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**THE EFFECTS OF TRADE UNIONS ON TOTAL COMPENSATION
IN KOREA FOR 1987-1999**

By

JEONGHYUN LEE

A DISSERTATION

**Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of**

DOCTOR OF PHILOSOPHY

School of Labor and Industrial Relations

2003

THE EFFECTS

The purpose of this study

relating wages and benefits

negotiating between employers

and labor unions. It

will undertake comparative

analysis whether Korea

and other areas must be

examined the union effect

and health effect.

For the purpose, this study

uses the Basic Survey on Wages

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surveys, for the union

Enterprise Labor Cost

and Two-Stage Least Squares

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Regarding the union

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ABSTRACT

THE EFFECTS OF TRADE UNIONS ON TOTAL COMPENSATION IN KOREA FOR 1987-1999

By

JEONGHYUN LEE

The purpose of this study is to examine the effects of trade unions on total compensation including wages and benefits in Korea for the period 1987-1999. In 1987, free collective bargaining between employers and unions began, following political democratization and massive labor unrest. The experiences of Western countries indicate that trade unions are likely to undertake converging roles regarding total compensation. Therefore, in order to determine whether Korean trade unions undertook similar roles for the period, four specific areas must be considered: the union wage effect, the union wage-equalizing effect, the union effect on human capital and other wage determinants, and the union benefit effect.

For the purpose, this study is based on three kinds of data, individual-level data from the Basic Survey on Wage Structure for the union wage effect and union effect on human capital and other wage determinants, establishment-level data, constructed from the BSWS, for the union wage-equalizing effect, and establishment-level data from Enterprise Labor Cost Survey in Korea. The Ordinary Least Square, Quantile Regression, and Two-Stage Least Squares estimation method are used to analyze the data.

Regarding the union wage effect, results show that positive wage effects are found in Korea for 1987-1999 and the size of the union wage effect is around 5%, implying

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Key Words: Total compo

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relatively low to 10-25% in the United States. While the union wage effect is larger for the lower end in the wage distribution for 1987-1995, in addition, the union wage effect for less-paid workers became less, compared to better-paid workers, from 1996-1999. The change indicates that Korean trade unions move from the organizations for less-skilled workers in the late-1980s and early-1990s to the organizations representing mainly more-skilled workers, who receive higher wages, in the late-1990s. With respect to the union wage-equalizing effect, the results indicate that unions reduced the degree of wage inequality within establishments by 7%-25% in the 1990s, when measured by variance of logarithm of wages and by 7%-14%, when measured by standard deviation of logarithm of wages. The result implies that Korean unions have succeeded in preventing their employers from introducing pay-for-performance wage systems in the 1990s. Also, it is shown that the union reduces the return for education and tenure in all years and gender wage differentials in most years studied. Regarding union benefit effect, results imply that unions increase the level of voluntary benefits, compared to non-organized establishments. In addition, the union organizing rate within establishments and the individual union's affiliation to the national union confederation are shown to affect the level of benefits and nature of benefits, provided by employers.

(Key Words: Total compensation, union wage effect, wage distribution, wage inequality, human capital, union benefit effect, Korean industrial relations, quantile regression, two-stage least squares, and ordinary least squares)

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2003

To My Beloved Parents and Families

I would like to thank R...
my committee, for h...
ing me how to finish...
the committee mem...
R. Ben F. Banks for th...
remained to be develop...

I would like to thank a...
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Acknowledgements

I would like to thank Richard N. Block, my advisor for the past six years and chairperson in my committee, for his endless patience and encouragement. Without him, I could not imagine how to finish my study and this dissertation. Also I am deeply grateful to all of other committee members: to Karen Roberts, to Peter Berg, to Richard C. Hill, and to Robert F. Banks for the careful reading and invaluable critiques. All errors and rooms remained to be developed should be mine.

I would like to thank all in the bibliography. In addition, my deep thanks go to all I could remember whenever I think of industrial relations in Korea and while writing this dissertation.

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Key to Abbreviations

2SLS	2-Stage Least Square
AMG	American Military Government
BLS	Bureau of Labor Statistics
BSWS	Basic Survey on Wage Structure
CDMA	Code Division Multiple Access
CLMC	Central Labor-Management Council
COLA	Cost-living Adjustment
CPS	Current Population Survey
DLP	Democratic Labor Party
DSP	Democratic Society Party
ECI	Employer Cost Index
ELCS	Enterprise Labor Cost Survey
EOI	Export-Oriented Industrialization
EPI	Economic Planning Board
FDI	Foreign Direct Investment
FKI	Federation of Korean Industries
FKTU	Federation of Korean Trade Unions
GM	General Motors
GNP	Gross National Product
GSM	Global System for Mobile communication
HCI	Heavy and Chemical Industrialization
ILO	International Labor Organization
IMF	International Monetary Fund
IRRC	Industrial Relations Reform Committee
ISI	Import-Substitution Industrialization
KCTU	Korean Congress of Trade Unions (1945-1947)
KCTU	Korean Confederation of Trade Unions (1995 ~)
KEF	Korea Employers Federation
KLI	Korea Labor Institute
KSLI	Korean Labor and Society Institute
KTUT	Korean Trade Union for Teachers
LAV	Least-Absolute Value
MAD	Minimum Absolute Deviation
MOL	Ministry of Labor
MWC	Minimum Wage Committee
NCES	National Council for Economy and Society
NCTU	National Congress of Trade Unions
NSO	National Statistical Office

OECD
OES
POSCO
OR
TETLCD
UAW
UN

OECD	Organization for Economic Co-operation and Development
OLS	Ordinary Least Square
POSCO	Pohang Steel and Iron Company
QR	Quantile Regression
TFT-LCD	Thin Film Transistor-Liquid Crystal Display
UAW	United Auto Workers
UN	United Nations

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CHAPTER ONE

INTRODUCTION

Fifteen years in Korea have passed since the political democratization and massive labor offensive occurred in 1987, which can be compared to the wage offensive by American labor for 1933-1937 and the British General Strike in 1926. In spite of the no-short history of trade unions and free collective bargaining guaranteed by labor laws in 1953, 1987 in Korea was the first year of free union establishment and free collective bargaining.

As the Korean economy had developed rapidly for the three decades prior to 1987, Korea was viewed as a developing country with labor acquiescence (Koo, 2001). Thus, it is the lack of organized labor and labor acquiescence that has enabled the Korean economy to achieve rapid industrialization during the past a few decades.

Throughout the 1990s, Korea, along with probably South Africa and Poland, remained one of the most dynamic industrial relations systems in the world, showing frequent conflicts between employers, trade unions including workers, and government especially during the Korean financial crisis of the period of 1998-1999 (Koo, 1996; Chang, 1999). Korea in the 1990s was described as 'a nation of endemic strikes' by the *New York Times* (January 17, 1997).

Most likely, the emergence of a new landscape in Korean industrial relations was affected by the political situation surrounding democratization in the late 1980s. Some workers built trade unions with political orientations, but it was also possible to join trade

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unions for non-economic reasons. Furthermore, employers and government were challenged by the new environment in industrial relations during that time period.

Despite the importance of political, cultural, ideological or personal approaches, the economic approach is the most important factor in explaining how Korean trade unions have survived to date. For example, 50.3% of all demands raised by workers were related to the increase of wages and various allowances in 1987, when massive strikes and an unprecedented series of union establishments occurred (Chang, 1999). Have the Korean trade unions since 1987 performed the economic roles as expected and as found in other developed countries? Moreover, are the economic roles of the unions enough to attract workers to union membership?

Over a century ago, Sidney and Beatrice Webb (1894) defined a trade union as “a continuous association of wage-earners for the purpose of maintaining or improving the conditions of their employment (p.1).” The purpose of trade unions is to protect and advance wages and employment for their union membership in general, in case, a threat to unions and workers comes from market competition (Commons, 1909). However, following these goals of trade unions, have Korean trade unions satisfied their union membership by increasing wages and improving working conditions? If not, we can expect that the lack of enhancing economic utilities of union membership will result in a decrease of union membership in the near future and the dynamics of Korean trade unions cannot be repeated in the 21st century any longer.

This study focuses on the importance of wages and benefits. The unions’ goals are to pursue such objections as wages, benefits, safer workplaces, and more freedom in union activities, sympathetic and swift grievance handling for workers, community activities,

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and political activities. Among them, the issue of wages is the most visible and calculable for the rank-and-file union members. They can feel immediately what their union has achieved regarding wages during the current year, compared to the previous year or compared to other firms. While other goals such as grievance handling and political activities are demanded by the limited scope of union members, in addition, all union members have an interest in wages and are involved in determining what the unions want regarding wages. The wage issue is an appropriate measure to reflect how unions function for their membership, what union members demand from their unions, and how they are involved in the decision-making process of unions.

During the period of 1987-1999 was the first time that free collective bargaining was guaranteed to workers via the government and labor laws. Prior to 1987, the level of wages for Korean workers had been low because workers were not allowed to organize and the government adhering to export-driven economic development restricted based on low wages. Thus the opening of the freedom to establish unions and free collective bargaining in 1987 meant the chance for unions to increase their wages for most organized workers. In this historical setting, we may assume that many rank-and-file union members expected the unions to demand an increase in workers' wages as their first priority. The expectation held by most union members may function as considerable pressure on the union itself and its leaders. In the context of Korea for 1987-1999, most unions focused on collective bargaining at the level of the firm, due to the mandated enterprise union system. Even though over time political activities beyond the boundary of enterprise have been recognized as important as economic activities within firms through collective bargaining procedures by many observers and union leaders, political

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Even though this study focuses mainly on the aspects of wages, it does not assume that economic aspects or goals are more important goals than other union goals. Rather, this study admits that the other goals of the unions may be more relevant than economic goals regarding wages. With respect to the Dunlop-Ross debate, this study does not support the economic aspects of unions argued by Dunlop. Rather this study will argue that seemingly pure economic issues like wages within unions may be not related to pure economic decision-making within unions but may be related to political compromise between the different worker groups such as the union leaders, the less-skilled, and more-skilled workers, within the unions.

The first empirical part of this study examines the existence of union wage effects and how union wage premiums are distributed to the various groups of workers in the distribution of wages. In the second empirical part, how trade unions affect wage dispersion is considered. The third empirical part examines how trade unions in Korea affect the four important wage determinants, education, tenure, experience, and gender in the process of wage determination. The final empirical question in this study concerns whether trade unions in Korea have affected the level of voluntary benefits, an increasingly important part of total compensation in Korea. Also the roles of additional union-related variables, union organizing rate and the nature of national union confederations, which each individual union is affiliated to, are considered, regarding the level and contents of voluntary benefits.

1. Nature and Goals of

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CHAPTER TWO

LITERATURE REVIEW

1. Natures and Goals of Trade Unions

Classical Explanations on the Nature and Origin of Unions

The starting point of this study is to consider the nature and origin of trade unions as organizations in history. From the 19th century, many have explained the origin and nature of trade unions. For example, Webb and Webb (1894 & 1987) defined trade unions as organizations for wage earners to maintain and even enhance working conditions including wages. In order to achieve the goal, trade unions are required to control the labor market and to set standard working conditions.

American observers seem to go along with the thoughts of Webb and Webb with regard to the goals of unions. For example, Perlman (1928) discerns the consciousness of job scarcity as the main force to create trade unions, while Commons points out the expansion of the market as an origin of trade unions. Regarding the role of unions, the thoughts of Perlman and Commons are not too different from Webb and Webb in that they also emphasize the maintenance of job and enhancement of working conditions.

The Marxist perspective (Hyman, 1975; Goldfield, 1987) towards unions also admits that trade unions, on the one hand, are, by nature, the economic organization for workers to enhance their wages and working conditions. In other words, trade unions are viewed by workers' organization as improving contracts between employers and workers. Mentioning that the origin of trade unions is capitalism in itself, however, Marxism

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argues at the same time that the origin of trade unions should contribute to the termination of capitalism which is opposite to the long-run interests of workers, and not limit unions while they enhance working conditions for workers. Marxists believe that under capitalism no way exists to achieve better and fairer contract between employers and workers in the long run, except the termination of the relations between employers and workers (Marx, 1947). However, the potential gap between the origin of trade unions and the ultimate goal of unions, inherent in Marxism, exceeds the scope of empirical examination in this study.

Dunlop-Ross Debate over the Nature of Union

While those such as Webb and Webb, Marx, Commons, Hoxie, and Perlman provide classical answers on how trade unions are created and what the purposes of the unions are, the debate between John T. Dunlop and Arthur M. Ross narrows down the specific purposes of trade unions and the natures of unions. Dunlop (1944) describes unions as economic institutions to maximize a wage bill for workers. The “wage bill” means the total amount of wages combined with size of employment. The concept of the wage bill seems to be close to the concept of profit to employers. Dunlop assumes trade unions are as a single actor trying to achieve an economic goal. The contents of an economic goal for unions narrows the broad working conditions including wages, benefits, employment, industrial security, and so on, which are emphasized by Webb and Webb (1984 & 1987), Perlman (1928), and Marxism noted above, to the wage bill, when it comes to Dunlop (1944).

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Opposing the argument concerning the goal of unions presented by Dunlop, Ross (1950) regards trade unions as the political organizations created to compromise the various goals valued and pursued by various groups within unions. Ross does suggest the political goal of trade unions' alternative to the economic goal by Dunlop.¹ However, Ross focuses on the various and even conflicting goals held by many internal groups within the unions and the political process of decision-making within unions. Ross rejects the concept of union as a single actor and the ultimate goal to maximize the wage bill, Dunlop espouses. One of the strengths of Ross (1950)'s argument is to find the existence of various groups in the unions and to assume that the goal of unions is not fixed, but variable dependent on compromise among the interest groups.

Stance of This Study

Someone might think that this study is based on Dunlop's thoughts on the economic purpose of trade unions maximizing the wage bill for membership in that this study focuses on the union effects on wages. However, this study does not argue that either Dunlop or Ross is better regarding the issue of the purpose and nature of trade unions.

Even though the focus of union activities is in maximizing economic utilities for their memberships, a union's target is to move from individual bargaining with their employers to government, when social security issues involving government emerge more importantly than individual bargaining with employers. For example, trade unions may place more emphasis on changing laws requiring increased premiums paid by the

¹ At this juncture, the meaning of 'political' is very different from usual usage such as 'political unionism,' which means unions' activities including enactment of labor-related laws favorable to labor, political protests, or any political activities beyond collective bargaining with employers. However, the meaning of the political nature of trade union, argued by Ross, does not exclude political activities by unions towards government and other social institutions.

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employers, with regard to workers' compensation or unemployment benefits. The larger the priority of trade unions over those legislations are, the greater the possibility to misjudge the role of collective bargaining is, when evaluating the overall outcomes of union activities.

The role of labor laws has been great in Korea. Union activities to amend labor laws to be favorable to labor have been an annual agenda. Also the general strikes in early 1997 were provoked by the unilateral amendment of labor laws by the ruling New Korea Party at that time. Despite the importance of labor laws, it is not relevant to focus on the union activities aimed to make labor laws favorable to labor in order to evaluate outcomes achieved by the trade unions of 1987-1999, because no case is presented that the unions succeeded in changing labor laws including increased premiums paid by the employers regarding workers' compensation, unemployment benefits, health insurance, or pensions.

In examining the effects of trade unions on economic outcomes from the period of 1987-1999, this study focuses on the four major issues: the relative distribution of union wage effects among worker groups, the union effects on wage dispersion, the union effects on how to determine wages for workers, and the union effects on benefits.

2. The Union Wage Premium in the Wage Distribution

Union Wage Differential

Union wage differentials have been and continue to be the topic of much concern by many including employers, unions, workers, and even policymakers, and researchers, in that a large union wage differential may distort the labor and product markets. In

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The concept of union

addition, the size of wage differentials is an indicator, which reveals union power in the labor market. For this reason, the area dealing with union wage differentials has been highlighted the most by labor economists.

Wages are the most important outcome of collective bargaining. On the one hand, union density causes wages and an excessively large union wage premium may undermine the unions' bargaining power by diminishing employment (Linneman and Wachter, 1986). On the other hand, large union wage premiums are seen as boosting union density and collective bargaining.

The union wage differential² is defined as “the percentage of wage advantage of worker represented by a union over a worker with comparable skills and nonpecuniary job attributes but not represented by a union” (Johnson, 1984; 3). Even though the definition appears easy to understand, it contains two difficult issues. First, to measure union wage differentials do not exclude the direct and indirect impact of unions on the nonunion sector. Union wage differentials are correct only if we know the predominant wage level when no union is present in the labor market. Because we do not know the wage level in the labor market when no union exists, the wage difference between the union sector and nonunion sector does not exclude the indirect union effect on wages in the nonunion sector (Pencavel, 1991)

Second, the expression of “comparable skills and nonpecuniary job attributes” in the definition cannot hold up in empirical study. Thus this difficulty in the definition produces two different approaches regarding selectivity bias as follows:

The traditional method used to find the union effect on wages is to place a union dummy variable in the equation for wages and observe the size and significance of the

² The concept of union wage differential and union wage premium will be interchangeably in this study.

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coefficient for union dummy variable. Using a union dummy variable in the wage equation assumes that other independent variables such as individual characteristics (education, tenure, skill, etc.) are independent of worker's union status (Lee, 1978). This assumption means that the sizes of coefficients for independent variables except the union dummy variable in the wage equation are identical for union and nonunion members (Pencavel, 1991). Thus, the traditional method for the finding union effect on wages excludes a possibility of interaction between wage differentials and union status in that union wage differentials affect union status. Lewis' (1963) study is regarded as the most important study, which has motivated other following studies so far. His study is based on the traditional approach using the union dummy variable. The most important finding is that the union wage differential has varied considerably over time (Johnson, 1984). In the U.S., union wage differentials reached a peak in the periods, 1930-1934 but almost disappeared between 1945-49. In addition, the size of the coefficient for the union is greater between 1925-29 but smaller between 1940-45. Freeman and Medoff (1984) also show that union wage differentials were above 20% in the U.S. until 1970s.

Research of the union wage premium has faced the problem of selectivity bias. Therefore, the effects of individual and organizational characteristics of union/nonunion workers are not the same and explanatory variables impact the workers' decision to be union a member or nonunion worker and further wages differently. As a result, the union and nonunion (and/or unionized and nonunionized firms) members are not the same in terms of the characteristics of their demographics and organizations. The fact that union status selection process is not random results in selectivity bias which means the ordinary least square should not be applied.

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In addition, the selectivity bias may make the unionized and nonunionized sample different from each other for two reasons. First, the union's standard-rate wage policy by reducing wage inequality among workers within and across firms reduces the size of the coefficients of individual characteristics associated with workers' skill such as education and tenure, when compared to size of the coefficients in nonunionized sample.³ In fact, most studies on union wage differentials report the fact that the size of the coefficients, such as education and tenure, in wage equations for union members is smaller than for nonunion members (Freeman and Medoff, 1984; Pencavel, 1991). Second, once the impact of the individual characteristics in terms of skill for workers in unionized firms is reduced, employers in unionized firms are likely to hire more skilled workers because the reduced size of the impact of skill, expressed in the coefficients of education and tenure, in wage equations indicates marginal costs for hiring more skilled workers are cheaper (Duncan and Leigh, 1980).

A number of methods to reduce the selectivity bias are present. Two kinds of solutions for the selectivity bias are present (Lewis, 1986). First, selectivity bias can be reduced or eliminated by using panel data. Second, simultaneous equation estimates are the most popular approach to the bias. Simultaneous equations consist of wage equation (or a pair of equations by union status) and an equation determining union status. In practice, the union status equation must first be fitted to data and the predicted value of the union status variable is attained for each worker. After that, the value is entered in place of (or in addition to) the observed union status on the wage equation. Lee (1978)

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Union Wage Premium in the Distribution of Wage

Both approaches, traditional method using union-dummy variable and the recent method aiming to deal with the selectivity bias, regarding union wage premium are the same in that both seek to find the accurate size of the union premium at mean values. Both stand on the assumption that the regression coefficients regarding union status are constant across the entire conditional wage distribution (Chamberlain, 1994).

However, no reason is available to assume the uniformity of the union wage effect. Traditional wisdom in industrial relations states that a trade union is likely to benefit the workers at the bottom of wage distribution by boosting their wages more than comparable workers in the non-unionized sector (Lewis, 1963; Freeman and Medoff, 1984). The median voter model has been used to support the idea that, in determining wage demands, the median voter will be favorable to workers at the bottom of wage distribution rather than the workers at the upper part of wage distribution because the median wage is below the mean wage (Freeman and Medoff, 1984; Booth, 1984). A recent finding (Budd and McCall, 2001) appears to support the prediction of the median voter model that unionization changes affected only above 25th percentile in the wage

⁴ However, all researchers do not agree with a need for solutions to correct selectivity bias such as the Heckman and Lee technique. For example, some influential researchers in union wage effect, such as Lewis (1986) and Freeman and Medoff (1984), do not think that the Heckman and Lee technique is superior to the traditional ordinary least square (OLS) estimation. It is very difficult to identify union status equation, which is required in the Heckman and Lee technique, with variables that do not affect wages. Such a technique yields divergent results depending on the structure chosen (Freeman, 1994; 294).” For instance, sometimes the technique by using selectivity variable produces implausible results as the technique produces 107% of union wage differentials in a study (Renaud, 1998). For this reason, Ichniowski and her colleagues (1989) did not attempt to estimate simultaneous equations in their study on union compensation differentials for policemen.

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distribution from 1984 to 1994 in the U.S. grocery store industry. Renaud (1998) also supports that wage differential is larger for unskilled workers than for skilled workers, finding that the wage differential declines as skill level increases.

A number of recent studies adopting quantile regression indicate that the OLS model may ignore different effects of unions upon wages, depending on conditional wage distribution. Chamberlain (1994) found that the union wage effect for both inexperienced workers with less than 9 years and more experienced workers with more than 20 years during 1987 in U.S. is higher at quantile $q=.10$ in wage distribution than other quantiles at $q=.25$, $.50$, $.75$, and $.90$. and shows a monotonic decrease after $q=.10$ as a quantile increases toward $q=.90$. An extreme case in South Africa appears to support the traditional wisdom. Schultz and Mwabu (1998) report that the union wage premium for workers at the bottom is 145%, while it is 19% for workers at the top of wage distribution.

Even though the two studies (Chamberlain, 1994; Schultz and Mwabu, 1998) indicate they support the traditional wisdom and appear to reject the OLS assumption, the two studies are still incomplete. The quantiles examined are few and arbitrary and thus, we cannot draw any conclusions from the results based on such few quantiles.⁵ Also the two studies examined only one-year data. Thus, we can not say if any changes occurred in traditional wisdom supporting unions that benefit less-paid workers in years.

It might be possible for unions to boost mainly the well-paid workers at upper end of the wage distribution scale rather than the lesser-paid workers. For example, the craft unions are expected to boost wages for skilled workers more because those unions open

⁵ Chamberlain (1994) uses five quantiles ($q=.10$, $.25$, $.50$, $.75$, and $.90$) and Schultz and Mwabu(1998) examine results at $q=.10$, 50 , and 90 .

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their membership to a limited number of skilled workers, who are likely to be at the upper half of the wage distribution scale (Freeman, 1980). However, the decline of craft unions and the dominance of industrial unions accepting unskilled or semi-skilled workers as their members in the late 20th century imply that the influence of craft unions is expected to be small in an economy. Under authoritarian corporatism in the developing or underdeveloped countries such as Brazil, it is likely that unions benefit better-paid and skilled workers the most as a result of political co-optation (Song, 1991). However, economic favor for better-paid and skilled workers as a result of political co-optation has yet to be tried by the Korean government.

