitudinal Variables on Firm Performance from HCCP Data)

dependent variables		job competency			labor productivity			company image upgrade			workers' motivation		
independent variables		coef.	s.d.		coef.	s.d.		coef.	s.d.		coef.	s.d.	
lketcost	log(per capita training cost)	0.10	(0.02)	***	0.08	(0.02)	***	0.08	(0.03)	***	0.13	(0.03)	***
ms	market instability	-0.10	(0.17)		0.03	(0.19)		-0.11	(0.24)		-0.01	(0.22)	
rds	R&D instability	0.10	(0.09)		0.22	(0.10)	**	0.26	(0.13)	**	0.19	(0.12)	
os	organizational instability	0.04	(0.07)		-0.04	(0.08)		-0.01	(0.10)		-0.04	(0.09)	
union	trade union dummy	-0.08	(0.09)		-0.02	(0.10)		-0.14	(0.12)		-0.20	(0.11)	*
lm	labor management relations	0.17	(0.04)	***	0.15	(0.05)	***	0.16	(0.06)	***	0.13	(0.05)	**
type1	KOSPI	0.05	(0.09)		0.01	(0.11)		-0.02	(0.13)		0.09	(0.12)	
type2	KOSDAQ	0.03	(0.10)		0.08	(0.11)		0.01	(0.13)		0.01	(0.12)	
gs1	ownership only	-0.11	(0.12)		-0.16	(0.13)		-0.05	(0.16)		-0.08	(0.15)	
gs23	high professional intervention	-0.11	(0.12)		-0.13	(0.13)		-0.06	(0.16)		-0.01	(0.15)	
gs4	low professional intervention	-0.01	(0.14)		-0.08	(0.16)		0.12	(0.19)		-0.10	(0.17)	
subcon	subcontractors	0.12	(0.08)		-0.07	(0.09)		-0.07	(0.12)		-0.01	(0.11)	
_cons		2.15	(0.32)	***	1.99	(0.37)	***	2.54	(0.46)	***	2.39	(0.41)	***
R-squared					0.26			0.19			0.22		
Number		290			290			290			290		

Note:
1) Three size dummy, 9 industry dummy, 4 ratio of export dummy, and 3 foreign ownership dummy variables are controlled in the regression but not presented here.
2) two-tailed test, *** (p<0.01), **(p<0.05), * (p<0.1)

The second set of variables on firm performance is from KIS data mentioned earlier. This variables are not attitudinal but measured performance. As seen in ⟨Table 12⟩, training cost variable is significantly related with per capita value-added and per capita

sales but not with tow revenue variables. While union is not related none of the performance variables.

⟨Table 12⟩ Effect of Union and Training on Company Performance II
(Dependent variable: Measured Firm Performance Variables form KIS data)

Dependent Variables		per capita value-added			per capita sales			per capita ordinary revenue			per capita net revenue		
Independent Variables		Coef.	Std.		Coef.	Std.		Coef.	Std.		Coef.	Std.	
lketcost	log(per capita training cost)	0.09	(0.03)	***	0.45	(0.19)	**	0.03	(0.02)		0.02	(0.02)	
ms	market instability	-0.17	(0.22)		-1.52	(1.53)		-0.04	(0.20)		-0.05	(0.16)	
rds	R&D instability	-0.15	(0.12)		-1.96	(0.83)	**	-0.20	(0.11)	*	-0.12	(0.09)	
os	organizational instability	-0.14	(0.09)		-0.96	(0.64)		-0.08	(0.08)		-0.07	(0.07)	
union	trade union dummy	0.18	(0.11)		-0.35	(0.76)		-0.01	(0.10)		0.02	(0.08)	
lm	labor management relations	0.13	(0.05)	**	0.43	(0.36)		0.04	(0.05)		0.03	(0.04)	
type1	KOSPI	-0.07	(0.12)		-1.29	(0.84)		-0.10	(0.11)		-0.13	(0.09)	
type2	KOSDAQ	-0.24	(0.12)	*	-1.78	(0.87)	**	-0.11	(0.11)		-0.11	(0.09)	
gs1	ownership only	-0.18	(0.17)		-3.36	(1.04)	***	-0.10	(0.13)		-0.15	(0.11)	
gs23	high professional intervention	-0.23	(0.17)		-2.99	(1.05)	***	-0.05	(0.13)		-0.10	(0.11)	
gs4	low professional intervention	-0.21	(0.20)		-3.44	(1.24)	***	-0.18	(0.16)		-0.22	(0.13)	*
fown1		0.24	(0.10)	**	2.00	(0.69)	***	0.37	(0.09)	***	0.32	(0.07)	***
fown2		-0.09	(0.21)		-0.22	(1.25)		0.11	(0.16)		0.05	(0.13)	
fown3		0.68	(0.32)	**	5.43	(2.14)	**	0.36	(0.27)		0.27	(0.22)	
subcon	subcontractors	0.02	(0.11)		-0.75	(0.75)		0.02	(0.10)		0.00	(0.08)	
	_cons	-0.07	(0.48)		1.31	(2.92)		-0.29	(0.37)		-0.16	(0.30)	
R-squared		0.513			0.2798			0.2327			0.235		
Number		178			290			290			290		

Note:
1) Three size dummy, 9 industry dummy, 4 ratio of export dummy, and 3 foreign ownership dummy variables are controlled in the regression but not presented here.
2) two-tailed test, *** (p<0.01), **(p<0.05), * (p<0.1)

IV. Implications

The empirical analyses on the effect of unions on company's firm performance based on this study are summarized as follows. Simple statistics show that unionized companies pay workers more and train them more than nounionized companies do. This may lead to the explanation that unions get more from the company but compensate higher labor cost by more training and development. As shown in Korea Investors Service dataset the absolute levels of per capita sales, ordinary revenue, and net revenue are higher in unionized companies with higher per capita labor cost.

However, HCCP data show that unions are not quite active in training and developing members neither in collective bargaining process nor in works council meetings. Also, unions do not show significant difference in various training and development programs in companies.

When other variables controlled, the effect of unions on training and development cost disappears although the effect is significant without control variables. Most powerful variables in this change is size variables. This means as the company size increases it increases training and development.

The union effect on firm performance measured by HCCP attitudinal variables and KIS variables based on the statement of profit and loss is not significant although the level of labor-management cooperation is significant in many of attitudinal performance variables.

What does this result imply to Korean industrial relations in the 21st century? Union seems to be a burden to the management who has to keep the competitiveness to survived in this globalized market although this result is based on only one statistical analysis. Union need to bargain not only wages, job security, and working conditions, but also company's competitiveness to help the company survive in the market. One simple but strong way of helping the company to be competitive in the market is upgrading skills and knowledge of union members. Without this skill and knowledge upgrading, union is going to have stronger resistance by the management in the near future.

This study, however, has many limitations to argue the statement mentioned above. First, the sample size is not large enough to test the effects of variables mentioned in the empirical analysis section. Second, as many other research has, the data is cross-sectional and is incomplete to measure the effect of unions on training because recent environment on industrial relations in general has changed so rapidly which makes difficult to capture the changes correctly. Third, the merge of HCCP and KIS dataset may be incomplete although the merging gives many positive influences in the analysis. The panel data added to the current dataset in coming years may be a good solution to the above limitations although it may not solve all the problems in this study.

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