Also the wages for the workers at the bottom part of the distribution may be aggravated by the emergence of two-tiered wage agreements by unions, which mean “wage settlements that decrease the pay rates of future hires while they maintain or increase the pay rates of existing employees (Katz and Kochan, 1992; 513).” However, the two-tiered wage agreements are not available in Korea, and thus, little possibility for it exists in Korea.

The issue of how the union premium is distributed in the wage distribution is also important because it may reveal which group of union workers governs unions. This paper assumes that it is the most important goal of unions to increase the wages for their rank-and-file members. Also this study excludes the possibility that other issues such as employment, working conditions including health and safety, autonomy in the workplace, etc may be the more important goals of unions to be achieved. We cannot tell which group of workers in the wage distribution governs trade unions and sets bargaining demands of unions to employers. However, we can tell at least which group of workers

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benefits the most from unions. Assuming that a distribution of union premiums in the wage distribution is a result of governance structure within unions, we may know ex post facto which group of workers governs trade unions, through the size of the union wage premium. Therefore, when examining union premium in wage distribution, the issue of union premium can be closely connected with the governance structure within unions as well as the union effects on labor markets in general.

The chapter 4 examines if the union wage premium changes across quantiles in the distribution of wages in Korea. To overcome the weakness of using only a few quantiles, I will examine union premiums at every quantile. In addition, I will attempt to determine if any yearly changes occur in the union premium at every quantile by using data with the 13 years from the Great Labor Offensive in 1987.

Initially, I am open to both possibilities including the OLS assumption, implying an equal union premium regardless of quantiles in wage distribution, and traditional wisdom, which suggests larger union premium for workers at the bottom of wage distribution and smaller for the workers at the upper of wage distribution, even though it is unlikely that the OLS assumption will be found valid.

3. Studies on the Union Effect on Wage Dispersion

Meanings and Importance of Wage Dispersion

While the union wage effect focuses on the level of wages, the union effects on wage dispersion place more attention on the relative aspect of wages between and within employees (and organizations). Both the compensation theory (Milkovich & Newman,

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1999) and the equity theory (Adams, 1965) emphasize the importance of the relative aspect of wages in that employees care greatly about their wages compared to those of relevant others no less than about the absolute amount of wages they earn from their employers. Through comparing their wages to those of the relevant others, employees care how employers value their work and how employers treat themselves (Bloom & Michel, 2002). The tournament theory asserts that it is the concept of wage dispersion, which is the key to understanding the relationship between compensation and employee outcomes (Lazear & Rosen, 1981). In this sense, one of the important functions of union activities is to secure fair treatment in the employment relations for their membership (Godard, 2000).

Wage dispersion here is defined as “the amount of difference (inequality) in wage created by a firm’s wage structure” (Milkovich & Newman, 1999). A more dispersed wage structure means relatively rich rewards for fewer employees at the top of the wage structure and relatively poor rewards for the rest. A more compressed wage structure is a more egalitarian wage structure, where a difference between wages for the fewer employees at the top of the wage structure and wages for the rest exists. While a more dispersed wage structure is aimed to foster competition among employees in pursuit of rich rewards for fewer employees at the top of the pay structure, in other words, less wage dispersion is aimed to facilitate cooperation among employees rather than competition. As a result, wage dispersion may affect product quality (Cowherd & Levine, 1992), turnover of college and university personnel (Bloom & Michel, 2002; Pfeffer & Davis-Blake, 1992), and employee tenure. Dispersed wage structures increase retention of a firm’s most talented employees at the expense of lowering retention and increasing

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On the level of the whole economy, trade unions redistribute income from capital to labor as they raise union wages. Wage dispersion becomes more important as it reflects how wages are redistributed within labor. As a result, wage inequality between the employed in labor market explains much of income inequality in an economy (Koo, 1996; Park, 1984).⁶ For instance, wage inequality in Korea accounts for over 50% of income inequality in the 1990s (Jeong and Choi, 2001).

Wage dispersion and unions

With regard to the effect of unions on wage structure, it is well known that unions reduce wage inequality by reducing the dispersion of wages within and across firms in organized sectors as compared to unorganized workers (Freeman and Medoff, 1984; Belman and Heywood, 1990). One study (Lemieux, 1993) reports that trade unions in the U.S. contribute to lowering wage inequality by reducing the overall dispersion of wages in the labor market by about 6.3 percent. Unions' standardization policy, such as single rate or automatic-progression modes of wage payment, in regard to wages is said to decrease the magnitude of impact of principal variables such as education, tenure, sex, and firm size, which are expressed in the regression coefficients (Freeman, 1980).

However, the effect of unions reducing wage inequality is not simply unidirectional as a result of opposing forces. On the one hand, union wage effects increase wage

⁶ Income here includes nonwage earnings from all kinds of property such as land and financial interest as well as earnings from wages.

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inequality in some ways. For instance, many studies on union wage effects assure that unions increase wages of blue-collar union workers more than those of blue-collar nonunion workers. Union success in enhancing the union/nonunion relative wage is likely to reduce employment in the unionized relative to non-unionized industries, thus placing downward pressure on nonunion wages and increasing wage inequality (Lewis, 1963; Johnson, 1975). The so-called ‘crowding effect’ (Kahn and Curme, 1987) indicates increased wage inequality by unions. Focusing on this function of trade unions, Milton Friedman (1962, p. 124) accused unions of having “made the incomes of the working class more unequal by reducing the opportunities available to the most disadvantaged workers.”

On the other hand, union wage effects decrease wage inequality in other ways. For employers in unorganized firms, they are willing to introduce union wage policy to forestall new unions of their employees and compete for skilled workers (Rosen, 1969; Kahn and Curme, 1987). This ‘threat effect’ (Kahn and Curme, 1987) is likely to reduce wage inequality in unorganized sector. Thus, the net effect of unions on wage inequality depends upon the relative strength of these opposing effects.

Three sources of wage inequality are, wage dispersion within firms, wage dispersion between firms, and the white-collar/blue-collar wage differential (Freeman, 1980; Lemieux, 1993).⁷ Industrial unions lower wage dispersion between firms by realizing wage standardization within an industry or local product market. Also unions can contribute to reducing wage dispersion within firms by reducing the number of job categories and wage differences between job categories within firms. Finally, unions can

⁷ Doeringer (1984) uses different expressions, vertical equity and horizontal equity. While vertical equity describes how to reduce wage inequality within occupations, firms, or job categories, horizontal equity means wage equality between occupations, industries, firms, or other categories.

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The wage compression by unions is realized by fact that unions are political institutions depending on the preferences of the median voter (Farber, 1978; Booth, 1984; Freeman and Medoff, 1984). Because the wage level of the median voter in unions is lower than the average wages in unionized firms or industry, the union's wage policy tends to reduce wage gap among members. Also the fact that union leaders tend to minimize conflicts between members support standard-rate wage policy, defined as a "uniform piece or time rates among comparable workers across establishments and impersonal rates or ranges of rates in a given occupational class within establishments (Freeman, 1980; 4)."

One way used to find union effect on wage dispersion is to calculate the standard deviation (or variance) of log earnings of union and nonunion workers and compare the difference between the two (Freeman, 1980; Bratsberg & Ragan Jr., 1997). Using the method, they found the union effects on wage dispersion in the U.S. Other ways to measure the degree of wage inequality are to use Gini-coefficient, a summary statistic derived from the Lorenz curve (Hyclak, 1979; Flaherty & Caniglia, 1992; Bloom & Michel, 2002), quintile share calculating share of the 20% of the relevant population in the earnings distribution (Flaherty & Caniglia, 1992), coefficient of variation (Rowthorn, 1992; Rodriguez- Gutierrez, 2001), or the difference between ninetieth and tenth percentiles of the earnings distribution (Bratsberg & Ragan Jr., 1997; Leslie & Pu, 1996). A few recent studies (DiNardo, Fortin, and Lemieux, 1995; DiNardo and Lemieux, 1997;

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Budd and McCall, 2001) focus on the entire distribution of wages, but do not examine various inequality indices mentioned above.

The trend of unions reducing wage dispersion and wage inequality is not confined only to the United States. Freeman's comparative study (1994) indicates that the effects of unions on wage dispersion also are found in all the other nine countries in his study. Among the ten countries, the largest union effect on wage dispersion is found in the U.S. In the U.S., standard deviation of log earnings of union members is less than that of nonunion members by 25%.

However, the role of the union in reducing wage dispersion has not been consistent. Theoretically, if highly paid workers are well organized by labor organizations such as craft unions, monopolistic aspects of unions protecting well-paid workers will dominate and wage dispersion will be increased (Freeman, 1980). In effect, however, Flaherty & Caniglia (1992) report that American unionism appears to increase inequality in earnings distribution for all women because unions exert a positive impact on full-time female workers and thus broaden the wage dispersion between full-time and part-time. Adding the effect of probability of being dismissed into theoretical framework, Donohue and Heywood (2000), by using the data from the Current Population Survey (CPS) in 1990, found a similar result that increased unionization increases in fact the dispersion of wages for female blue-collar workers. Also, Arbache (1999) finds that while unions increase wage premium, the larger wage dispersion is found in unionized sectors than in unorganized sectors in Brazil. Therefore, whether union reduces wage dispersion in Korea should be determined by empirical studies.

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The literature on wage dispersion presents at least three major determinants for the **change** in wage dispersion (Gosling and Machin, 1995; Budd and McCall, 2001). The **first** is supply-side determinants of wage dispersion such as the change in the return to **education**, female labor force participation, immigration, and so on. The second is **demand-side** determinants such as a change in the demand for skilled workers from the **employer's** side. The increased demand for skilled workers by employers is viewed as a **result** of either skill-based technical change (Bound and Johnson, 1992) or increased **import** competition (Murphy and Welch, 1992). A third explanation is to focus on the **role** of labor market institutions like trade unions and minimum wages. Union density, an **indicator** of union bargaining power, affects wage dispersion. In addition, the union wage **premium** also affects the difference in wage dispersion between unionized and **nonunionized** sectors (Budd and McCall, 2001). Many involved in industrial relations explain that increased wage inequality in the U.S. in the last two decades is a result of the **decline** of union density and eroded minimum wages (Freeman, 1992; DiNardo and Lemieux, 1993)

Wage Dispersion in Korea

Traditionally, East Asian countries like Korea, Japan, Taiwan, and Singapore have **been** relatively egalitarian societies, compared to the 'winner-take-all' society such as the **U.S.** and Western European countries, in terms of wage dispersion (Cowherd & Levine, 1992; Koike, 1988). Cultural explanations emphasizing collectivism is said to lead to the **egalitarian** societies in the East Asian countries (e.g., Hofstede, 1980; Adler, 1997; Berg and Chang, 2000). For example, wage inequality in 1970 was reported to be lower in

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Korea by about 30-40% than in the U.S. (Kim and Topel, 1995).⁸ Wage inequality has steadily decreased in Korea since the 1970s (Park, 1984). The phenomenon continued to the mid-1990s in Korea, while the U.S. experienced a considerable increase of wage dispersion. The reason for the phenomenon prior to the Great Labor Offensive in 1987 is a decrease in return rate for education, which resulted from a shortage of supply for less-skilled workers with low education level as the level of education increases (Park, 1984; Kim and Topel, 1995; Nahm, 1997).⁹ It is a surprise that the reduced wage dispersion has gone along with an increase in real wages in Korea, compared to the U.S. which showed a decline of real wages and a increase in wage dispersion (Kim and Topel, 1995; Nahm, 1997). Thus Korea was praised as an unusual example of 'growth with equity (World Bank, 1993).

Since the late-1960s, the relative low level of the wage inequality in Korea has been closely interwoven with the low wages under the export-driven strategy. The government could appease workers' discontent with low wages through depending on low wage inequality before the year of 1987 (Song, 1991; Lee, 1993). The external fairness of wages, achieved by the principle of 'generous to the less-paid and strict to well-paid,' had been an important tool for the government to sustain low wage advantages (Bae, 1995).

Also, Korean trade unions also have kept the principle of 'generous to the less-paid and strict to well-paid.' In addition, unions have regarded uniform and automatic progression of wage payment, reducing wage gap across occupations, educations, and sex, as goals to be achieved with employers at the bargaining table (Park, 1995; Koo,

⁸ The measure of wage inequality is the differentials between the ninetieth and the tenth percentiles of the wage distribution (Kim and Topel, 1995).

⁹ Portion of the 20-24 age group enrolled in post-secondary schools and universities increased from 6% to 37% in 1988 (Nahm, 1997).

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1996).¹⁰ In reality, most firms have multiple forms of automatic progression of wage payment within occupations and job groups, producing wage inequality and competition across occupations and job groups (KLSI, 1998). Generally speaking, the higher the number of wage payments within firms, the greater employers' discretion in determining wage for workers. The goal of unions is to change from a multiple number of automatic progression of wage payment within occupations and job groups to a single automatic progression of wage payment within occupations and job groups and further to single automatic progression of wage payment within firms regardless of occupation, job groups, and of sex.

Very few studies on union effect on wage dispersion in Korea are available. Lee (1993) analyzed data in 1986 from the Basic Survey on Wage Structure (BSWS) in order to see whether trade unions reduce wage dispersion. Even though he focused on the employees who work in the large firms, which hire at least 500 employees, he found that trade unions did not affect wage dispersion significantly. The lack of effect of unions on wage dispersion he found made sense because the data used were gathered in 1986 when authoritarian government repressed free activities of unionism and collective bargaining and the year 1986 is just one year prior to the Great Labor Offensive of 1987 in Korea (Park, 1984).

In the analysis of data in 1988 from the BSWS, which was conducted by the Ministry of Labour, Song (1994) examined degree of inequality of wages. He found that the standard deviation of wages for union members is smaller by 5% than the standard deviation of wages for non-union members. However, he concluded that the number (5%)

¹⁰ Also numerous trade unions in Korea mentioned uniform and automatic progression modes of wage payment as one of major accomplishments realized throughout bargaining with employers in their web-based-home-pages.

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of difference in standard deviation of wages between union and non-union members was much smaller than expected after considering effects on wage dispersion in the United States. Using data from the Minimum Wage Committee (MWC) in 1988, Kim (1991) reports that wage dispersion in union sector is 73% for men and 68% for women in nonunion sector.

From the data of the BSWs in 1993, Koo (1996) examined the union effects on wage dispersion for permanent workers in the metal industry. The result was that wage dispersion within, measured by variance of log wages, establishments in the union sector is smaller by 23% than that in the nonunion sector, after controlling for differences in the characteristics of workers and their establishments between the two sectors. According to Koo (1996), however, the wage dispersion between the establishments in union sector is larger than that in the nonunion sector due to the intrinsic feature of enterprise unionism neglecting to bargain at the industry level beyond the enterprise level. He concluded that the wage dispersion in the union sector was less by 11% than in the nonunion sector when considering the positive effect of unions on wage dispersion within establishments and the negative effect on wage dispersion between establishments.

Lee and Kwon (1995) also reported that in 1994 unions appeared to decrease wage dispersion in the union sector by 4.6% rather than in the nonunion sector in all industries. However, wage dispersion for manufacturing workers in the union sector was much smaller by 24.6% than in the nonunion sector. Therefore, the union effects on wage dispersion are much stronger in the manufacturing industry than in any other industry, due to the high union density.

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The employers try to set wages comparable to the educational attainment and skill of the employees in order to motivate the employees. As a result, when bargaining with the employers, unions make an effort to reduce the return to educational attainment and/or skill in order to maintain wage equality for labor solidarity.

Even though some searchers have examined union effects on wage dispersion, all reveal the same limitations that do not explain how unions have affected wage dispersion for the period of 1987-1999. Also, many studies limit the boundary of interest regarding blue-collar workers (Kim, 1991) or workers in manufacturing (Lee, 1993) or more narrowly the metal industry (Uh and Lee, 1992; Koo, 1996), where the union effects on wage dispersion are likely to be the largest. Even then, the results from prior studies cannot be generalized.

Many questions still remain. For example, how has wage dispersion in Korea changed so far? Have Korean unions been successful in resisting market pressures to broaden the return to skill and education attainment and bigger wage inequality? This study aims to answer those questions.

4. Union Effect on Return Rates for Human Capital

Indirect influence of unions over wage determinants

Basically, the question, whether trade unions create wage premiums for their union members, is equal to the question, if trade unions can be a separated independent variable in the wage equation. The question, regarding union wage effect, which will be dealt mainly in the chapter 4, assumes that the directions and sizes of coefficients representing

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all independent variables, such as industry or establishment characteristics, personal characteristics, and human capital, are identical between unionized and non-unionized sector. However, the sizes of coefficients for many independent variables in the wage equation may be different between the two sectors, due to the effects of trade unions. If trade unions really affect determinants of wages, the verification of union effect on wage determinants can be another topic of research, different from union wage effect.

The question in this section is whether trade unions affect the rates of return for human capital for workers regarding education, experience, and tenure, and the effects of personal characteristics such as gender, regarding wages, compared to the unorganized sector. Regarding the whole period of this study, 1987-1999, whether any significant changes in the union effect on the return rates for those variables are evident is interest, also. Also, it is interesting to examine how the union effects on wage determinants have changed from 1987 to 1999. Furthermore, it might be interesting to see whether trade unions may affect wage determinants differently, depending on the relative location of employees ranging lowest, median, and highest part of wage distribution.

Union and various determinants of wages

Previous studies on union effects on the wage structure conclude that trade unions reduce returns to all individual employee characteristics such gender, marital status, and human capital including experience, tenure, and education (Bloch and Kuskin, 1978; Duncan and Leigh, 1980; Johnson and Youmans, 1971; Freeman and Medoff, 1984).

Previous studies have explained how trade unions reduce returns to personal characteristics such as gender and human capital including educational attainment,

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experience, and tenure (Freeman, 1982; Maranto, 1985). According to them, the most important way by which trade unions affect wage determinants is establishment of single wage rates. Under the single wage rates, differentiation of wages among employees becomes simplified. Within a category of wages, difference in the level of educational attainment among employees can be minimized or little, if employees meet minimum requirements for the job. That is, over-qualification in human capital may not result in difference in wages (Maranto, 1985). While employers seek to wage plan, merit review plan and pay for performance, reflecting all difference in human capital and work performance, trade unions seek to establish standard wage policy, which is less sensitive to difference in human capital and employee's performance.

Importance of education, experience, tenure, and sex

The four variables, education, experience, tenure, and sex, are selected in that trade unions are likely to affect the effects of the four on wages. Also many other variables that may affect the level of wages for workers: for example, organizational characteristics such as industry, region, and establishment size, industry-wide variables such as industry concentration ratio and the rate of unemployment in the industry, macro-economic variables such as unemployment rate and the rate of economic development, strategies of government over wages and collective bargaining, etc. The nature of the enterprise union system and the lack of resources held by the industry-level or national level union confederation in Korea compels us to expect that the unions can impact on the four variables more than any other variables on the organizational-level, industry-level, or national level.

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Among the four, education is the most important variable that prior studies on wages in Korea have pointed out (Song, 1991; Bae, 1995; Chang, 1999). It is well known that the wage gap between high school graduates and university graduates has been large and education is the criterion dividing occupations into white-collar vs. blue-collar and well-paying jobs vs. poor-paying jobs (Bae, 1995; Chang, 1999). Also, workers have complained about the unfair wage gap between high-school graduates and university graduates more than in any other aspects regarding wages, except the low level of wages.

Also gender has been one of interest regarding wages (Song, 1991). However, wages for female workers have been much lower than wages for comparable male workers. For instance, there has been a separate scheme for female workers from the scheme for male workers in many firms in Korea (Jeong, 1993; Park, 1995). In spite of graduating from a university, female workers usually earn lower wages than the male workers graduated from a university in many firms. Furthermore, the situation in the manufacturing sector is not different from the non-manufacturing sector. To be promoted, female workers wait for more years, compared to male workers. Many researchers, as well as female workers, have pointed out that the economic discrimination regarding wages dependant on sex. As long as trade unions are expected to oppose any type of discrimination and to protect workers with less individual bargaining power, unions are likely to affect the wage gap between male and female workers in the organized sector.

It is well known that tenure is one of important determinants of wages in Japan, where enterprise union systems have developed. The seniority-based wage system is evident in the United States and Japan showing the importance of tenure in determining wages there (Maranto, 1985). Korea also has seniority-based wage scheme in most firms. Thus, we

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can expect that tenure may play a major role in determining wages in Korea, on one hand. **However**, the average years of tenure per workers have been low in the manufacturing sector in Korea since the 1970s. Therefore, we can anticipate that the role of tenure in determining wages might be less in Korea than expected. Song (1991) mentioned the smaller role of tenure in determining wages in Korea than in Japan, arguing that education and sex determines wages in Korea, while the variables that are related to costs of living, such as tenure, age, and numbers of families, are major determinants of wages in Japan.

Also experience is one important determinant of wages. While tenure is related to more firm-specific skills among the four variables, experience is related to the less firm-specific, and rather more general skills usable in the entire labor market. As a result, tenure will be valued when determining wages within firms if internal labor markets within firms are developed. If internal labor markets within firms are not developed and lesser years of tenure among workers are found, the variable, experience, will emerge as more important determinant of wages.

5. Union Benefit Effects

The importance of the union effect on fringe benefits, when examining its effect on total compensation, has increased and is expected to increase further in the near future. For instance, the percentage of fringe benefits in total compensations for blue-collar workers in the U.S. increased from 17% in 1951 to 30% in 1981 (Freeman and Medoff, 1984). Another source of data reports a rapid rise in employee benefit costs, increasing

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from 24.7% of payroll costs in 1959 to 31.1% in 1969 to 38.4% in 1990 and then to 42% in 1995 (Milkovich and Newman, 1999; 395). The phenomenon is not confined to the U.S. but is also found in Canada (Renaud; 1998) and even in Korea (Uh and Lee, 1992). In Korea, the share of benefits including statutory and voluntary benefits in total labor costs, paid by the employer, has increased from 8.26% in 1987 to 11.82% in 1999, while the share of cash earnings paid by employers in total labor costs has decreased from 83.55% in 1987 to 72.97% in 1999 (MOLb, various years).

In spite of the increasing importance of fringe benefits, most studies concerning the union effect on wages have been based on an assumption that unions would affect fringe benefits proportionally as it did on wages (Alpert, 1982).¹¹ The changes in wages and further a union effect on wages can be a rough proxy showing changes in total compensation and the union effect on total compensation so long as increases in wages are proportional to changes in benefits (Smith and Ehrenberg, 1983). If the assumption of proportional effect of unions on fringe benefits on wages is not appropriate, it means that studies on the union wage effect ignoring fringe benefits miscalculate union effects on total compensation. As a result, many studies declared a potential overestimation or underestimation of union effects on total compensation (Hyclak, 1979; Lewis, 1986; Bellante and Long, 1981; Moore and Raisian, 1987). Recent studies have attempted to fill the gaps in the previous studies regarding fringe benefits (Renaud, 1998; Wunnava and Ewing, 1999).

A general belief is that trade unions affect fringe benefits through increasing the level of benefits, the share of benefits in total compensation, and the probability that a specific

¹¹ While Alpert (1990) called this assumption as 'proportional assumption of benefits,' Triplett (1983) named it as 'consistency hypothesis.'

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types of benefits such as pensions and health insurance are provided by employers, through changing the amount of cost sharing between employers and employees from contributory plans towards non-contributory (entirely employer-financed) plans with no explicit cost sharing (Gentry and Peress, 1994), and through changing the funding pattern in the public sector (Mitchell and Smith, 1992). As a result, the union benefit effect has been conducted in many developed countries including Canada (Swidinsky and Kupferschmidt, 1991; Gordon et al., 2003), U.K. (Brown, Deakin, Nash and Oxenbridge, 2000), Australia (Kornfield, 1993), as well as the United States.

Fringe Benefits in Korea

Table 2-1 presents the changes in the portions of various categories consisting of total labor costs in Korea from 1986 to 1999. Cash earnings consist of regular wages, overtime payments, and bonus payments.¹² Cash earnings represent the largest share of total labor costs, ranging from 67.90% in 1998 to 84.40% in 1989. However, their share indicates the ups and downs over the period. The share of cash earnings, 78.63%, in 1986 increased to 83.55% in 1987 and to 84.40% in 1988, due to a sharp rise in wages resulting from the Great Labor Offensive of 1987 (Choi, 1992). Compared to the declines of the portions of other categories, such as severance payments, statutory benefits, and voluntary benefits, in total labor costs, the increase in the share of cash earnings in 1987 and 1988 implies that the demands of employees and unions at that time targeted to increase cash earnings including bonus payments, while paying little attention to non-cash earnings, especially voluntary benefits. As employees' desires to achieve higher

¹² Paid holidays, vacations, and bonus, which are classified as benefits in U.S., are regarded as cash earnings in Korea. Thus, the share of benefits in total compensation in Korea would be considerably increased when following the scheme of classification of labor costs in United States.

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wage rates, at least in part, was realized, the share of cash earnings in total labor costs decreased in the 1990s, reaching 72.97% in 1999. It means that it took a few years for both employers and unions including union members to start to increase the share of non-cash earnings in the total labor costs.

The share of cash earnings in Korea can be compared to that in Japan because the structures of wages and total labor costs are very similar to those in Japan. In 1988 the share of cash earnings are similar in both Korea (84.40%) and Japan (83.68%). However, the difference in the share of cash earnings between Korea and Japan occurred in the 1990s. For instance, the numbers in 1995 are 82.26% in Japan and 74.42% in Korea. While the shares of cash earnings and other components comprising total labor costs is relatively stable in Japan during the past two decades (Hart and Kawasaki, 1999), the portion of cash earnings (and other components) experienced greater changes in Korea.

The reduction of cash earnings in total labor costs in the 1990s implies the greater importance of various non-wage labor costs (Song, 1995; Park, 2002). Among the various components of total labor costs, three components, statutory benefits, voluntary benefits, and severance payment.

With minor variations, the share of statutory benefits over the period is stable, ranging from about 3 percent to 5 percent. As mentioned previously, the decrease in the share of statutory benefits for 1987-1991 can be attributed to the absolute increase of total labor costs due to the wage offensive since 1987. Comparably, the increase of statutory benefits borne by employers in 1992 and 1993 can be explained by a new category in statutory benefits, an allotted charge for promoting employment of the handicapped. Also, an addition of employment insurance and an increase in the insurance premium,

Table 2-1. Labor Costs in All Industries, 1986-1999

	As a percentage of total labor costs*									
	Cash Earnings	Overtime as % of cash earnings	Bonuses as % of cash earnings	Severance Payments	Statutory Welfare Costs	Voluntary Welfare Costs	Training Costs	Recruitment Costs		
1986	78.63	12.51	21.68	7.34	5.58	6.44	0.86	0.15		
1987	83.55	11.87	19.21	5.71	3.42	4.84	1.05	0.12		
1988	84.40	10.88	25.75	5.23	3.01	5.4	1.07	0.17		
1989	81.76	11.16	25.96	6.96	2.93	6.04	0.75	0.19		
1990	79.63	N.A.	N.A.	9.71	3.03	5.60	1.14	0.18		
1991	78.29	N.A.	N.A.	8.72	2.95	7.01	1.51	0.30		
1992	78.64	N.A.	25.85	8.36	3.62	7.22	1.46	0.36		
1993	74.07	N.A.	23.15	9.11	4.63	9.32	1.82	0.21		
1994	75.95	N.A.	24.87	9.04	3.62	8.46	1.73	0.19		
1995	74.42	N.A.	25.02	11.72	3.72	7.25	1.98	0.20		
1996	77.81	N.A.	25.98	7.35	4.32	7.76	2.08	0.15		
1997	73.68	N.A.	26.34	10.95	4.70	7.83	1.89	0.10		
1998	67.90	N.A.	26.64	21.55	4.26	5.52	1.00	0.04		
1999	72.97	N.A.	30.18	14.30	5.51	6.31	1.09	0.09		

Source: the Enterprise Labor Cost Survey (ELCS) by Ministry of Labor (MOL), each year
 Note: Labor Costs = cash earnings + pay-in-kinds + severance payments + Statutory benefits cost + Voluntary benefits costs
 + Training Costs + Recruitment Costs + Other Labor Costs

Note: The item of pay-in-kinds is excluded because the amount is negligible. The sum of percentage for six items may be not exact 100%.
 Note: N.A. means 'not available,' because the ELCS in the year concerned has not information on the matter.

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which is a burden born by employers due to a sharp rise in the unemployment rate, accounts for other increases of share of statutory benefits in 1996 and 1999, respectively. One of the most conspicuous characteristics of Korean labor cost statistics is that the proportion of statutory benefits within the total cost is much lower than those of other countries such as Japan and the U.S., let alone continental European countries which are famous for well-designed welfare systems (Song, 1995).

The Korean financial crisis, which started in November 1997, enormously affected the structure of wages and total labor costs for 1998 and 1999. Table 2-1 confirms the effects of Korean financial crisis on the total labor costs. While the importance of cash in the total labor costs dropped in 1998 and returned to over 70% in 1999 due to a wage freeze or even a wage-cut, the importance of bonus payments in 1999 increased to 30.18% of cash earnings, the highest percentage ever. Massive layoffs and dismissals in almost every industry made employers pay severance payments to their employees who were dismissed. As a result, the share of severance payments reached 21.55% in 1998 and 14.30% in 1999. In addition, voluntary benefits after the crisis were cut massively and returned to the level in 1989 and 1990 (Bang, 2002). A drought of cash flow and the unprecedented unemployment rate forced firms to reduce their expenditures on employee training and recruitment by nearly half in 1998 relative to the previous year.

Statutory benefits consist of medical insurance, workers' compensation, pensions from 1987, funds for pneumoconiosis in the mining industry for 1986-89, employment insurance from 1995, and an allotted charge for promoting employment of the handicapped from 1991. Table 2-2 shows sub-categories under statutory benefits and voluntary benefits and the variations in their shares for 1986-1999. Until 1993, it was

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Pensions accounted for a considerable share (26.3 per cent) of statutory benefits from their start and showed a continuous increase. Since pensions became the largest item of statutory benefits in 1994, the share of pensions in the statutory benefits increased to 47.9 percent in 1999. Another important sub-category of statutory benefits is employment insurance, which was launched in 1995. Although it started quite late, considering recent economic development of Korea, employment insurance has become one of the important sources of statutory benefits like medical insurance and workers compensation in the late 1980s.

The pension premium currently is 9% of the total payroll, 4.5% for employees and employers, respectively. The steep increase of share of pension of statutory benefits in 1994 and 1998 in Table 2-2 resulted from an increase of pension premiums from 3% to 6% and 6% to 9% (Kim, 2002). While employees pay 0.5% of their payroll, the employment (unemployment) insurance premium paid by employers is 0.9~1.6 percent of the total payroll, depending on the establishment size.

Also Table 2-2 presents twelve sub-categories listed under voluntary benefits over the period: housing-related benefits, medical- or hygiene-related benefits, meals for employees, culture, sports, and entertainment, supports for other insurance for employees such as life insurance, expenditures for congratulations and condolences, supports for

Table 2-3 Shares of Sub-categories in Statutory and Voluntary Benefits, 1986-1999.

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Statutory (=100)														
Medical Insurance Workers Compensation	43.1	26.7	29.5	28.5	N.A.*	26.7	22.3	19.6	23.6	22.1	20.1	18.3	16.8	14.9
Pensions	54.5	46.4	37.5	38.1	N.A.	43.4	50.0	46.7	30.8	25.5	24.7	27.3	21.6	18.7
Pneumoconiosis Employment Of the Handicapped Employment Insurance	1.0	26.3	32.2	33.3	N.A.	28.7	25.9	31.2	42.7	40.3	37.9	37.6	46.7	47.9
	1.4	0.6	0.8	0.1										
						1.2	1.8	2.5	2.9	2.6	2.3	2.3	2.2	1.4
										9.5	15.0	14.5	12.7	17.2
Voluntary (=100)														
Housing Medical & Hygiene	11.0	12.2	9.0	17.4	N.A.	12.4	16.6	16.3	19.6	10.3	10.1	10.8	8.9	10.7
Meals Culture, Sports, & Entertainment Other Insurance	3.8	3.9	3.4	2.8	N.A.	2.9	3.2	3.4	3.6	3.2	3.6	4.3	4.5	3.9
Congratulation/Condolence Employee	57.4	46.3	53.6	49.0	N.A.	43.2	35.4	32.2	31.0	33.4	32.5	31.6	35.8	31.1
	8.0	12.3	8.8	7.4	N.A.	5.4	5.3	4.4	4.2	6.6	5.9	5.1	3.4	3.9
	1.7	2.2	3.1	2.0	N.A.	1.7	1.0	1.2	1.9	2.2	5.9	8.7	12.1	8.1
	5.0	6.5	5.5	5.0	N.A.	4.2	3.7	3.3	3.7	3.2	4.5	5.2	5.4	4.8

Savings	11	26	26	22	NA	14	13	07	06	06	06	06	06	06	06	06	06	06	06
Scholarship	10.0	14.0	14.0	14.2	NA	12.3	11.9	11.4	10.7	11.7	14.8	17.3	19.2	14.2					
Expenses																			
Intra-firm																			
Benefits Fund						9.9	13.0	15.6	11.8	22.8	7.6	7.8	7.0	18.5					
Childcare						0.1	0.1	0.1	0.1	0.1	0.3	0.5	0.2	0.1					

Savings	3.1	2.6	2.6	2.2	N.A.	1.4	1.2	0.7	0.6	0.6	0.6	0.6	0.5	0.6
Schooling Expenditures	10.0	14.0	14.0	14.2	N.A.	12.3	11.9	11.4	10.7	14.8	17.3	19.2	14.2	
Intra-firm Benefits Fund						9.9	13.0	15.6	11.8	7.6	7.8	7.0	18.5	
Childcare						0.1	0.1	0.1	0.1	0.3	0.5	0.2	0.1	
Relaxation/ Vacation						4.9	7.1	5.6	3.0	5.3	3.9	2.6	2.5	
Employee Stock-sharing						1.6	1.5	5.9	9.8	8.9	4.2	0.4	1.6	

Source: the Enterprise Labor Cost Survey (ELCS) by Ministry of Labor, each year

Note: * means 'Not Available.'

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employee savings, expenditures for employee schooling, intra-firm benefit fund,¹³ childcare or nursery facilities, expenditures for employee relaxation or vacation except payment for days not worked, and the employee stock-sharing program. Among the twelve, some are worthy of attention. In spite of the recent decrease of its importance, meals still remain the largest item of voluntary benefits. It accounts for about one-third of voluntary benefits in the 1990s. It is shown that housing-related benefits and expenditures for employee schooling have been important benefits throughout the period. Expenditures on intra-firm benefit fund became the second largest item of the voluntary benefits in 1999 even though they revealed large variations depending on the year. Finally, Table 2-2 indicates that the share of employers' support for other insurance for employees like life insurance has increased in recent years.

The types and numbers of voluntary benefits have increased over the period as seen in the increase of subcategories classifying voluntary benefits in Table 2-2. The needs of employees for voluntary benefits become diverse as time passes. The unions are expected to better find employees' needs for voluntary benefits and will channel more effectively the voice of employees to employers (Freeman and Medoff, 1984). The table implies that the portion of 'basic or peripheral' benefits such as meals, congratulations and condolences, and sports and entertainment, is declining in the 1990s, while newer types of benefits such as other insurances, schooling expenditures, and intra-firm benefit fund are being created or are becoming important currently (Park, 2002).

¹³ Intra-firm benefit fund is aiming to increase the level of benefits for workers, by employers' contribution after collective bargaining between employers and unions. By law, the maximum limit of the fund is 5% of profit before tax in the previous year. Because the operation of the fund is independent of employers, it is expected that the fund is valuable to workers, especially when layoff or a delay in wage payment occurs. In many cases, the fund is used to support schooling expenditures of workers' families, expenditures for congratulations and condolences, and loans to workers purchasing a house or stocks of the firms. The number of firms having the fund is 862 and the total number of the funds are estimated to be 3,428,400,000,000 Won, 2.85 billion in U.S. dollars, in 2001 (Dong-A Ilbo, July 25, 2001)

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In order to examine the effects of trade unions on non-wage benefits, this chapter focuses on voluntary benefits. Most studies regarding the union effect on benefits focus on voluntary benefits except for a few studies examining statutory benefits along with voluntary benefits. Regarding severance payments, Japan is said to have a considerably larger proportion (4.01 per cent) of severance payment than the United Kingdom, Germany, France, and the United States, within the total costs in 1992 (Hart and Kawasaki, 1999). The share of severance payment in Korea is much larger than in Japan, as well as in other industrialized Western countries. However, severance payments in nature are determined by the wages and tenure.

Severance payment in Korea (and in Japan) has characteristics of both statutory and voluntary benefits. On one hand, severance payment may be classified as statutory benefits in that basic formula determining the amount of severance payment for employees leaving firms is set by labor laws. However, tenure is a critical factor determining severance payment because monthly regular wages are multiplied by tenure (*Labor Standard Act*, Article 34). On the other hand, severance pay share the characteristics of voluntary benefits in that many employers pay higher severance payment beyond the lower bound, set by the Labor Standard Act as a result of collective bargaining between employers and unions. No matter whether severance payment should be regarded as statutory benefits or voluntary benefits, a remarkable aspect of severance payment is that severance payment may work similarly to voluntary benefits because Korean severance payment is very close to the European retirement-related contributions by employers, which is classified as non-statutory benefits (Hart and Kawasaki, 1999).

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Therefore, it is difficult to say that severance payments are one of pure types of voluntary benefits in Korea.

Important Empirical Studies

Using unpublished 1972 BLS data, Alpert (1982) found small but significant union benefit differentials for manufacturing production, non-manufacturing production, and office workers. Freeman and Medoff (1984) suggest that the size of the union benefit premium is larger (20% ~ 30%) than the union wage premium. In addition, distinct union effects on fringe benefits in the U.S. are found especially in pensions, holiday premiums, life insurance, and medical insurance.

By using the April 1993 CPS Employee Benefits Supplement, Budd (1998) shows the difference in fringe benefits especially in employee's retirement and health insurance between union members and nonunion members. He states that only 41.8% of nonunion members are covered by a retirement plan, while 79.9% of union members are covered by the plan. Also while 85.8% of workers covered by collective bargaining agreement are included in health insurance, the percentage of nonunion members who are included in the plan is only 57%.

A study by Renaud (1998) in Canada adds further evidence of the impact of unions on benefits and total compensation. His results from micro data from the Canadian General Social Survey (GSS) of 1989 show that the union effect on total compensation 12.4%, while the effect on wages is 10.4%. However, the size of benefits in total compensation in the sample is only 6%. Surprisingly, the size of the union benefit

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differentials in his results turns out to be 45.5%. Union effects on the level of benefits are found in public sector, also (Mitchell and Smith, 1992; Cohen and Cohen, 1998).

The size of the union effect on benefits is still unclear. Belman and Heywood (1990) discovered that when using two separate probit equations for the union and non-union sub-samples, the probability of receiving fringe benefits is approximately a third of the value estimated from a single equation. With these results, they raise the possibility that the size of union effect on benefits by previous studies may be considerably exaggerated.

While those studies mentioned above mainly focused on the union effects on the level of benefits or on the probability that a specific type of benefits such as pension and health insurance are provided by employers, union effects on the share of benefits in total compensation is another issue. Several studies (Lester, 1967; Schiller and Weiss, 1980; Feuille, Hendricks, and Kahn, 1981; Alpert, 1982; Woodbury, 1983) raise an important question of whether differences in wage/benefit mix exist in total compensation between unionized and non-unionized sector and, if any, why does the difference appear? Their finding is that unionism is positively related to the share of benefits taken in total compensation 1984 (Woodbury, 1983; Fosu, 1984). For example, full collective bargaining coverage is reported to increase the benefit share of total compensation by 1.6 to 2.2 percentage, compared to nonunion firms (Woodbury, 1983).

Reasons for Larger Effect of Unions on Benefits than on Wages

What can explain the phenomenon that unionized firms pay more of their compensation in the form of benefits? One explanation comes from a monopoly model of unions regarding bargaining power. Unions with strong bargaining power are able to

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induce the employer to pay not only higher wages but also more fringe benefits (Feuille, Hendricks, and Kahn, 1981; Freeman and Medoff, 1984). This idea assumes a positive relationship between union effect on wages and on benefits.

A second explanation for the larger effect of unions on benefits than on wages is that collective bargaining is driven by the preferences of older workers who generally seek a larger proportion of benefits (Freeman & Medoff, 1984). While non-organized firms offers minimized benefits and maximized wages that are necessary to attract relatively young marginal' workers with little seniority, unionized firms have to offer better benefits using the influence of unions which are based on the older workers. In unionized firms, the union's bargaining goal is heavily influenced by the preferences of the median employee in seniority distribution. Freeman (1981) offers a reason why union may enhance the share of benefits. Trade unions, which are likely to be operated by median voter, are inclined to follow older workers with longer tenure, who prefer benefits to wages.¹⁴ It seems that this explanation, which is based on the median voter model, is different from the first explanation in that it assumes a negative relationship between wages and benefits.

A third explanation points out that union leaders may have their own incentives to increase benefits more than wages (Lester, 1967; Mabry, 1973; Freeman, 1981). While a few studies examining union wage effect mention the role of union leaders, the literature on union benefit effect pay more attention to the role and separate preferences of union leaders. Union leaders are said to have more interest in fringe benefits in that the administration of such benefits may result in a bureaucracy, which tends to helpful for

¹⁴ In spite of an explanation by Freeman (1981 & 1984), a piece of advice by Lester (1967), Schiller and Weiss (1980), and Woodbury (1983), arguing that a theory about why trade unions might to alter wage-benefit mix is still needed, is still correct.

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them to be re-elected. Also it could be possible for union leaders to maintain labor solidarity by keeping up with the level of wages across firms or industries and at the same time to hide extra rent as a less visible form of benefits rather than wages (Mabry, 1973).

A fourth explanation offers that employers also may be involved in the recent increase of fringe benefits in the compensation packages in many countries. Especially, it is likely that employers offer various and generous benefits for older workers in order to retain skilled workers and reduce turnover rate where employers invest significantly in the firm-specific training of their employees (Becker, 1964; Mabry, 1973).¹⁵ On the contrary, it might not be good for employers expecting to attract marginal workers to provide more generous benefits because fringe benefits are less visible than wages to outsiders like job applicants (Mabry, 1973).

Conditions to produce union benefit effect in Korea

In order to assure whether the previous studies on the union benefit effect in the U.S. can be applied to Korea, we must ask whether union effect on fringe benefits in Korea is meaningful. The importance of benefits, that is, the size of fringe benefits in total compensation needs to be considered.

In Korea, the share of fringe benefits in total compensation appears lower than in the U.S. (MOLb, 1999). However, the importance of the union effect on fringe benefits should not be overlooked for two reasons: a poor national welfare system and government intervention into wage bargaining between employers and unions.

¹⁵ It was Henry Ford, Welfare Capitalism, and Human Relations Movement in the 1920s that recognized the importance of benefits and argued to make an effort to provide benefits for workers in the United States (Davis, 1986; Katz and Kochan, 1992).

Table 2-3. The share of labor costs in manufacturing

	1980
Statutory Benefit	14.3 (84.0)
Voluntary Benefit	2.6 (15.4)

Note: Values in parentheses are for Japan, and for Korea (labor).

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* The shares of statutory benefits are exactly the same as the shares of total labor costs. The shares of voluntary benefits are lower than those of total labor costs. In some cases, the shares of voluntary benefits are higher. It is especially true for statutory benefits.

Table 2-3. The shares of statutory and voluntary benefits in total labor costs per employee in many countries

	<i>U.K.</i>	<i>Austria</i>	<i>German</i>	<i>Belgium</i>	<i>Japan</i>	<i>Korea</i>
Statutory Benefit	14.3 (84.6)	20.5 (71.7)	20.4 (88.7)	23.4 (92.8)	7.9 (73.8)	4.6 (33.1)
Voluntary Benefit	2.6 (15.4)	8.1 (28.3)	2.6 (11.3)	1.8 (7.2)	2.8 (26.2)	9.3 (66.9)

Note: Values in parentheses are the share each item in total benefits. The reference year for European countries, Japan, and Korea is 1984, 1988, and 1993, respectively.

Source: Korea Labor Institute (1995) and Hong (1996).

Korea has a much more limited national welfare system (Song, 1995; Choi, 1992). Table 2-3 presents a simple comparison between many countries including Korea, with regard to the shares of statutory and voluntary benefits in total labor costs per employee. Among the seven countries, the share of statutory benefits in total labor costs is the lowest in Korea, indicating an extremely weak social welfare system. On the contrary, the portion of voluntary benefits is quite higher in Korea than in other countries.¹⁶ That fact, combined with no labor party or pro-labor government, supports the importance of the union effect on benefits. The lack of a strong social welfare system supported by the government makes the importance of welfare system relating to employment relations within firms greater (Hong, 1996). Also the fact excludes a possibility that union benefit differentials are a poor indicator to supplement union wage differentials because union effects on benefits are realized through welfare legislation, not through collective

¹⁶ The shares of statutory and voluntary benefits in total labor costs for Korea in 1993 in Table 2-3 are exactly same as the shares in Table 2-2, earlier. Table 2-2 implies that the share of voluntary benefits in total labor costs and in total benefits is higher in 1993 than any other year in the period of 1986-1999. In spite of some exaggeration in Table 2-3, the shares of voluntary benefits in total labor costs in Korea are still higher. It is because the shares of voluntary benefits in total labor costs are larger than the shares of statutory benefits in every year between 1986-1999.

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bargaining, as in the Scandinavian countries (Freeman, 1994). In this vein, it is expected that the voice effect of unions in Korea is greater on fringe benefits than on wages.

In addition, since 1987 the government has intervened in wage bargaining at the enterprise level through forcing firms to follow so-called 'one-digit wage guideline' offered by the government (Choi, 1992). The government continued to have a deep concern about inflation, which may be caused by a steep increase in wages sought by unions, and so strongly prefers an increase in welfare program or fringe benefits to increase wages (Park, 2002). Consequently, the unions have sought to increase or create various fringe benefits, which are free from the government wage guidelines, and not regulated as in the case of wages (Choi, 1992; Bae, 1995; Park, 2002).

Given the historical conditions mentioned above, I hypothesize that the union effect on benefits which have existed since the Great Labor Offensive in 1987 is larger than the effect on wages as in the U.S. Determining the size of the union benefit differentials will be a focus in my study in the near future.

Compensating wage theory expecting no union effect on benefit

When following the compensating wage theory which implies lower wages in exchange for more generous benefits (Schiller and Weiss, 1980; Rosen, 1986; Olsen, 1994 & 2002), positive union effects on wages may result in negative union effects on shares (and/or levels) of benefits in total compensation, holding other factors constant. Assuming a perfectly competitive labor market with perfect information and no uncertainty, all workers are to be paid by their marginal product. If wages are the only form of compensation, the same wages will be given to all workers having the same

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ability or marginal product. Even though fringe benefits are introduced into some of firms in the competitive labor market, compensating wage theory predicts that the level of total compensation for all workers having same marginal product should be the same between firms offering benefits and other firms offering no benefits. If not, the theory expects that the firms offering more generous wages due to benefits will face the liability of labor costs. After all, the compensating wage theory says that there should be no difference, in the long run, in total compensation for all workers having the same marginal product, even though there might be a different wage/benefit mix across firms or preferences of workers in the short run. It also implies that union benefit effects do not exist when we control the level of wages, even though trade union may impact on the mix of wage/benefit mix.¹⁷

Thus, many studies on the union effect on fringe benefits support the belief that it is indispensable to consider the union effect on fringe benefits in order to have the union effect on total compensation even though the share of fringe benefits for workers in total compensation is much smaller than that of wages. Fortunately, the number of studies dealing with total compensation, not just wages, has been increasing. The trend of studies on the union effect on wages should be to include fringe benefits and other non-pecuniary benefits, which have not yet been explained.

Characteristics of Benefits in Korea

The most conspicuous characteristics of fringe benefits in Korea is that statutory benefits cover major benefits but deprive employees and unions of bargaining for the

¹⁷ In reality, the compensating wage theory assuming competitive labor market is challenged by existence of preferential tax treatment by government (Gentry and Peress, 1994), different administration costs for benefits according to firm size, union bargaining power to boost both wages and benefits, and so on.

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level of those benefits with their employers. For example, pension and health insurance are the most important two benefits, which are likely to be related to union effects on benefits in the United States. Also the two benefits are very likely to relate to the preferences of older and skilled workers. Also eligibility for the magnitude of the benefits is generally associated with seniority or job tenure in their firms (Mabry, 1973; Allen and Clark, 1986).

By excluding pension and health insurance from the private bargaining between employers and unions due to statutory benefits, the role of seniority, age, and skill is likely to be reduced with regard to benefits. It may undermine the union effects on benefits in general in Korea because older skilled workers especially do not always favor major voluntary benefits such as meals, housing, schooling expenditures, and an intra-firm benefit fund than younger workers do. The situation would be similar to employers. The major voluntary benefits cannot be regarded as a kind of deferred wages in the long run enough to retain skilled workers. It may reduce the incentives for employers to provide various and generous benefits. In fact, a study on 20 types of voluntary benefits reports that only 19% of voluntary benefits are related to the clause of a minimum year of tenure in order for the employee to be eligible (Hong, 1996).¹⁸

Another factor discouraging unions' responsiveness to the preferences of older workers is evident in Korea. In the U.S. some unions such as the United Mine Workers allow retired workers to participate in internal decision-making processes, resulting in a greater voice for older workers in determining the contents of benefits (Farber, 1978; Allen and

¹⁸ The study by Hong (1996) is based on small size of sample (N=240) in 1993. Thus, the results should be interpreted with caution.

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Clark, 1986). Under enterprise unionism, retired workers are not allowed to be members of unions at all. Also lower union benefit effects in Korea are expected.

Previous studies in Korea

Only a limited number of studies (Choi, 1992; Song, 1994, Park, 1996, Hong, 1996; Choi, Y.S., 2000) on union effects on benefits are available in Korea. This scarcity of research on union effects on fringe benefits results from the lack of data. Compared to data availability for union wage effects, it is difficult to find data available regarding the union effects on fringe benefits (Song, 1994).

Therefore, due to the lack of appropriate data, Song (1994) adopts an indirect way to test union effects on benefits, by examining the degree of workers' satisfaction regarding fringe benefits or the degree of resource investment in enhancing working conditions including fringe benefits by unions in order to estimate union effects on fringe benefits (Song, 1994). Choi (2000) attempts to find union effects on the level of benefits from 433 firms listed on the Korean Stock Exchange. Both studies found no significant difference in the fringe benefits between union and non-union members (Song, 1994; Choi, Y.S., 2000) thus making it impossible to determine the differences in fringe benefits between union and non-union members.

Using two kinds of data, aggregated industry-level data and establishment-level data, Choi (1992) found significant positive effects of unions on the level of benefits and the share of benefits in total compensation in 1988 from establishment-level data, though no union effect for 1969-1989 from time-series data based on aggregated industry-level is

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available. Hong (1996)¹⁹ examines variety of benefit types as measured by the total number of voluntary benefits and the degree of the exclusivity of benefits as measured by the number of benefit types without the clause of a minimum of a year of tenure, divided by the total number of benefit types. He found that the existence of unions is positively related to the variety of types of benefits and the percentage of benefits without the clause of a minimum year of tenure to be available to employees in the total number of benefit types. Park (1996) used data from large firms, which are found in the Korean Stock Exchange, and shows a limitation that her findings cannot be applied to mid- or small-sized firms.

The previous studies on union benefit effects reveal many limitations. Some studies do not include the level of wages as independent variable in the benefit equation (Choi, 2000). No study considers the possibility of an endogeneity problem between wages and benefits, which will be considered by adopting 2SLS in this study. In addition, no study examines any differences in benefits within the unionized sector by using additional variables such as union organizing rate and the individual union's affiliation with national union federations as seen in this study.

Research Questions

The main research question in this study is whether or not the union effect on fringe benefits exists in Korea. Many studies on union wage effect and union benefit effect implies the existence of the union benefit effect. A few even argue a larger union effect

¹⁹ One of feature in Hong (1996) is that it focuses on organizational characteristics such as whether a firm is monopoly in the industry, whether productivity for blue-collars and white-collars can be measured, how large the added-value per employee is, whether the firm is belong to Chaebol, and whether the firm has specialized department regarding personnel management or human resources.

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on benefits than wages (Renaud, 1998). The compensating wage theory predicts a negative relationship between union and benefits.

A second question raised by this study is how unions affect the probability of each of the sub-categories provided by employers such as meals, housing, schooling expenditure, and intra-firm benefit fund.

Third, this study also will examine how two more critical variables, related to union bargaining power, affect benefits as well as the union dummy variable does. The union organizing rate, defined as the number of union members divided by the total number of regular employees, in the establishment and enterprise union's affiliation with either two national union confederations (FKTU/KCTU) are the two variables, added in order to determine whether any variations in level of labor costs including total compensation and composition of labor costs within unionized establishments are present.

Bargaining outcomes vary according to union bargaining power. One of the most popular indicators showing union power is union density measured by the percent of employees who are union members in the bargaining units (Feuille et al., 1981). In addition to union density, many variables measuring union structure and union rivalry have been used in previous studies (i.e., Feuille et al, 1981; Fiorito and Hendricks, 1987). Following a line of previous studies, this study expects that union density may affect union preferences towards levels and shares of benefits in total compensation (Alpert, 1982; Woodbury, 1983; Mitchell and Smith, 1992; Kahn, 2000).

Two national labor camps in Korea, FKTU and KCTU, are know to be very different from each other in terms of bargaining strategy and the type of mobilization of union membership. While the FKTU has depended on more peaceful negotiations without the

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rank-and-file union members' visible collective actions such as strikes, the KCTU has shown to resort to more massive collective actions from the union membership (Kim and Song, 1998; Kwon, 1997). As a consequence, most of the union leaders who were arrested and sentenced were affiliated with the KCTU rather than the FKTU. The difference between the two national confederations continues in terms of the individual characteristics of the full-time union leaders working for each. While the union leaders, who are in their fifties and are high school graduates with longer tenure, dominate the FKTU, most of the full-time union leaders in the KCTU are university graduates in their thirties or forties but have shorter tenure (Lee et al., 2001). Regarding benefits, the union leaders and rank-and-file union members place more emphasis on benefits in the FKTU-affiliated unions than in the KCTU-affiliated unions (Kwon, 1997). These different characteristics of the unions under the two national peak organizations indicate that there might be some different levels of total compensation and labor costs and the composition of total compensation achieved between the FKTU and KCTU. With respect to the level of benefits and total compensation, it is expected that the average level of benefits and compensation will be higher in the unions affiliated with the KCTU than in the unions under the FKTU, because the KCTU-affiliated unions are more responsive to the voice of rank-and-file union members and more militancy in bargaining.

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CHAPTER THREE

DATA

In dealing with the four empirical parts regarding union effects on economic bargaining outcomes for 1987-1999, this study is based on the three kinds of data: individual-level data from the Basic Survey on Wage Structure (BSWS), which will be used for union wage effects on the distribution of wages and union effects on four variables, education, experience, tenure, and sex, in determining wages; establishment-level data from the BSWS, which will be utilized for union effects on wage dispersion; and establishment-level data from the Enterprise Labor Cost Survey (ELCS) used for union benefit effects. This chapter explains briefly the nature and characteristics of the three kinds of data for the four empirical parts. Extra information regarding data will be provided in the relevant chapters later.

1. Individual-level data from BSWS

The data set used here comes from the Basic Survey on Wage Structure (BSWS), which has been conducted by the Ministry of Labour (MOL) in Korea every year since 1972. The BSWS consists of individuals who are hired in at approximately 2,700-5,500 establishments, drawn by a stratified random sample method, with at least ten regular workers (MOLa, various year). The data source does not include agricultural workers,

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workers in foreign organizations, and civil servants including polices, armed forces, and workers in public educational institutions, school, hospitals, and libraries.

The BSWS data as originally individual-level data contain decidedly in-detail information on individual workers such as wages, hours worked, sex, martial status, age, tenure, career, occupation, and level of skill held by workers, and on the characteristics of firms, which respondents work for, such as region, industry, firm size, and existence of unions (Lee & Kwon, 1995). In addition, the BSWS data are highly comprehensive in that the number of observations ranges from 383,000 at the minimum to 585,000 at the maximum. This study uses a randomly extracted 10% of the original number of observations from the BSWS. Finally, the annual BSWS is the only data in Korea, which may satisfy researchers who have interest in a period, not limited to a specific year, with regard to union wage effects.

For these reasons, most previous studies (Bae, 1990; Lee & Kwon, 1995) on union wage effects depend on the data set: 1976 (Song, 1989), 1980 (S.I. Park, 1984), 1986 (Y. B. Park, 1993), 1987 (Jeong, 1991), 1988 (Bae, 1990; Song, 1994), 1989 (Jeong, 1991; Chae, 1992), 1994 (Lee & Kwon, 1995), and 1987-1999 (Shin, 2001). Thus, it is possible to utilize most of the previous studies on the same topic because most of them are based on the data.

This study has selected and uses only regular employees, ages 19-65. Also the data used are limited to employees who have non-professional and non-managerial occupations, since the membership of trade unions is unlikely to be opened to professional and managerial occupations.

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The annual individual-level data from the BSWs for 1987-1999 will be used in the chapter dealing with the question of how the size of union wage premium changes in the distribution of wages. Also the data will be used in the chapter examining how union affects four values including education, experience, tenure, and sex, which are expected to determine wages. In the chapter, the annual data will be divided into union and nonunion sectors.

2. Establishment-level data from BSWs

The part dealing union effects on wage dispersion within establishments aims to answer the questions, whether there is a significant difference in wage dispersion exists between unionized and non-unionized sectors and, if any, how big the union wage equalizing effects are. Those questions need establishment-level data including wage-related variables. Therefore, I constructed establishment-level data from the BSWs by sorting individual-level data from the BSWs after considering the locations of establishments and the establishment identification numbers. After that, establishments having at least five employees who are found in the BSWs as observations, are selected. Also information relating wages within are calculated, such as the average of wages, the average variance of wages, the percentage of females, salesmen, skilled, technician workers within establishments as well as the variance of education, experience, and tenure within establishments.

The approximate number of establishments constructed in a year is 2,000. Even though it is desirable to construct establishment-level data for every year for the period of 1987-

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1999, establishment-level data for only five years, 1987, 1990, 1994, 1997, and 1999 could be constructed because the process of constructing establishment-level data from the BSWs is considerably time-consuming.

3. Establishment-level data from ELCS

The data used for union effect on benefits are the Enterprise Labor Cost Survey conducted by the Ministry of Labor.

The survey has been conducted annually since early 1980s and contains items inquiring about the existence of unions, the amounts of obligatory and non-obligatory benefits paid by individual firms, etc. The population of the survey is all firms hiring at least 30 permanent employees (10 employees from 1997) and the size of the sample for the survey is 2,406 in 1997, for example. Data from the Enterprise Labor Cost Survey (ELCS) have strength, compared to other data set used in other countries. First, the data are not limited to a specific type of benefit such as pension and health insurance or a part of benefits which employers offer to employees, but cover comprehensively all expenditures regarding benefits including statutory benefits, voluntary benefits, and even training-related expenditures and recruitment expenditures. It may allow us to observe the union effect on the entire features of benefits, not on specific benefits, and not to overlook any misunderstanding resulting from a potential relationship between a specific benefits examined and other benefits, when focusing on a part of the benefits.

However, two important limitations of the data are present also. Compared to individual-level data like the CPS data, one of the limitations of ELCS data in this paper

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is that the data in the sample lack information on human capital such as experience, education, and tenure. It is expected that the weakness of a lack of information relating to human capital, except the percentage of female workers in the establishment, might be mitigated by adding the average values of education, experience, and tenure for 169 three-digit industries from the Basic Survey on Wage Structure (BSWS) in relevant years and information regarding employee wages into the model in this study. The second limitation of the data is that the data do not include information on trade unions in establishments. The process of adding union-related variables into the ELCS data will be explained in the relevant chapter later.

Because no establishment-identifying information for data from 1987-1994 is available unfortunately, the chapter uses only data from 1995 to 1999. The total number of establishments used in the analysis is 8,479.

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CHAPTER FOUR

UNION EFFECT ON WAGES

1. Introduction

The chapter is organized as follows: Section 2 describes the estimation methods, especially quantile regression (QR), and then describes the data set. Section 3 introduces the results and explains the implications from the results. Finally, section 4 concludes.

2. Model and Data

Model and Estimation

Like most of studies on the union wage effect, this chapter adopts a Mincer-type wage equation (Mincer, 1974) and union status, U_i , is added to the equation as one of the explanatory variables. Other covariates, X_{it} are a vector of individual's years of education, sex, marital status, experience, squared experience, tenure, and squared tenure and the characteristics of establishments such as firm size, industry, and region. The dependent variable, $\ln W_{it}$, is the logarithm of monthly gross wages divided by hours worked. The main goal is to estimate the parameter associated with union status. Thus, our wage equation is

$$\ln W_{it} = X_{it}\beta_\tau + UNION_{it}\beta_\tau + \varepsilon_{it} . \quad (4.1)$$

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The model of the ordinary least squares (OLS) assumes that the regression coefficients regarding union status are constant across the entire conditional wage distribution.

The quantile regression model, also known as least-absolute value model (LAV) or the method of minimum absolute deviations (MAD), is aimed to minimize the sum of absolute residuals rather than the sum of the squares of the residuals as in ordinary least square regression (STATA, 1999). While the union effect by the OLS is an estimate on the mean wage, quantile regression does not assume that union effects are equal over all quantiles of the wage distribution. The quantile regression assumes that the covariate parameters determining wages may vary over all quantiles of wage distribution.

This characteristic of quantile regression compared to the OLS is more suitable to the purpose of this study on the union effects on the wage inequality because prior studies report that unions affect wages for employees in the lower half of the distribution more than the wages for employees in the upper half of distribution. In addition, quantile regressions have some other advantages compared to the assumptions behind the OLS. The quantile regressions relax the assumptions by the OLS, in which the errors are identically distributed and normally distributed, by admitting that the coefficients of covariates determining wages may vary over all quantiles of distribution. Also a criterion minimizing errors quantile regressions, based on the sum of the absolute values of the errors, is likely to be better than quadratic-error-minimizing criterion of the OLS in that outlier observations in the quantile regressions are not given as much weight different from in the OLS and, also, the quantile regressions deals with statistical heteroscedasticity (Buchinsky, 1998; Schultz & Mwabu, 1998). For these reasons, the number of studies adopting quantile regressions in the area of wage inequality has been

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increasing (Buchinsky, 1994; Chamberlain, 1994; Poterba & Rueben, 1994; Schultz & Mwabu, 1998; Pizer, 2000).

From the wage equation (4.1), it is assumed that the q^{th} quantile of the conditional wage distribution is a linear function of the individual attributes (X_{it}):

$$\text{Quant}_q(\ln W_{it} | X_{it}) = X_{it}\beta_{q,\tau} + \text{UNION}_{it}\delta_{q,\tau}. \quad (4.2)$$

Quantile regression estimates can be obtained where the slope coefficients β , for the q^{th} quantile are gained from the following minimizing problem

$$\min 1/n \sum [q1(y_i \geq \beta'x_i) + (1-q)1(y_i < \beta'x_i)] |y_i - \beta'x_i| \quad (4.3)$$

where $1(A)$ is the indicator function that equals one if event A obtains and equals zero otherwise, and n is the sample size (Koenker & Bassett, 1978). For instance, if $y_i \geq \beta'x_i$, the deviation is positive (at least above the fitted line), and is weighted by q . If $y_i < \beta'x_i$, the deviation is negative (below the fitted line) and is weighted by $1-q$. Thus, the quantiles other than the median are estimated by weighting the regression residuals and the weight on positive and negative residuals depends on their location relative to the median residual. In the process of minimizing the sum of their absolute values, the deviations above are treated as nonnegative numbers (Schultz & Mwabu, 1998; STATA, 1999). In the context of this study, the equation (4.3) can be rewritten with

$$\begin{aligned} \min 1/n \sum [q1(y_{it} \geq X_{it}\beta_{q,\tau} + \text{UNION}_{it}\delta_{q,\tau}) + (1-q)1(y_{it} < X_{it}\beta_{q,\tau} + \text{UNION}_{it}\delta_{q,\tau})] \\ * |y_{it} - X_{it}\beta_{q,\tau} - \text{UNION}_{it}\delta_{q,\tau}|. \end{aligned} \quad (4.4)$$

In most cases, the standard errors in quantile regression are computed according to the method by Koenker and Bassett (1982). However, it has been pointed out that these standard errors are downward-biased because of heteroscedasticity of the disturbance terms. A bootstrap approach to estimate the standard errors, allowing for bootstrap

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sampling from the original sample with a replacement, has been used in previous studies (Chamberlain, 1994; Buchinsky, 1994; Schultz & Mwabu, 1998; Hartog et al., 2001). After estimating coefficients at each quantile based on a linear programming algorithm, the means of the estimated bootstrap coefficients are used to calculate their variance, $V(\beta_\tau)$, and the associated standard errors, using the equation

$$V(\beta_\tau) = n/B \sum_b (\beta_\tau^{(b)} - \beta_\tau)(\beta_\tau^{(b)} - \beta_\tau)', \quad (4.5)$$

where B = number of bootstrap replication samples, $b = 1, \dots, \beta_\tau^{(b)}$ = parameter estimate from the bootstrap replication b ; and β_τ = the mean of all parameters obtained from the bootstrap replication samples. The bootstrap standard errors in this study are calculated using 20 iterations following Poterba & Rueben (1994) and Hartog et al. (2001).

To discover how the unions affect the entire distribution of wages among union members compared to the distribution among nonunion members, this study first estimates the union effects conditional on the expected log wage by the OLS as a baseline. Then, the estimates of the union effects for the median wage earner and other deciles in the distribution of wage residuals, such as the 10th and 90th percentile, are obtained from quantile regressions. Finally, a full quantile regression at every quantile, which is expected to reveal how the union effects on different deciles vary, will be conducted.

Data and Variables

As mentioned in the chapter briefly explaining the nature of data earlier, this chapter uses dataset from the Basic Survey on Wage Structure (BSWS)²⁰, which has been

²⁰ They had been termed the Occupational Wage Survey (OWS).

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collected by the Ministry of Labour (MOL) in Korea every year since 1972.²¹ The population of the BSWS is all kind of workers working in the private establishment hiring at least ten or more regular workers. Therefore, civil servants such as armed forces, police, and employees in public educational institutes, libraries, and hospitals are not included in the BSWS. In addition, agricultural workers and employees in foreign establishments are also excluded. Every year the number of target establishment are determined, based on a stratified random sample method with consideration of industry, establishment size, and region. The number of establishment participating in the BSWS is approximately 2,700-5,500 sample establishments (MOLa, various year).²² If an establishment is determined to participate in the BSWS, the numbers of employees in the establishment are chosen, based on the establishment size. From wage records for all employees, which is kept in the establishment, all information on the number of employees are collected.

The BSWS data have been used by Korean researchers examining union wage effect, because they contain rich information on individual workers such as wages, hours worked, sex, martial status, age, tenure, career, occupation, and the level of skill held by workers, and on the characteristics of firms, which respondents work for, such as region, industry, firm size, and the existence of unions (Lee & Kwon, 1995). In addition, students in industrial relations have favored the BSWS data, because the number of observations is big, ranging from a minimum of 383,000 to a maximum of 585,000. However, it is not possible to get such full data set. Only a randomly extracted 10% of the original number of observations from the BSWS is available to researchers.

²¹ It is reported that Japan has a similar survey used by the Japanese Ministry of Labor (Kim and Topel, 1995).

²² The number of sample establishments depends on years investigated.

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Some drawbacks of the BSWS should be acknowledged. First of all, the population of the survey is an establishment hiring 10 or more employees, and thus excludes small-sized establishments and their employees. One of the characteristics of the BSWS survey is that the respondents are asked whether trade unions are organized in their workplace, rather the respondents are union members (Uh and Lee, 1992). In that case, the union variable in the BSWS is similar with the Current Population Survey in the U.S. including information on collective bargaining coverage (Shin, 2001). However, the variable must not be a serious weakness when measuring union effects because bargaining outcomes including wages and fringe benefits affect all workers in a potential union member pool, no matter how great the percentage of the pool is represented with the union in the establishment concerned with labor laws (Lee and Nam, 1990).

The main dependent variable here is the logarithm of real hourly wages, nominal wages deflated by the Customer Price Index (1995=100). The logarithm of real hourly wages reflects bonus as well as regular payment and overtime payment. Dummy variables for one-digit industries (omitted category is manufacturing), based on the Standard Industrial Classification, are included in order to capture any industry difference in the union effect on wages. Dummy variables for the establishment region (omitted category is region for Seoul) and the dummy variables for size (omitted category is establishment hiring less than 30 employees) are added into the regression equation. To measure human capital of the employees, three variables, education, experience, and tenure, are considered. The dummy variables (omitted category is middle school including elementary school) are used for education. Experience is measured by “age-total years of education-6.” Also squared experience and squared tenure are included.

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Two personal characteristics, sex (1 if female, 0 otherwise) and marital status (1 if married, 0 if unmarried) are also measured and included into the equation. A variable regarding union status as a form of the dummy variable (1 if union exists, 0 if union does not exist) is put into the equation. Again, an important thing to remember is that the union variable is not the answer if individual employees are or not union members. Thus, the union variable is expected to capture the effect of unions on wages when a union is organized within an establishment.

This study selects and uses only regular employees ages 19-65. Also the data used are limited to employees who have non-professional and non-managerial occupations, since labor laws prevent them from joining unions.²³

This study uses data for 1987-1999. Most previous studies in Korea examined data for only one or a few years and analyzed the period of the late-1980s and early-1990s. None, except Shin (2001), use data covering a long time-span as this study does. Thus, it might be meaningful to examine a long time-span of 1987-1999 including recent periods.

²³ The original sample of the BSWs in this study included professional and managerial employees of 12.7% (73,365 for 1987-1999), 7.4% in 1987 at a minimum and 18.3% in 1998 at a maximum. Article Two in the *Trade Union and Industrial Relations Adjustment Act* requires that managerial employees “who always act in their employer’s interests are not allowed to join” trade unions. Thus, there appears to be no need to exclude professional and managerial occupation from the sample for this study, because the union dummy for the occupation should always be zero in the wage equation if employees in the occupation cannot be union members. However, the expectation may not be true. I ran the wage equations for only professional and managerial occupations. Among the 13 years (1987-1999) in this study, union coefficient for professional and managerial employees was not statistically different from zero at the 5% level in eight years. However, the union coefficients for the employees are significantly positive at the 5% or less level in five years; .060 in 1988, .024 in 1990, .031 in 1992, .044 in 1998, .051 in 1999 7.4% in 1987, 18.3% in 1998. It appears to a surprising that professional and managerial employees, who cannot be union members, can have positive union wage premium in the five years. However, it may make sense, considering that, according to DiNardo, Hallock, and Pischke (1997), the union can indirectly affect wages for managerial employees not under union coverage in unionized establishment, even though they reported opposite direction of union effect. How and why union can affect salaries for professional and managerial employees may be an interesting another research question, which cannot be dealt with herein.

If the professional and managerial employees are included in the sample for the study herein the indirect effect of unions on professional and managerial employees will bias the results regarding the direct effect of unions on potential union membership. For this reason, professional and managerial employees are excluded from this study.

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Table 4-1. Descriptive statistics for all variables in all, non-unionized, and unionized sectors for 1987-1999 (unweighted)

Variables	Explanations	All	Nonunion	Union
Lwage	Logarithm of hourly real wage	8.345	8.105	8.477
		(.774)	(.831)	(.706)
Busan	1= Busan	.098	.095	.099
		(.297)	(.293)	(.299)
Kyungki	1= Seoul suburbs	.215	.214	.216
		(.411)	(.410)	(.412)
Joongbu	1= Kangwon, Choongchung, & Cholla	.175	.135	.198
		(.380)	(.341)	(.398)
Kyungsang	1= Kyungsang	.214	.195	.225
		(.410)	(.396)	(.418)
Mining	1= Mining	.018	.005	.025
		(.132)	(.071)	(.155)
Construction	1= Construcion	.010	.001	.015
		(.101)	(.035)	(.122)
Transportation	1= Transportation & Public Utilities	.024	.041	.014
		(.152)	(.198)	(.119)
Wholesale	1= Wholesale and retail Trade	.069	.104	.049
		(.253)	(.305)	(.216)
Finance	1= Finance insurance & Real estate	.090	.031	.123
		(.286)	(.173)	(.328)
Services	1= Services	.104	.122	.095
		(.306)	(.327)	(.293)
Public	1= Public services	.079	.084	.075
		(.269)	(.278)	(.264)
30≤Ees<100	1= 30-99 employees	.096	.201	.039
		(.295)	(.400)	(.193)
100≤Ees<300	1= 100-299 employees	.202	.264	.168
		(.401)	(.441)	(.374)
300≤Ees<500	1= 300-499 employees	.195	.165	.314
		(.396)	(.371)	(.212)
Ees≥500	1= 500 or more employees	.478	.300	.576
		(.500)	(.458)	(.494)
Sex	1= female	.322	.388	.287
		(.467)	(.487)	(.452)
Marital Status	1= married	.616	.563	.645
		(.486)	(.496)	(.479)
Highschool	1= high school	.528	.512	.537
		(.499)	(.500)	(.499)
College	1= 2-year college	.075	.081	.072
		(.263)	(.272)	(.258)
University	1= 4-year university	.130	.134	.127
		(.336)	(.341)	(.333)
Expe	year of (age-educated years-6)	15.509	14.861	15.865
		(10.955)	(11.747)	(10.476)
SQexpe	Squared term of Expe	360.536	358.861	361.459
		(513.857)	(513.858)	(421.552)
	Year of Tenure	5.496	3.748	6.459

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Tenure		(5.332)	(3.930)	(5.743)
SQtenure	Squared term of Tenure	58.639	29.496	74.702
		(110.800)	(68.029)	(125.564)
Union	I= unionized establishment	.645	-	-
		(.479)	-	-
N =		486,685	172,929	313,756

Note: mean without parentheses and standard deviation in parentheses

Table 4-1 reports the descriptive statistics for all (column 3), non-unionized (column 4), and unionized samples (column 5) from a pooled cross-sectional data for 1987-1999. The total number of workers used in the analysis is 486,685 including 172,929 (35.53%) in non-unionized and 313,757 (64.47%) in unionized establishments. The average number of observations for all samples per year is 37,437 and the smallest number of observations for all samples is 26,700. Also the average number of observations for men and women samples per year is 25,363 (total 329,730) and 12,073 (total 156,955), respectively.²⁴ Considering that the coefficients estimated by quantile regression become ‘quite accurate’ (Buchinsky, 1998; 91) in the large sample, it is expected that the size of the coefficients in this study will be stable.

A comparison of the means of a number of characteristics indicates that union workers are more experienced by one year, and longer tenure by 2.7 years than non-unionized workers. Also they have a higher probability of being married and male, earn more wages, and are concentrated in larger-sized firms.

²⁴ The exact number of observations for all, men, and women in each year can be found in Table 4-2, 4-3, and 4-4, which will be presented later.

3. Results

Results from All Samples

Table 4-2 presents the OLS estimates and estimates of $\delta_{q,\tau}$ from quantile regressions with $q = .10, .50, \text{ and } .90$ for the years 1987-1999. The OLS results in the second row of Table 4-2 shows that the union wage premium existed for 1987-1999. The size of union wage premium varies depending on year examined, ranging from .01 (1% = $\exp [.01]-1$) in 1996 to .074 (7.7% = $\exp [.074]-1$) in 1999.²⁵

Comparing the results from the OLS to the results from the QR at the median in the fourth row in the table, the estimated unionized sector wage premium, estimated by median ($q= 0.50$) quantile regression, is approximately from .005 (0.5 %) in 1999 to .025 (2.5%) in 1987 smaller than that estimated by ordinary least squares, in all cases but 1998. The results from both OLS and QR show that the union wage advantage had gradually declined from .069 (7.1% = $\exp [.069]-1$) by the OLS and .044 (4.5% = $\exp [.044]-1$) by the QR in 1987 to .022 (2.2% = $\exp [.022]-1$) by the OLS and .005 (0.5% = $\exp [.005]-1$) by the QR in 1993. Despite the increase of a narrow range, above .03 or 3%, in 1994 and 1995, the union wage premium remained around one or two percent by both the OLS and QR in 1996 and 1997. Finally, the union wage effects have increased to above .06 or 6% in 1998 and 1999, as they have faced a serious financial crisis in Korea since December 1997. The results indicate that there has been a union wage effect in

²⁵ It is easier to understand more the meaning of union wage premiums when percentage is used instead of the coefficient of union in the wage equation. The coefficient of union in the wage equation can be transformed by the formula of exponential form, $\exp(\text{union coefficient}) - 1$ (Halvorsen & Palmquist, 1980; Kennedy, 1981). If the size of union coefficient in the wage equation is below 0.1, the size of the coefficient becomes close to the relevant percentage. For example, the coefficients of union, .01, .05, and .1, in the wage equation are 1% (.01005), 5% (.05127), and 10.5% (.10517).

Table 4-2. Size of Union Coefficient in OLS and Quantile Regressions for a Samples for 1987-1999

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Mean (OLS)	.069* (.006)	.053* (.003)	.051* (.005)	.051* (.004)	.033* (.004)	.016* (.004)	.022* (.004)	.039* (.004)	.045* (.004)	.010* (.004)	.026* (.004)	.060* (.004)	.074* (.004)
QR													
q = .10	.088* (.013)	.069* (.006)	.079* (.010)	.051* (.006)	.039* (.006)	.017* (.006)	.025* (.007)	.035* (.006)	.027* (.006)	-.005 (.007)	-.006 (.007)	-.044* (.006)	-.053* (.008)
q = .50	.044* (.008)	.040* (.004)	.030* (.005)	.031* (.004)	.017* (.004)	.007 (.005)	.005 (.004)	.036* (.005)	.036* (.004)	.006* (.003)	.020* (.003)	.062* (.004)	.069* (.006)
q = .90	.045* (.005)	.018* (.005)	.018* (.009)	.030* (.008)	.012 (.008)	-.007 (.006)	.011 (.006)	.017* (.005)	.024* (.005)	.014* (.006)	-.039* (.006)	-.063* (.006)	-.074* (.006)
N	50,566	50,538	26,700	41,196	39,853	35,279	36,357	35,064	32,663	34,999	32,651	30,906	39,913

Note: Samples including 18-65 age and excluding managers and professionals

Note: Bootstrap standard errors for quantile regressions in parentheses

Note: Robust standard errors in parentheses for OLS regressions

Note: * means significant at the 5% or less level

Note: variables included: log of hourly real wage as dependent variable, four regional dummies, seven industry dummies, four establishment size dummies, sex, marital status, three educational dummies, experience, experience squared, tenure, tenure squared, and union as independent variables

Korea for the period 1987-1999. However, the size of the union wage premium is not a large number, .043 (4.4%) by OLS or .032 (3.3%) by QR on average for the thirteen years. Also, we can describe the changes of union wage advantage as a gradual decline for the late-1980s and early-1990s, some fluctuations of a narrow range in the mid-1990s, and a relative high union wage premium during 1998-1999 during the crisis.'

The results with regard to the size of union wage effects do correspond by and large to previous studies. For example, the union premium of .053 (5.44%) by OLS in 1988 is quite close to the estimated union premium (5.50%) as Bai (1991) predicted for the year. Also the union premium of -1.6% in the manufacturing sector in 1994 by Lee and Kwon (1995) does not differ much from our estimated size (-2.7%) when I follow their estimation procedures.

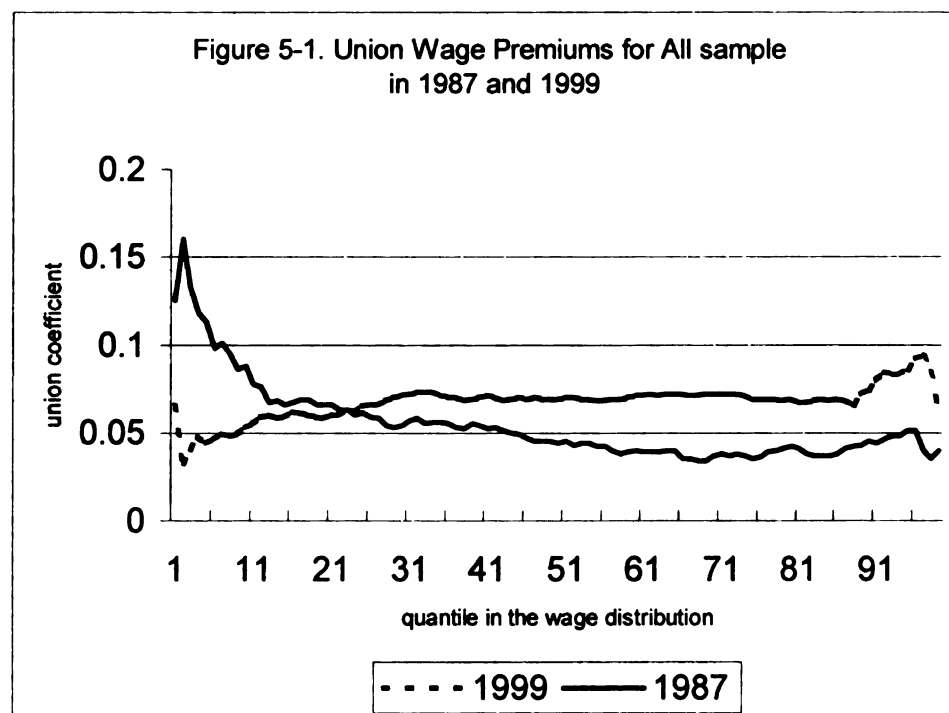
The estimates of the union wage effect from the quantile regression with $q = .10, .50,$ and $.90$ assure the assumption behind quantile regression that the regression union wage effect may not be constant across the entire conditional wage distribution. In every year, the size of the union wage effects at $q = .10, .50,$ and $.90$ is different.²⁶ More importantly, a quantile producing the largest size of union effect among $q = .10, .50,$ and $.90$ is not consistent. For the year 1987-1993, the estimate of union status at $q = .10$ is larger than those at $q = .50$ and $.90$. For instance, unionized workers at $q = .10$ in 1987 began to earn larger wage increase (8.7%) three times greater than workers at $q = .90$. For the years 1994, 1995 and 1998, the union wage effect at $q = .50$ is larger than those at $q = .10$ and $.90$. In addition, the union effect at $q = .90$ is larger than those at $q = .10$ and $.50$ for the

²⁶ F-tests comparing coefficients of union variable in between two quantile regressions at $q = .10$ and at $q = .90$ are conducted, though not reported here. The null hypothesis that the size of union coefficients at $q = .10$ and at $q = .90$ are equal is rejected at the 5% significance level in every year, but the year of 1995 ($F(1, 32,637) = 0.11, Prob > F = 0.740$) and 1998 ($F(1, 30,880) = 3.65, Prob > F = 0.056$).



years 1996, 1997, and 1999. This result means that unions had protected the best the interests of workers at the bottom of wage distribution for 1987-1993 and workers at the top of wage distribution for the year of 1996, 1997, and 1999, while the median workers for the years 1994, 1995, and 1998 had better benefits from a wage increase by collective bargaining, compared to the workers in the lower and upper tail of wage distribution.

As the absolute size of union wage effect, estimated by either OLS or median QR, has declined during the period 1987-1993, the difference between the largest and smallest union effects from $q = .10, .50, \text{ and } .90$ also have decreased. This result indicates that wage policies of the trade unions have changed from favoring only a limited number of workers in the lower end of wage distribution to balancing various interests of different workers across the wage distribution, during the period.

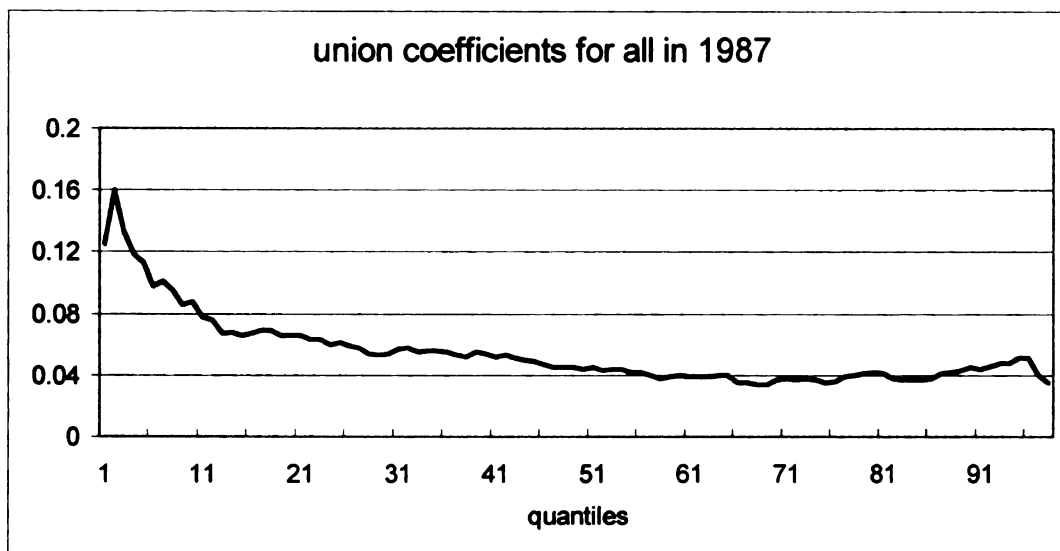


To confirm the findings that the quantile producing larger union wage effect varies among $q = .10, .50, \text{ and } .90$, full quantile regressions ranging from $q = .01$ to $q = .99$ were run for 1987 and 1999. Figure 4-1 presents how the unions wage premium changes in each quantile in the distribution of wages for the two years. The results from Figure 4-1 were surprising in that the size of union premium for employees, opposite of our expectation, was smaller in the lower part than in the higher part of the wage distribution in 1999, while the union premium was larger in the lower part than in the higher part in 1987 as expected. This finding means that higher-wage workers, rather than lower-wage workers, benefit more from trade union and collective bargaining by trade unions at least in 1999. This result was not found through the OLS reporting union wage premium at mean and through quantile regressions at $q = .10, .50, \text{ and } .90$ as already seen in Table 4-2.²⁷

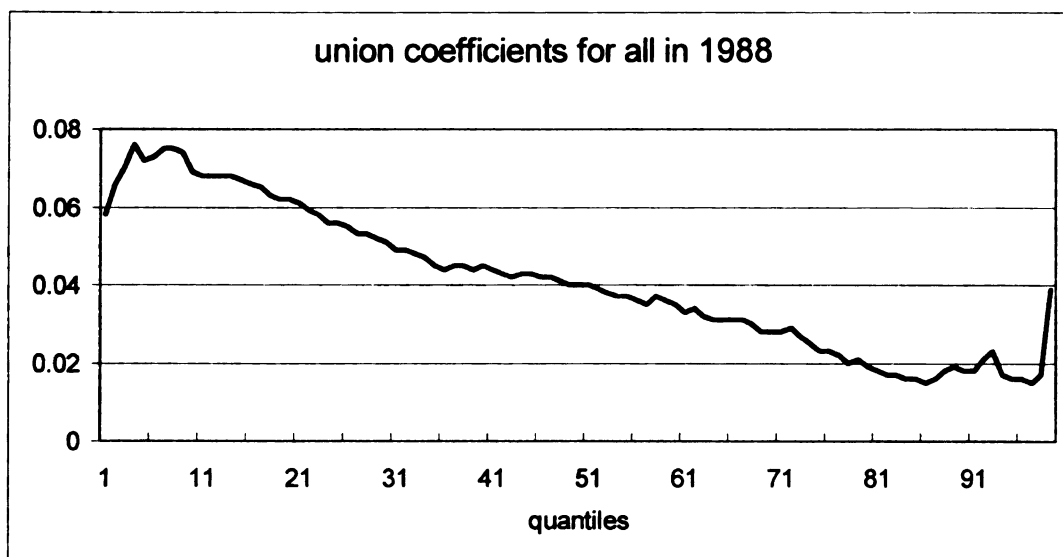
The argument that the Korean financial crisis may have caused the exceptional phenomenon in 1999 could be raised. To answer the question, I ran full quantile regressions at every quantile for every year from 1987-1999 for all workers, as seen in Figure 4-2. A graph of union coefficients for each year was drawn from 99 quantile regressions ranging from $q = .01$ to $q = .99$. Even though some variations in details are evident, it is clear that the size of union coefficient was larger for workers at the lower end of wage distribution than for workers at the higher end of the wage distribution from 1987-1995. In 1987, it is clear that workers ranging from $q = .01$ to $q = .11$ have much

²⁷ To date, most studies adopting quantile regressions report only the results at some quantiles such as $q = .10, .25, .50, .75, \text{ and } .90$ (Chamberlian, 1994; Poterba and Rueben, 1994). The comparison between Table 4-2 and Figure 4-1 implies that the traditional reporting practice might be incomplete and even arbitrary in a sense. One of the reason explaining why the reporting practice has existed might be the time in running quantile regressions ranging from $q = .01$ to $q = .99$. For example, it takes about an hour to run a quantile regression with bootstrap replication of 20 iterations at a quantile in this study. When increasing the number of bootstrap replication from 20 to 500 repetitions by using the data here, the time spent to a run a quantile regression increases to a whole day.

Figure 4-2. Union Wage Premiums for a Samples for 1987-1999



Note: all quantiles significant at the 5% or less level



Note: quantiles from $q=.95$ to $q=.98$ insignificant at the 5% level

0.1

0.075

0.05

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1

Note a

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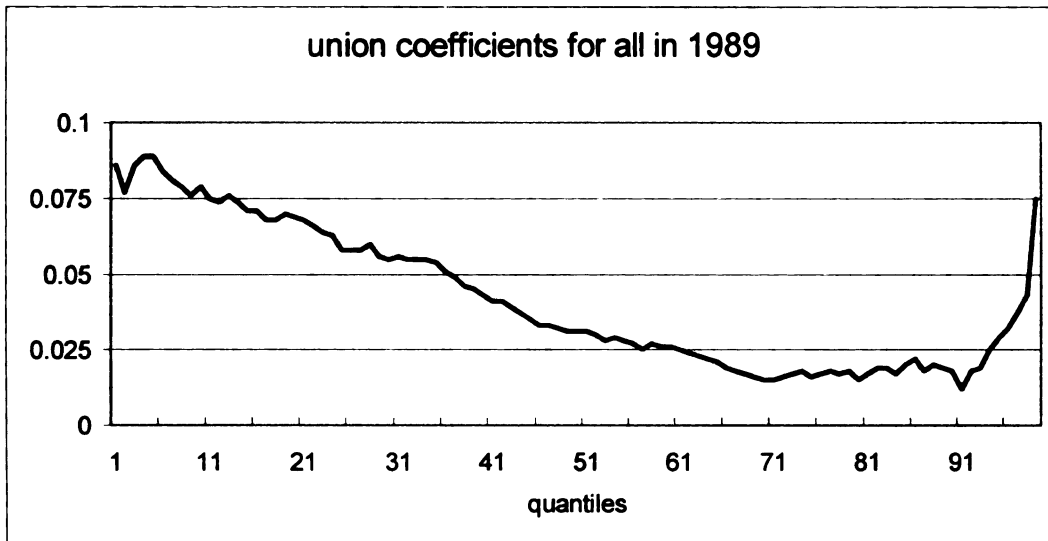
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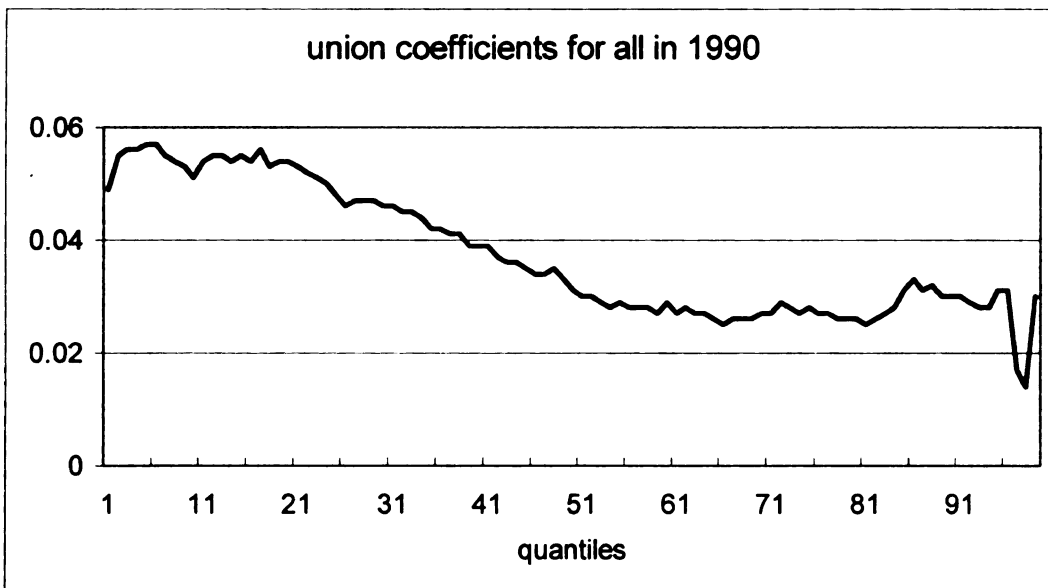
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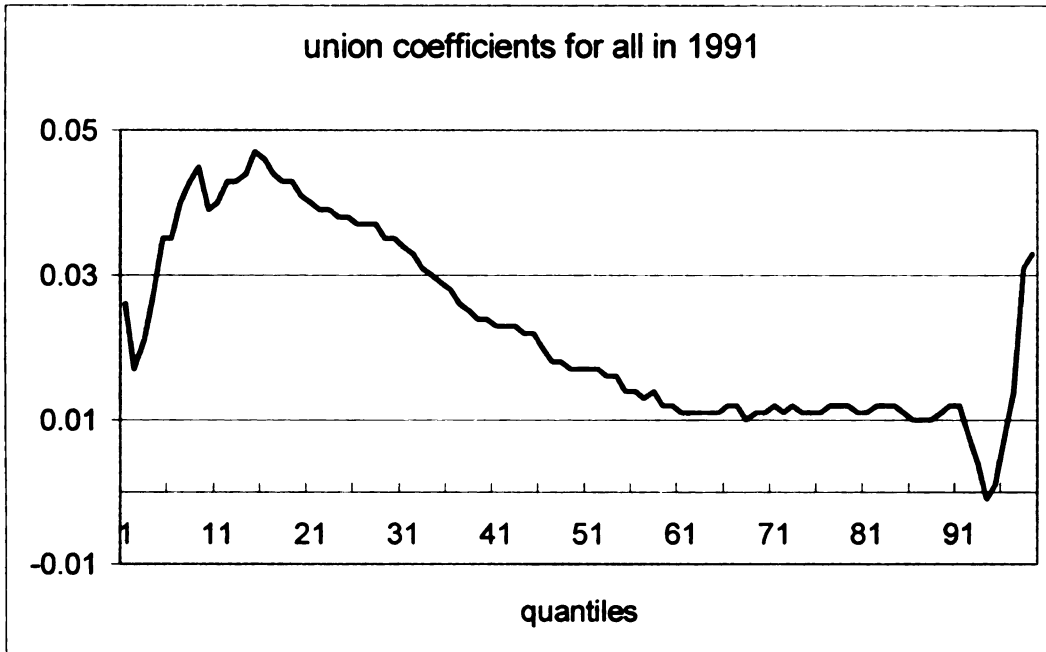
Note c



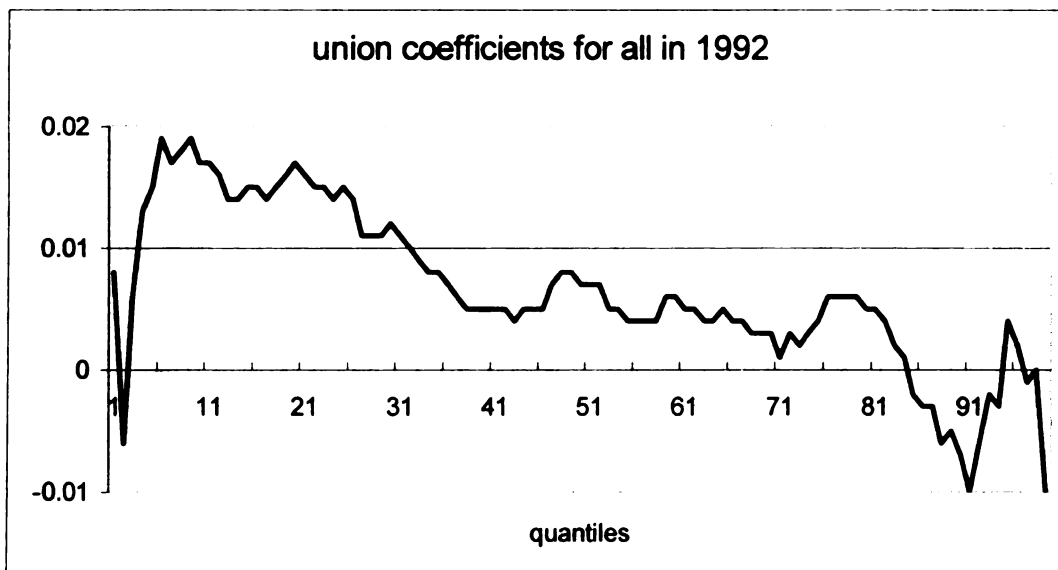
Note: all quantiles except $q=.91$ significant at the 5% or less level



Note: all quantiles except $q=.97, .98, \text{ and } .99$ significant at the 5% or less level



Note: all quantiles except $q=.01, .02, .67, .74, .85, .87, .88, .89, .92, .93, .94, .95, .96, .97,$ and $.99$ significant at the 5% or less level



Note: only quantiles at $q=.5\sim.13, q=.15\sim.26, q=.29\sim.32, q=.36, q=.48, q=.50$ and $q=.60$ significant at the 5% or less level

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Note

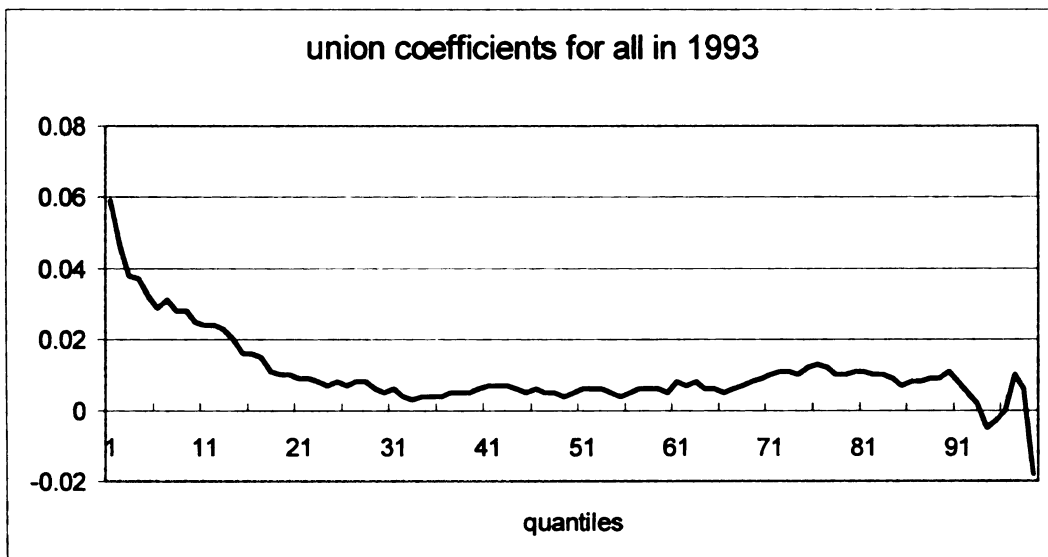
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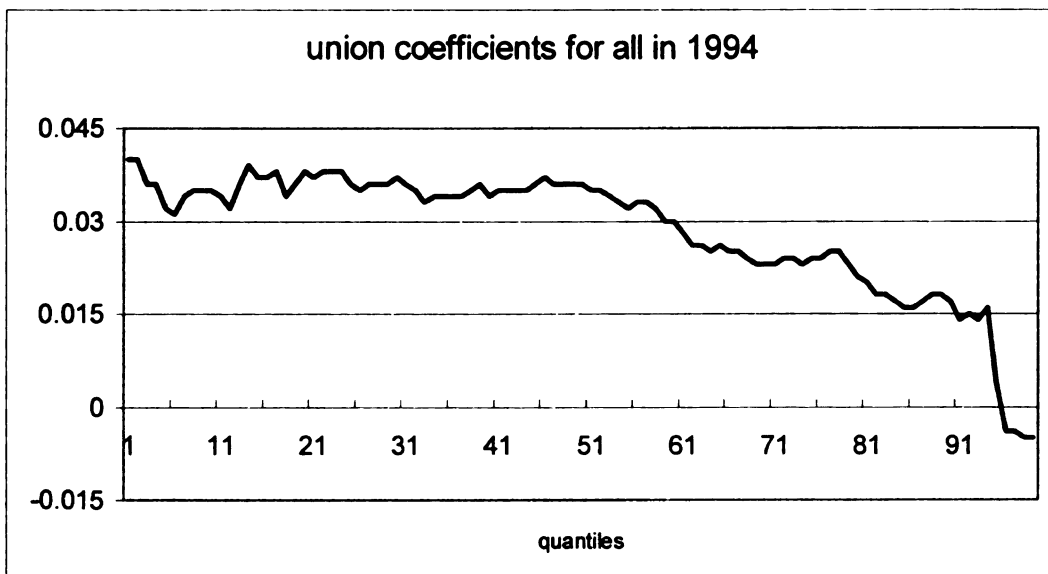
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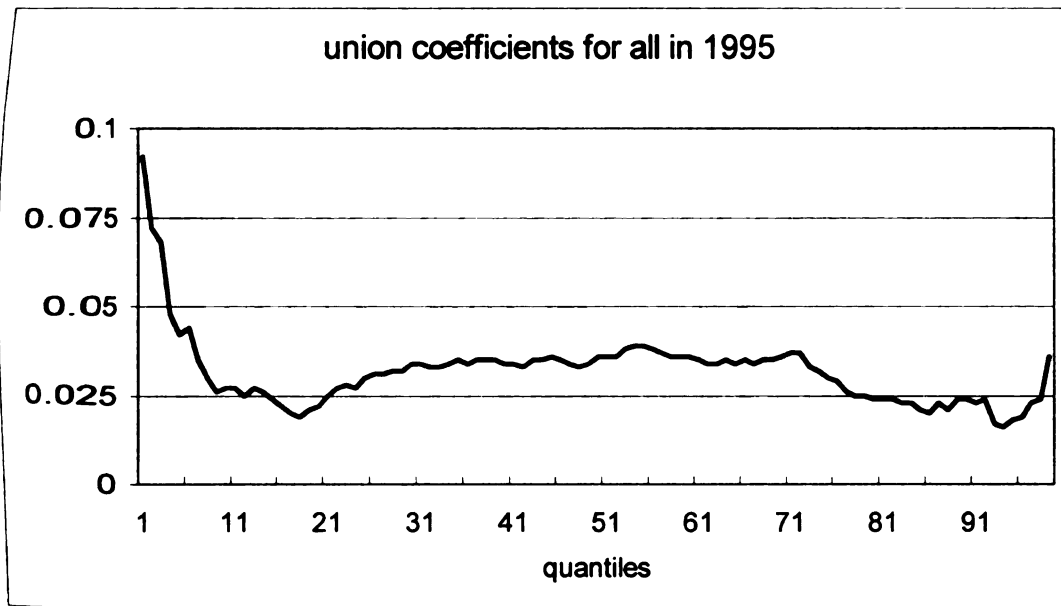
Note



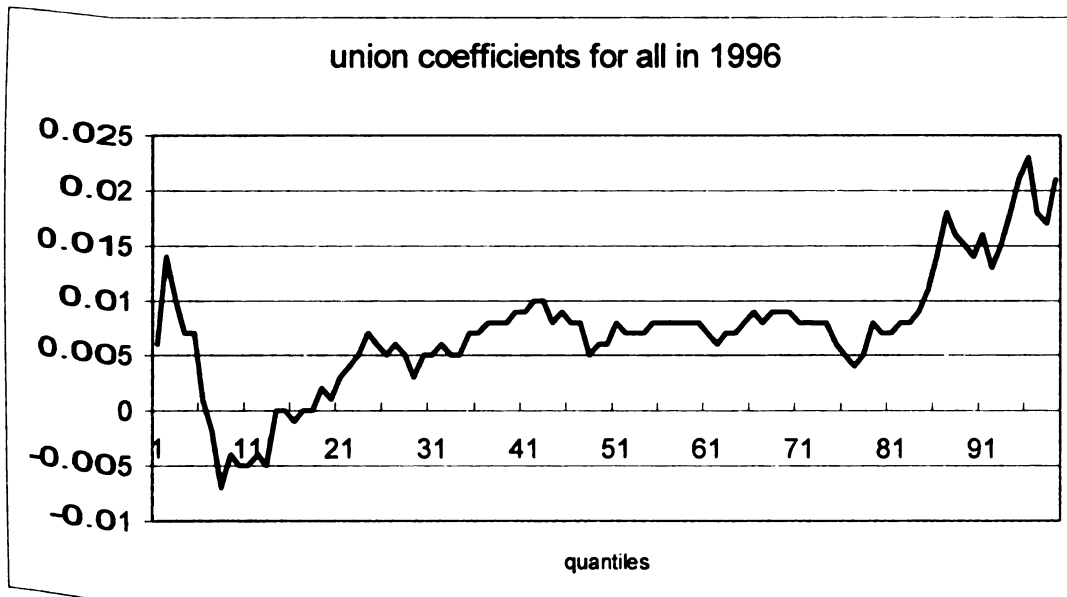
Note: quantiles at $q=.01 \sim q=.17$, $q=.23$, $q=.27$, $q=.41$, $q=.58$, $q=.61$, and $q=.70 \sim q=.84$ significant at the 5% or less level



Note: quantiles except $q=.92$, $.93$, $.95$, $.96$, $.97$, $.98$ and $.99$ significant at the 5% or less level



Note: all quantiles significant at the 5% or less level



Note: quantiles at $q=.37, .40, .41, .42, .43, .45, .55, .59, .60, .68, .69, .70, .79, .85 \sim .95,$ and $.97$ significant at the 5% or less level

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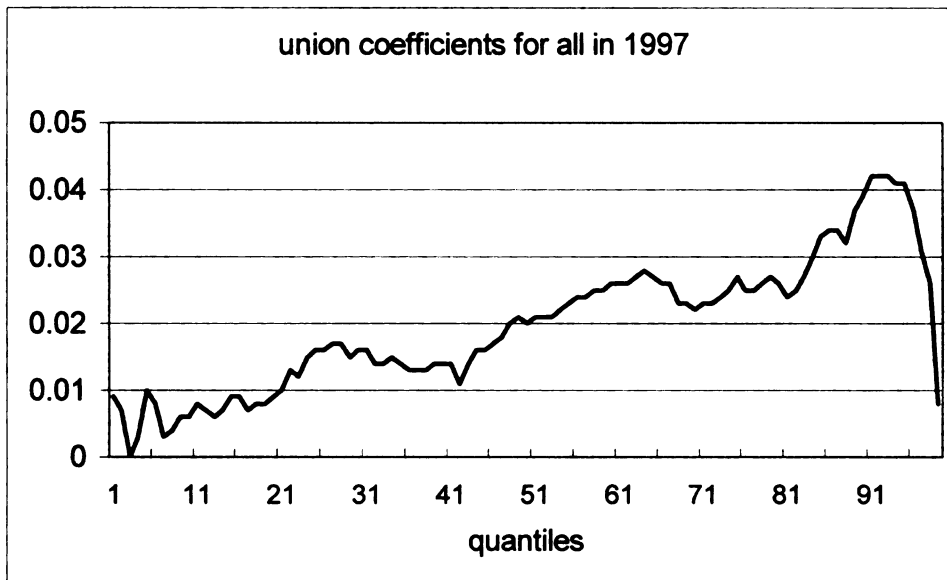
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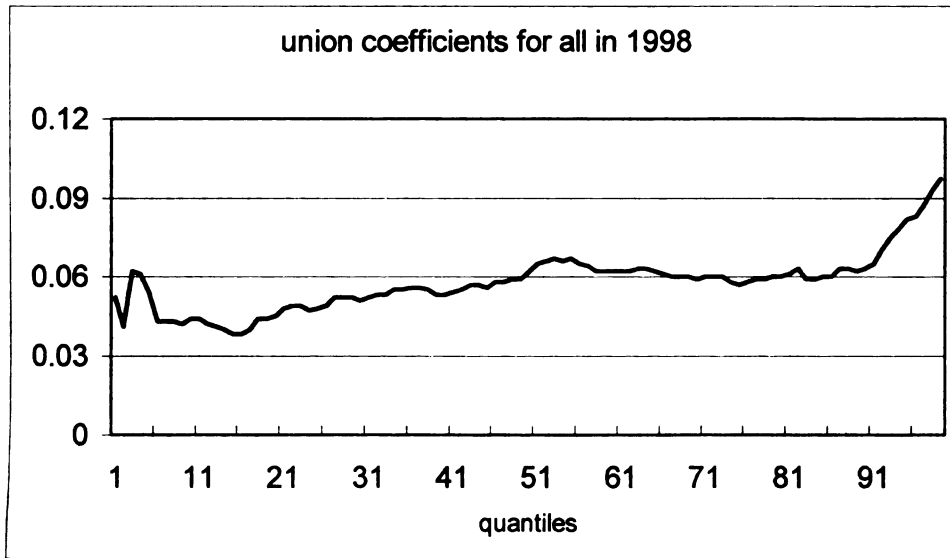
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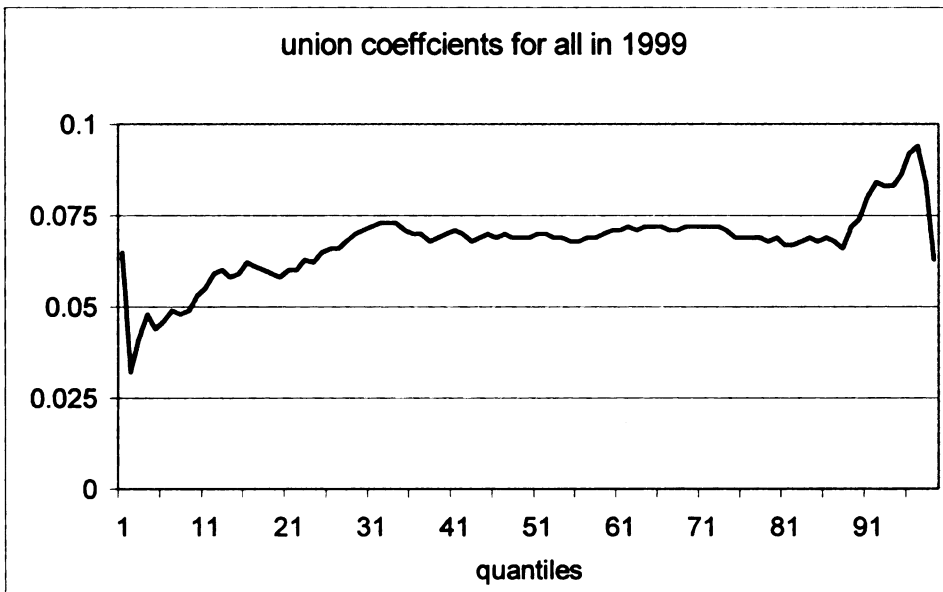
Not



Note: quantiles except $q=.01 \sim q=.20$, $q=.23$, $q=.98$ and $q=.99$ significant at the 5% or less level



Note: all quantiles significant at the 5% or less level



Note: all quantiles except q=.02 significant at the 5% or less level

higher union wage premium, compared to workers in the remaining quantiles. The situation was similar in 1993 and 1995. However, in the years 1988-1992, it is clear that the workers at the lower half of wage distribution have a larger union premium than the workers at the upper half of the distribution. Furthermore, it appears no significant difference in union premium among workers at the lower half of wage distribution existed in 1994.

The finding that the size of union premium was larger for workers in the lower half than workers in the upper half in wage distribution was not repeated during the period of 1996-1999. In 1996, the lower half of the wage distribution showed a smaller size of union premium, compared to the upper half of the wage distribution. Even the union

coefficients at from $q = .01$ to $q = .36$ are not significant statistically at the 5% level.²⁸ Again, the union coefficients from $q = .01$ to $q = .20$ in 1997 were not significant at the 5% level. This finding means that workers in the quantiles during 1996 and 1997 did not have extra wages through the unions, compared to the comparable workers in the non-unionized sector. In the period of 1996-1999, the union premium for the workers was smaller at the lower half than at the upper half of the wage distribution. In particular, workers ranging from $q = .01$ to $q = .20$ suffered the lowest size of the union premium, while well-paid workers ranging from $q = .80$ to $q = .99$ enjoy the highest amount of the union premium for the period. Furthermore, Figure 4-2 implies that the result from quantile regression for 1999 is not a more exceptional phenomenon because the phenomenon that the size of union premium is larger for the well-paid workers than for the lesser-paid workers started in 1996, two years before the Korean financial crisis occurred in December, 1997.

Comparison between Men and Women

Table 4-3 and Table 4-4 present union coefficients from the OLS and the quantile regressions for 1987-1999 for men and for women, respectively. Except for the period of 1987-1989 and 1999, the size of the union coefficient from the OLS is larger for women than for men. This finding is as expected in that previous studies argue that the union wage premium for women is likely to be larger than for men because of lower wages for women workers.

The results from the quantile regressions at $q = .10$, $.50$, and $.90$ imply again that the size of the union coefficients varies among the three quantiles for both men and women.

²⁸ I cannot report results in detail here due to space limitations.

Table 4-3. Size of Union Coefficient in OLS and Quantile Regressions for Male sample for 1987-1999

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Mean (OLS)	.085* (.007)	.057* (.005)	.049* (.007)	.034* (.005)	.024* (.005)	.004 (.005)	.018* (.005)	.023* (.005)	.028* (.005)	-.004 (.005)	.021* (.005)	.048* (.005)	.072* (.005)
$q = 10$	.087* (.013)	.054* (.007)	.068* (.015)	.055* (.008)	.034* (.011)	.010 (.010)	.016 (.008)	.022* (.010)	.009 (.007)	.024* (.009)	.002 (.007)	.038* (.012)	.053* (.007)
$q = 50$	.067* (.007)	.044* (.005)	.024* (.006)	.004 (.006)	-.001 (.006)	-.013* (.006)	-.009* (.004)	.013* (.006)	.019* (.006)	-.016* (.005)	.016* (.007)	.046* (.004)	.063* (.006)
$q = 90$	.066* (.010)	.037* (.005)	.041* (.009)	.020* (.008)	.005 (.009)	-.019 (.011)	.011 (.009)	-.004 (.008)	.005 (.007)	.011 (.007)	.030* (.007)	.046* (.007)	.063* (.008)
$N =$	32,670	31,964	16,890	26,369	25,933	22,500	26,079	25,092	23,347	24,817	23,332	22,172	28,565

Table 4-4. Size of Union Coefficient in OLS and Quantile Regressions for Female sample for 1987-1999

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Mean (OLS)	.030* (.009)	.030* (.004)	.041* (.007)	.060* (.005)	.035* (.005)	.019* (.005)	.023* (.007)	.051* (.007)	.062* (.007)	.025* (.007)	.024* (.007)	.070* (.007)	.060* (.007)
$q = 10$	.059* (.018)	.069* (.008)	.077* (.010)	.050* (.007)	.046* (.007)	.008 (.008)	.034* (.011)	.042* (.011)	.052* (.006)	.025* (.010)	.004 (.012)	.055* (.012)	.043* (.013)
$q = 50$	-.000 (.010)	.021* (.005)	.027* (.010)	.057* (.005)	.027* (.006)	.019* (.008)	.018* (.008)	.051* (.006)	.051* (.006)	.018* (.007)	.013 (.008)	.066* (.008)	.050* (.010)
$q = 90$	.016 (.011)	-.016* (.005)	-.008 (.010)	.029* (.009)	-.001 (.011)	-.006 (.008)	-.003 (.012)	.039* (.020)	.066* (.013)	.024 (.014)	.030* (.015)	.088* (.013)	.089* (.013)
$N =$	17,896	18,574	9,810	14,827	13,920	12,779	10,278	9,972	9,316	10,182	9,319	8,734	11,348

Note for Table 4-3 & 4-4: Robust standard errors (for OLS) and Bootstrap standard errors (for QR) in parentheses

Note for Table 4-3 & 4-4: * means significant at the 5% or less level

Note for Table 4-3 & 4-4: variables included: log of hourly real wage as dependent variable, four regional dummies, seven industry dummies, four establishment size dummies, marital status, three educational dummies, experience, experience squared, tenure, tenure squared, and union as independent variables

For men, the union coefficient at $q = .10$ is larger than at $q = .50$ and $q = .90$ from 1987-1994. Since then, the union coefficient at $q = .10$ is not the highest among the three quantiles any longer. Rather the union coefficient at $q = .90$ for 1996-1999 is larger than at $q = .10$ or $q = .50$. This result is similar with what we found in the analysis for all samples as seen in Table 4-2, Figure 4-1, and Figure 4-2.

In Table 4-4, the situation appears more complicated for women. The union coefficient at $q = .10$ is larger than those at $q = .50$ and $q = .90$ for the years 1987, 1988, 1989, 1991, and 1993.²⁹ In the years 1990, 1992, and 1994, the union coefficient at $q = .50$ is larger than that at $q = .10$ or $q = .90$, while the union coefficient at $q = .90$ is larger than those at $q = .10$ and $q = .50$ for 1995, 1997, 1998, and 1999. Also, we can state that the union coefficient at $q = .10$, $q = .50$ and $q = .90$ is larger in the late-1980s, in the early-1990s, and in the late-1990s, respectively.

For a better understanding of how unions affect wages differently for men and women workers at each quantile in the distribution, I ran quantile regressions at every quantile for the 13 years for both sexes.³⁰ Figure 4-3 shows the results. In 1987, union coefficient for men moved in a relatively narrow boundary, ranging from .05 to .01. Until $q = .80$, we can see that the union coefficient for workers at the bottom of the wage distribution showed a larger size and then decreased slowly, when ignoring the last a few quantile showing a slope upward in the upper end of the distribution. This fact supports the argument that low-wage workers benefit the best from the trade unions, rejecting the OLS assumption that the union wage premium will be constant, regardless of the quantile in

²⁹ In 1996, union coefficient at $q = .10$ is .025 and that at $q = .90$ is .024. Because the difference in union coefficient between the two quantiles is too small, we will not consider it further.

³⁰ It requires 1,287 quantile regressions (99quantiles * 13 years) for men and women workers, respectively.

Figure 4-3. Union Wage Premiums for men and women for 1987-1999

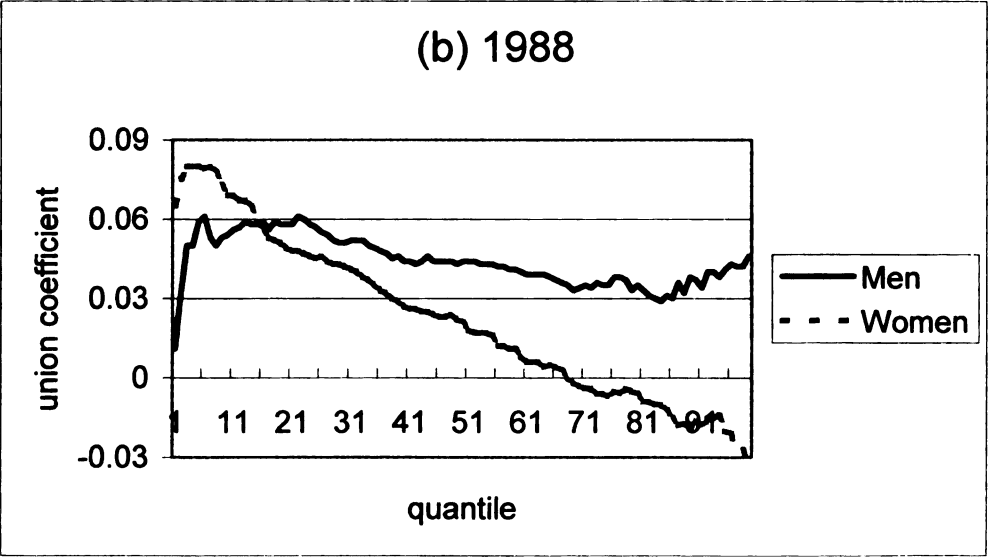
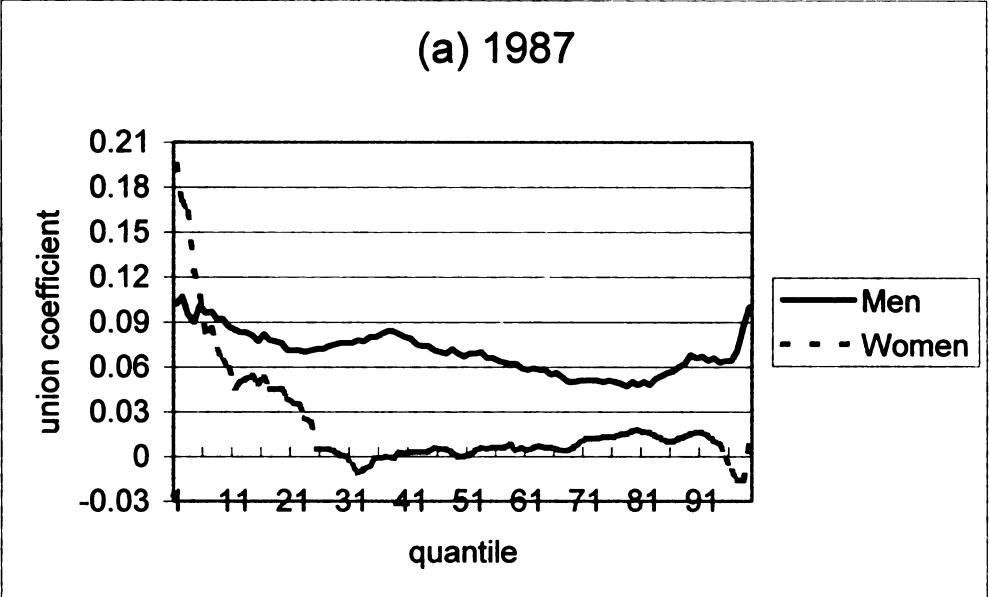
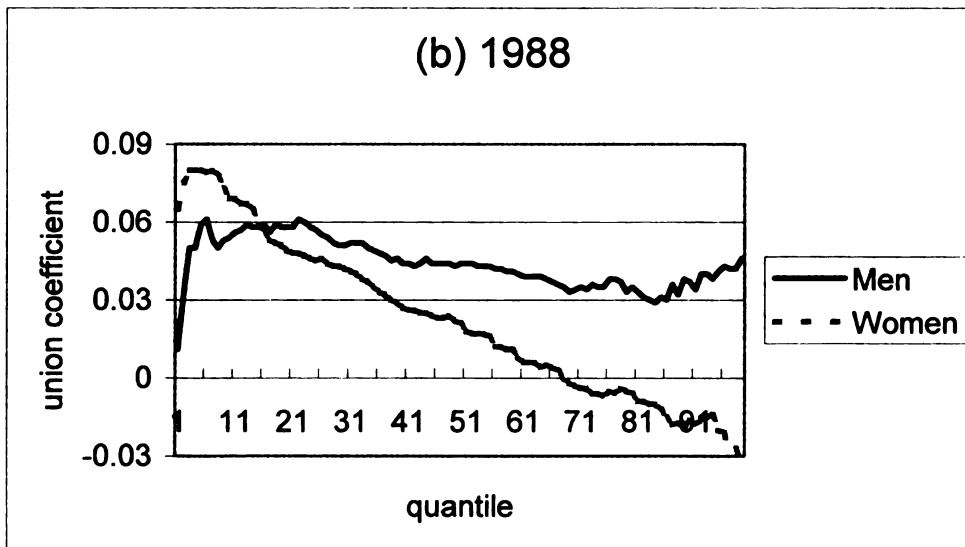
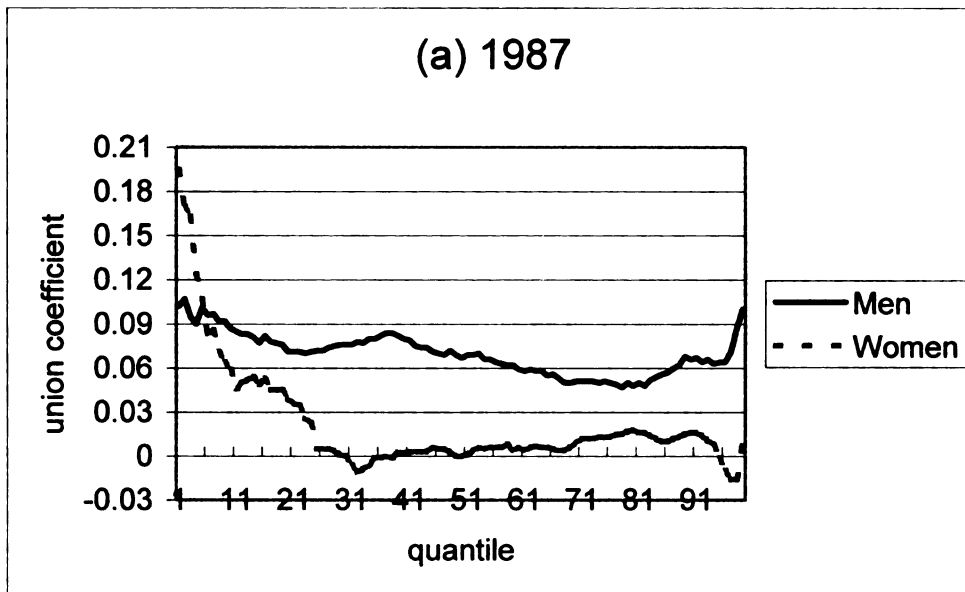


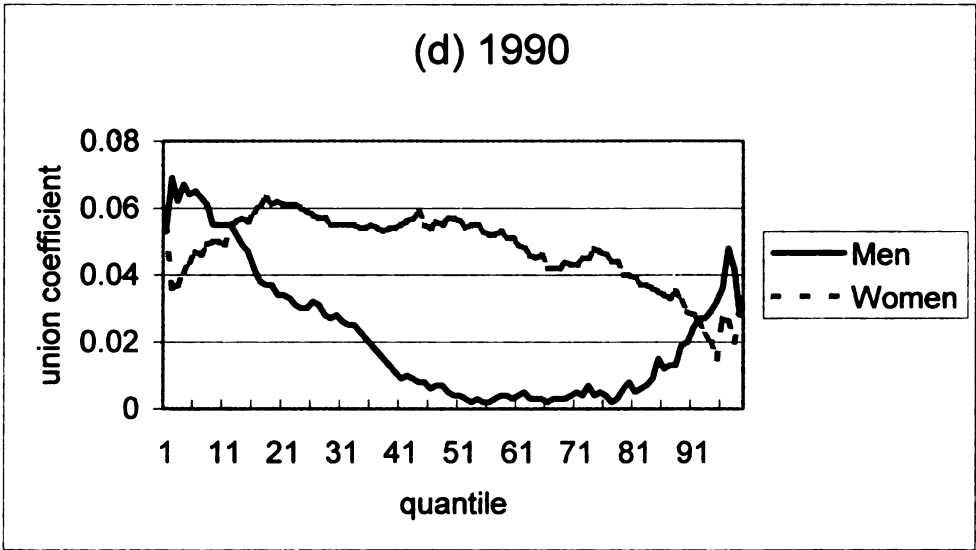
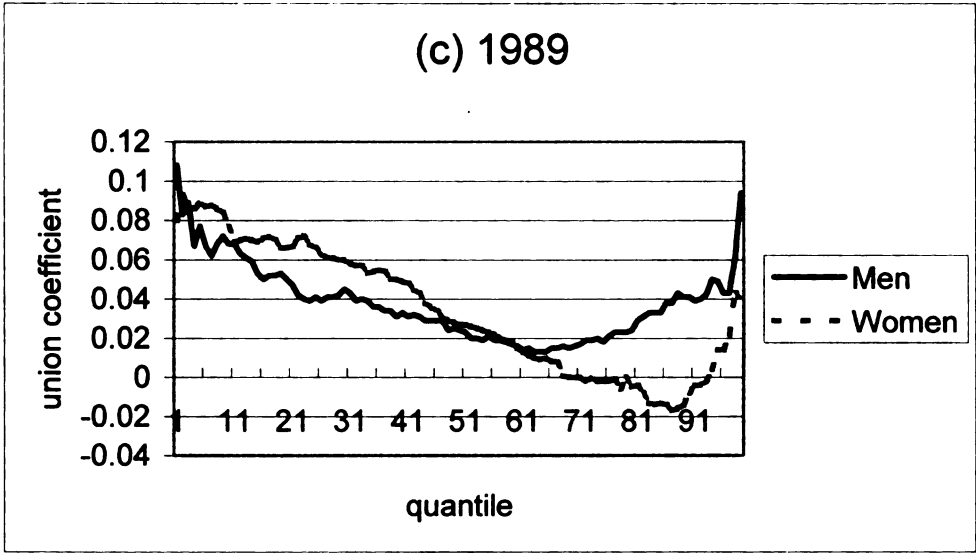
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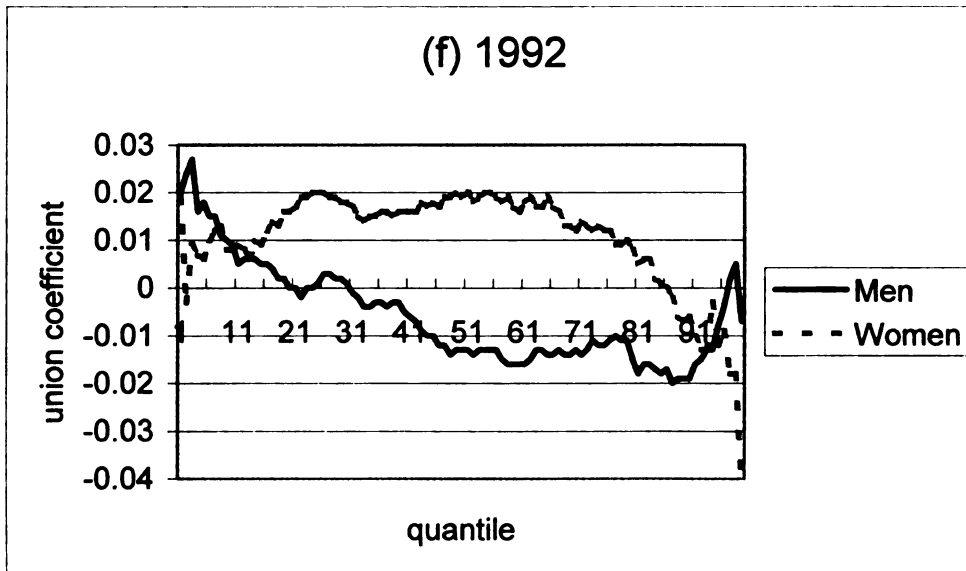
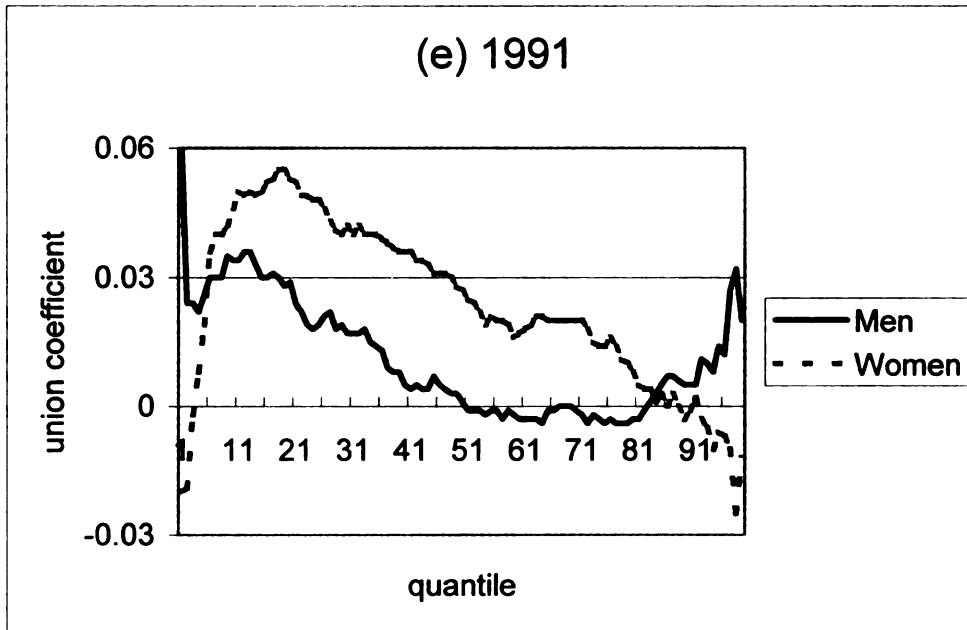
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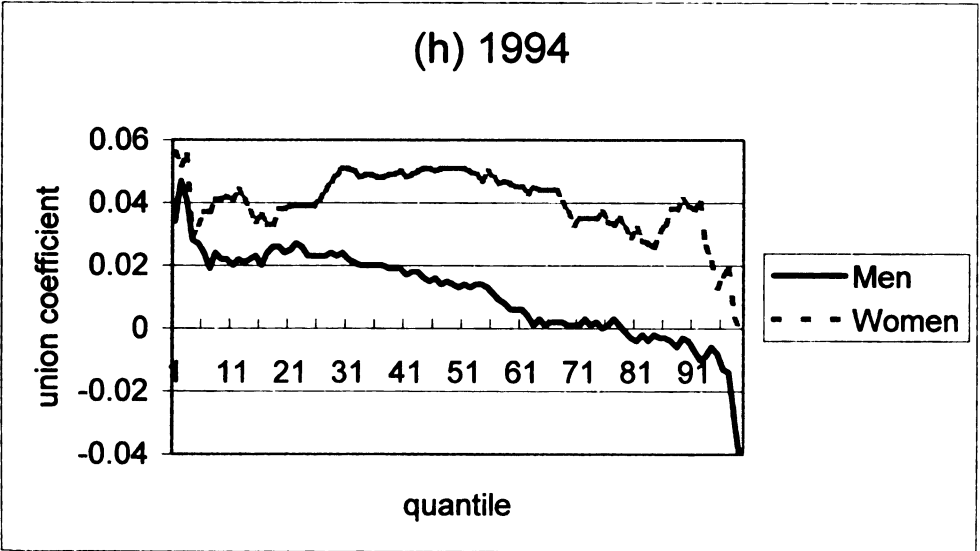
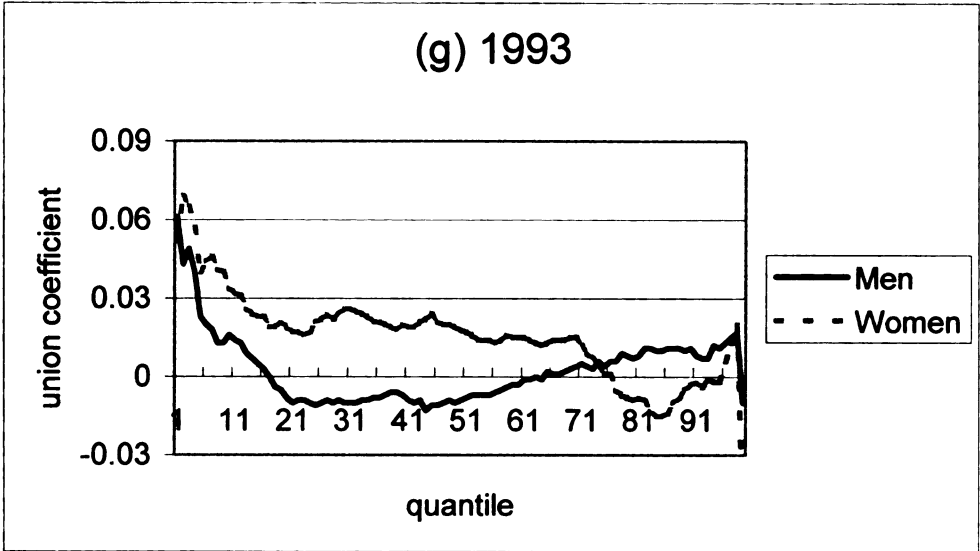
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Figure 4-3. Union Wage Premiums for men and women for 1987-1999



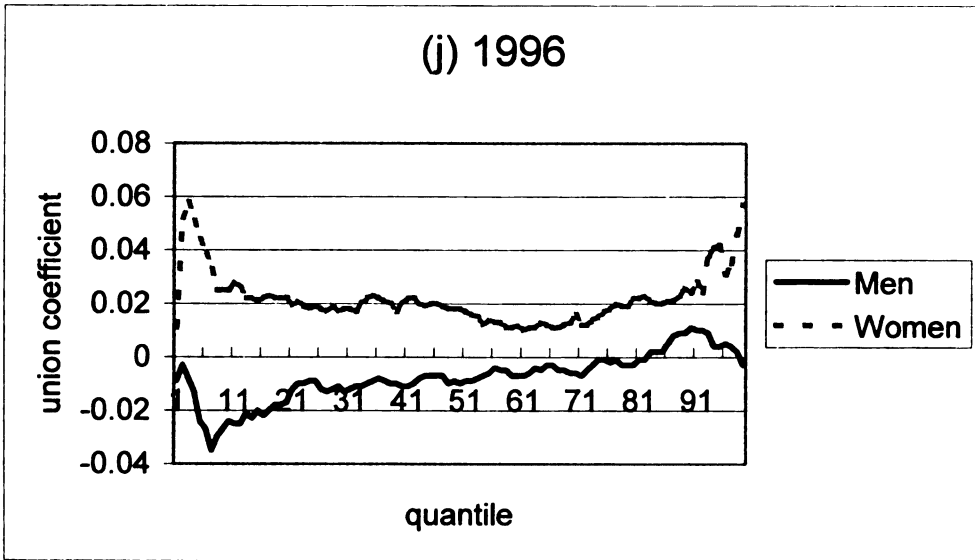
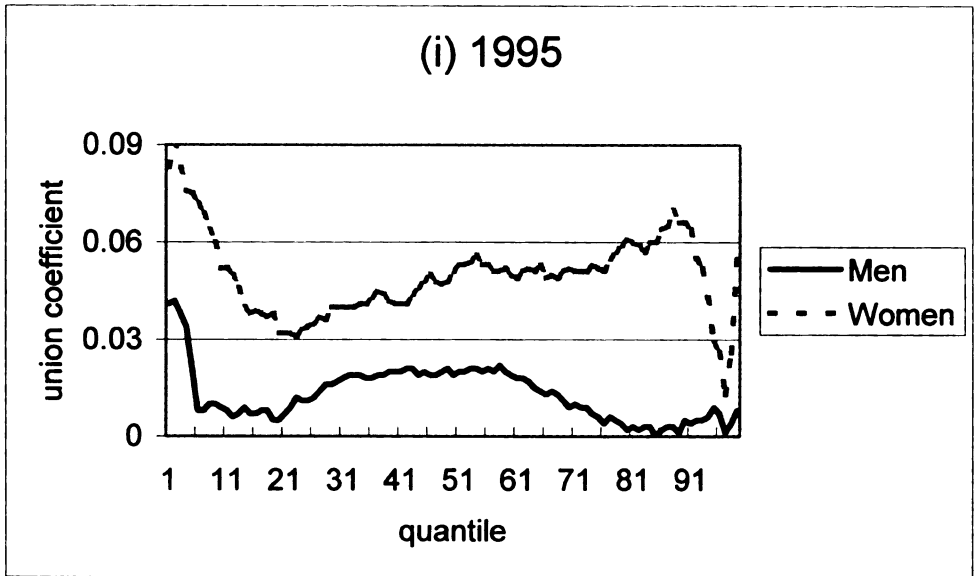


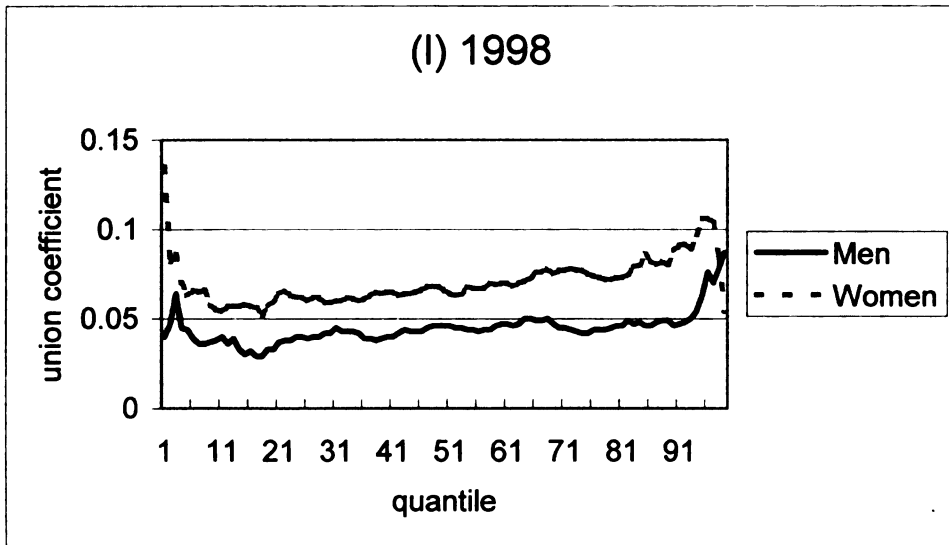
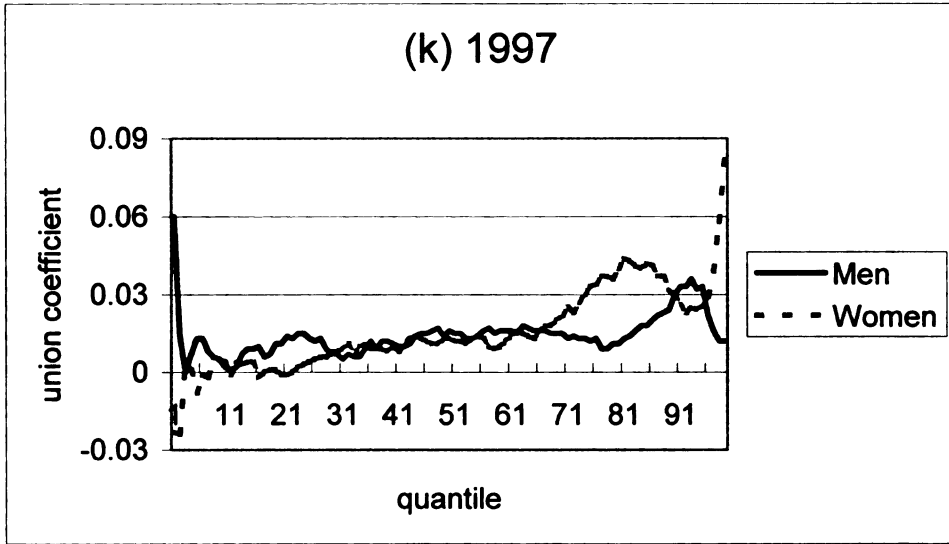


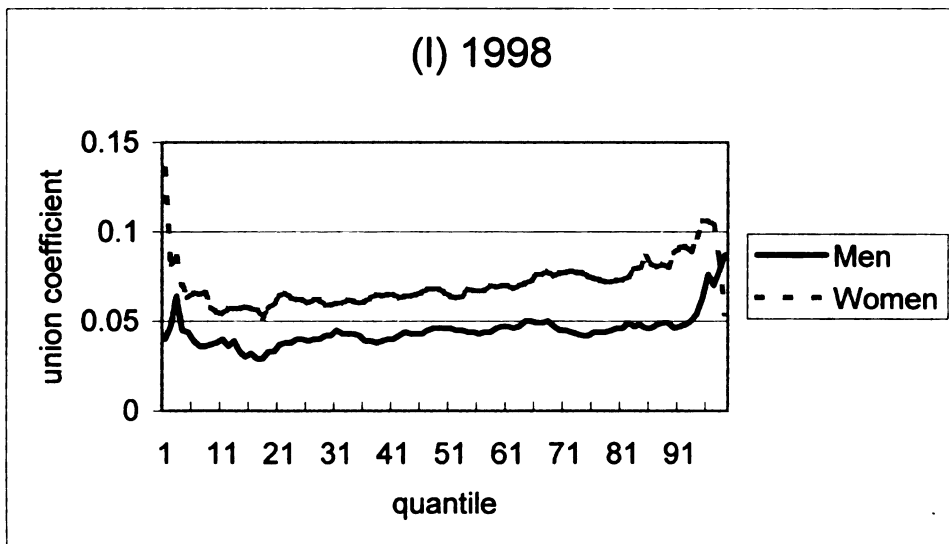
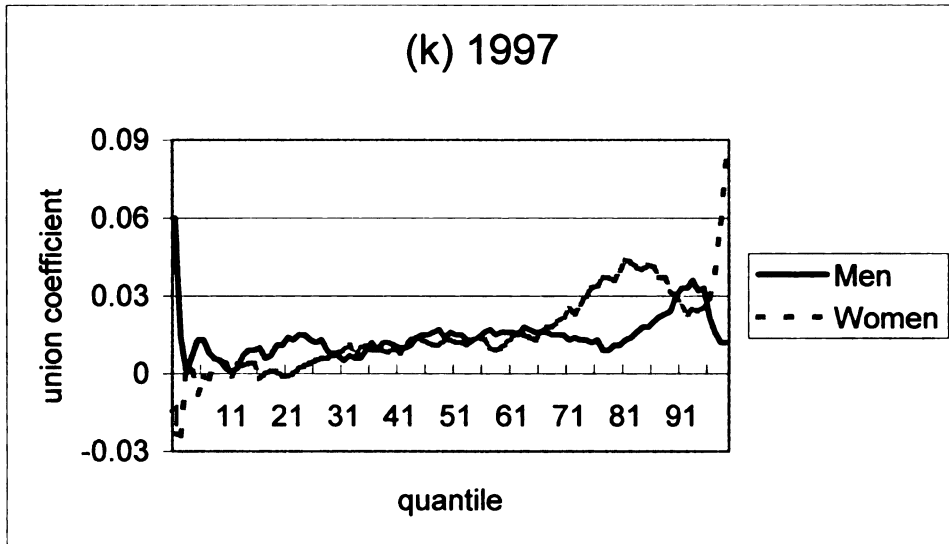


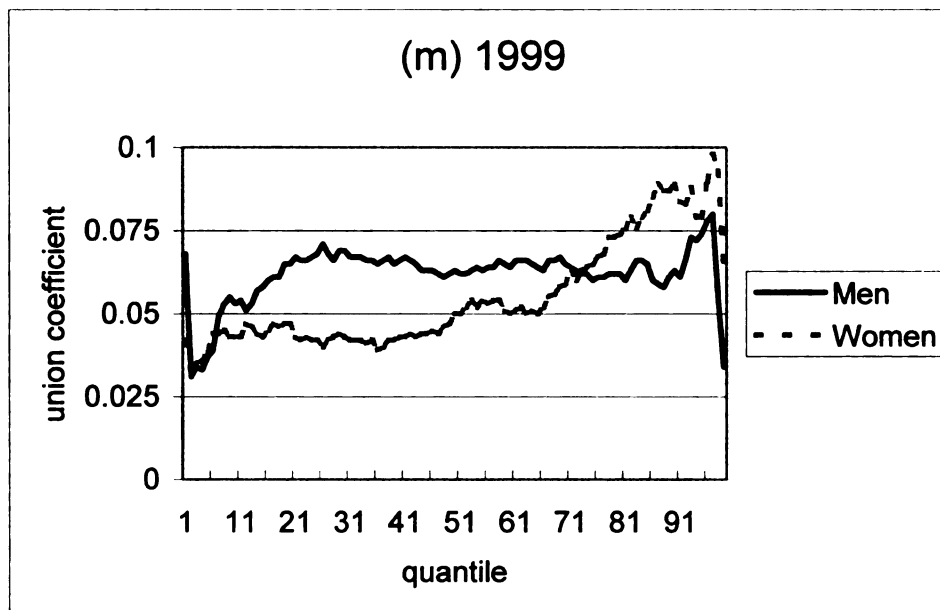
union coefficient

union coefficient









the wage distribution. In the case of women, the shape of the union coefficient depending on quantile is more extreme, compared to men. With the highest number of .195 at $q = .01$, a series of statistically significant union coefficients in 1987 stop at $q = .21$.³¹ This finding means that only female workers in 21% in the wage distribution earn more wages, when compared to female workers in the non-unionized sector. Therefore, when we view only the union coefficient estimated by the OLS as seen in Table 4-4, we may have made an error by stating that all female workers will consistently earn more wages by 3.05% ($=\exp(.03)-1$), due to the unions. The fact that the significant and positive union premium for female workers is found for some workers who are in the lower 21% of

³¹ At $q = .79, .80, \text{ and } .81$, the union coefficient becomes significant again at the 5% level, in fact.

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wage distribution may suggest that female workers suffer from structural discrimination within unions.

Since the year of 1987, the percentage of female workers showing a positive union premium increase year by year as seen in Figure 4-3, for the period of 1990-1998, it is apparent visually that the union wage premium is larger for women than for men.

The view that the size of union wage premium, expressed by percentage of wages, for less-paid workers is larger than the size of union wage premium for better-paid workers can be supported to some degree by the case for females in 1988, 1989, 1990, 1991, and 1993 and the case for males in 1987 and 1994. A good example is female workers in 1988 where the lowest 10% of wage distribution shows the highest wages and then the union coefficient decreases at a constant rate as the quantile increases. Finally, the upper 30% in the wage distribution appears to suffer from wage losses due to the unions.

An interesting finding is that a U-shape distribution of union coefficients varied by quantile is found in the case of men in the period between 1989-1993 and in the case of women in 1996. This finding means that the union premium was larger for both workers in the lowest part and workers in the highest part and smaller for workers in the middle wage distribution. For instance, workers in the interval ranging from $q = .38$ to $q = .84$ in 1991 did not show significant union coefficient, while other workers did. So far, we do not know how this phenomenon occurred and which factors in the unions result from it.

As a whole, a new trend that the union premium was low at the bottom and high at the upper half in the wage distribution becomes clear in 1996. The trend was already found in the Figure 4-2 dealing with all samples.

Sensitivity Tests

The robustness of the results above should be double-checked because a possibility exists that an important additional or omitted variable may cause very different results than those we observed prior. To answer this question, I added more variables when they are available in a specific year. For example, I ran additional quantile regressions including four occupational dummy variables as well as the already-used variables for three years, 1987, 1993, and 1999, for all men, and women samples. The partial results are shown in Figure 4-4.³² It suggests that adding four occupational variables do not affect the results without occupational variables at all.

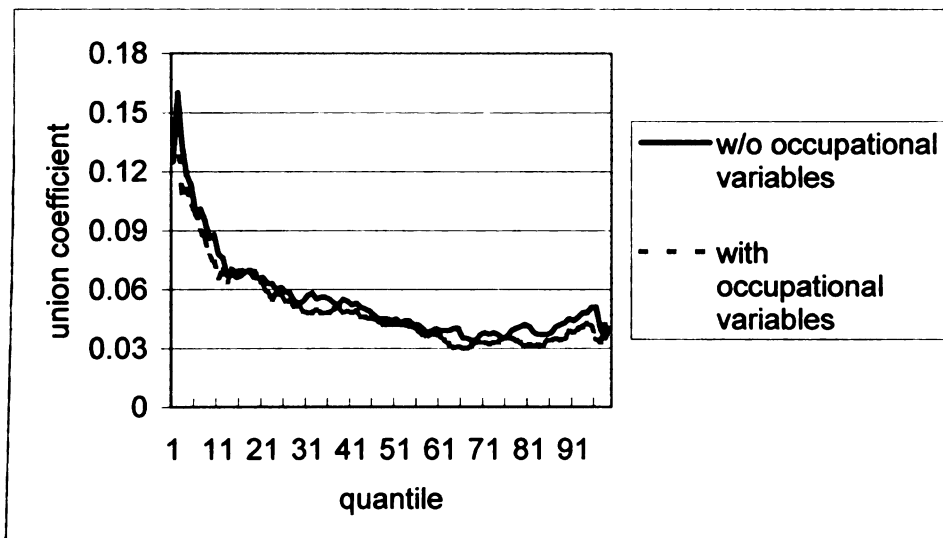
Usually 20 replications with regard to bootstrap standard errors are generally sufficient even in the case of heteroscedastic errors (STATA, 1999). In fact, Poterba & Rueben (1994) and Hartog et al. (2001) calculated bootstrap standard errors by using 20 iterations in their study. However, Chamberlain (1994) conducted bootstrapping with 500 replications in order to obtain more efficient bootstrap standard errors. In order to assure if significant differences occur between 20 replications and 500 replications done by Chamberlain (1994), I repeated the same quantile regression with 500 replications for the three years, 1987, and 1999, again. However, I did not find any significant difference.

In sum, we may say that the results from quantile regression listed prior are quite robust because no changes occurred after adding occupational variables and checking different standard errors as well as the large number of samples in each year.

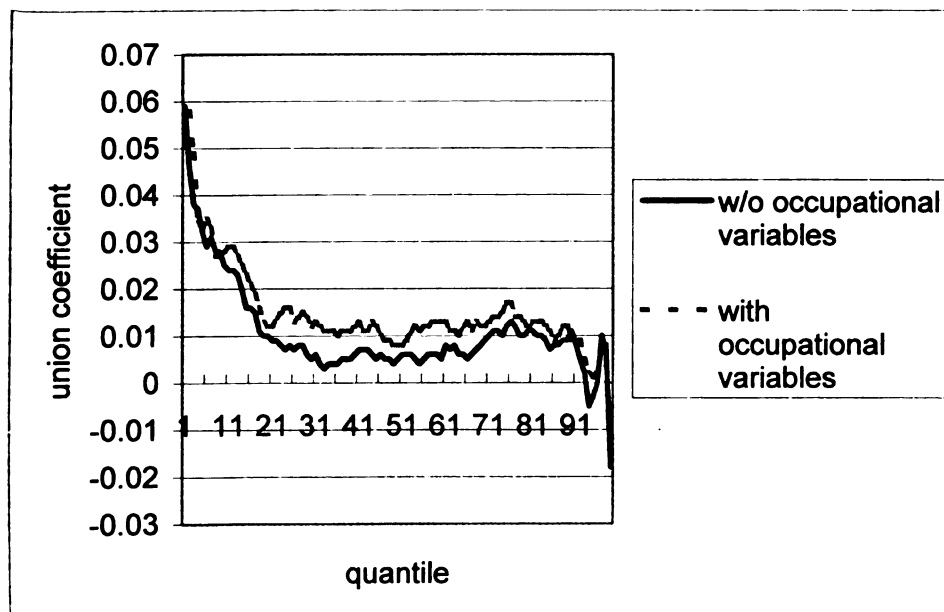
³² The results for males and females in 1987, 1993, and 1999 are available.

Figure 4-4. Comparison of Union Coefficients in between the equation including Occupational variables and the equation without the variables for men and women In 1987, 1993 and 1999

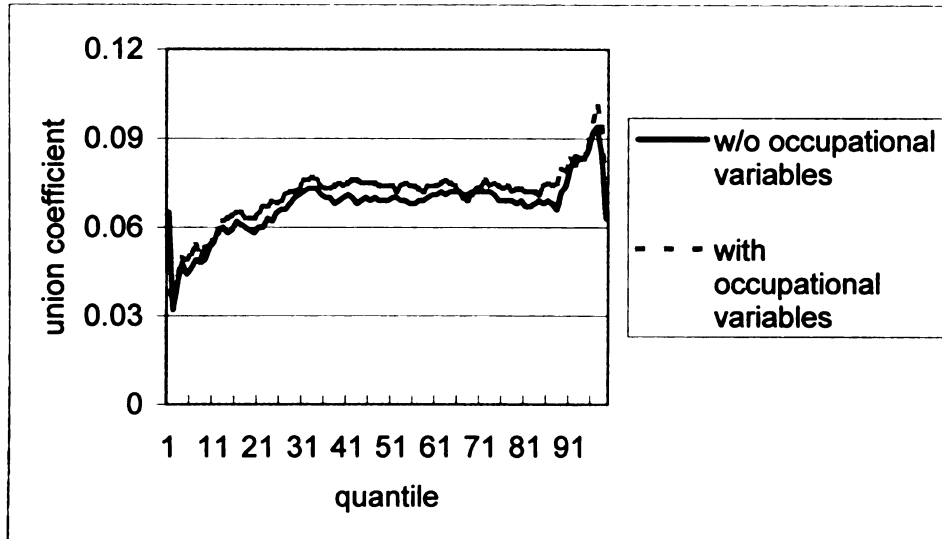
(a) All samples in 1987



(b) All samples in 1993



(c) All samples in 1999



Implications and Interpretation of Results

The purpose of interference by the government into labor market in Korea was to erase the effects of institutions such as trade unions on wages for the period prior to 1987 (Song, 1991). The oppressions by the government in the 1990s shared the same purpose. If the purpose of interference by the government is true, it means that no significant union wage premiums should be seen in the period post 1987. In fact, our results implying significant union wage premium in Korea indicates that the purpose of interference by the government into the labor market was not fulfilled. Also it means that trade unions can be viewed as institutions offering economic incentives to which workers are likely to be attracted.

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The results from the quantile regression indicate that the OLS model based on mean values may miss important features of the union wage effects on the wage structure. Quantile regression reveals that the union wage effect is not constant across the conditional wage distribution.

In addition, the union wage effect across the conditional wage distribution varies greatly for the period of 1987-1999. For 1987-1995, in detail, the largest union wage effect is located at the bottom of the conditional wage distribution. However, the largest union wage effect moves from the bottom to the middle and to the top of the wage distribution.

The results from quantile regressions are not surprising in that Korean unions have protected the interest of the workers better for the years 1987-1993 who remained at the bottom of wage distribution. It is thought that workers at the bottom end of the wage distribution gain the largest wage advantage from unionization (Farber and Saks, 1980). Also the finding is understandable when considering the situations for 1987-1993 with regard to who initiated Great Labor Offensive in 1987. The period of 1987-1993 had been heavily shadowed by the influences of the Great Labor Offensive in 1987. Unskilled or semi-skilled male blue-collar workers aged from the late-twenties to thirties, who are expected to be at the lower half in the wage distribution with shorter tenure, initiated the waves of union-organizing drive at that time. They took most of the presidential positions in the new enterprise unions that were created after the Great Labor Offensive. Then, as a reasonable result, demands for wage increase every year for the period reflected the interests of the workers at the lower half of wage distribution in most cases by strict fixed-amounts of wage-increases definitely favorable to workers who were paid less,

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rather than the fixed-rate of wage-increase that might be favorable to high-paid workers (Jung, 1992). Table 4-5 presents how unions determine wage increases in 1990. It shows that fixed amounts of wage-increase are the most favored way by unions in all three types of firm size. When regarding mainly fixed amounts and partly fixed rates of wage-increase as a variant of a fixed amount of wage-increase, the importance of a fixed amount of wage-increase appears dominant in all firm sizes. Another finding from the table is that the importance of a fixed amount of wage-increase is larger in the relatively small-sized firms hiring less than 300 employees, compared to the larger-sized firms hiring 500 or more employees.

Table 4-5. Ways to Determine Wage Increases by Unions across firm Size in 1990

	Firms hiring 100-299 Workers	Firms hiring 300-499 Workers	Firms hiring 500 or more Workers	Total
Fixed Amount Increase	64 (54.2%)	18 (39.1%)	31 (32.3%)	113 (43.5%)
Mainly Fixed Amount and Partly Fixed Rate	16 (13.6%)	7 (15.2%)	15 (15.6%)	38 (100%)
Fixed Rate Increase	15 (12.7%)	8 (17.4%)	19 (19.8%)	42 (100)
Mainly Fixed Rate and Partly Fixed Amount	14 (11.9%)	8 (18.4%)	18 (18.8%)	40 (100%)
Other	9 (7.6%)	5 (10.9%)	13 (13.5%)	27 (100%)
Total	118 (100%)	46 (100%)	96 (100%)	260 (100%)

Source: Jung (1992)

The results for 1996-1999 are surprising in that Korean unions have protected the interests better of workers who occupy the top part of the wage distribution from 1996-

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1999. Prior the thought was the workers at the top gained the least wage advantage from unionization (Farber and Saks, 1980). Thus, this finding is contrary to the literature on the issue, and the well-paid and skilled workers may benefit only from the craft unions or political co-optation by the authoritarian corporatist government (Freeman, 1980; Song, 1991). However, no significant emergence of craft unionism or political co-optation by the government occurred in the mid-1990s in Korea. Also two-tiered wage agreements, which are believed to push down wages for newcomer workers and to cause union premium effects favored to existing workers, are not found in Korea (Koo, 2001).

At least three explanations may account for the unexpected finding. The first explanation unraveling the unexpected finding regarding unions protecting well-paid workers in the late 1990 comes from employers and the government. Korean employers in the 1990s introduced many schemes that may have affected wage increases, such as pay-for-performance and team-based pay system. In addition, the government supported those employers' changes. However, the ways to increase wages for well-paid workers better applied to mainly white-collar workers in large companies in the 1990s. It is unlikely that the schemes changed how union premiums are distributed across wage distribution. In addition, the finding of unions protecting well-paid workers from 1996-1999 should not be interpreted as a simple sign showing that unions had lost their original spirit and had declined as a result in the mid and late 1990s. Even though union density has slowly declined since 1990, the Korean unions in individual firms showed that they have sufficient bargaining power to determine how to retain schemes to increase wages favorable to them by themselves as seen in the general strike of 1997 and 1998 during the Korean financial crisis (Choi, 1997; Kuruvillar and Erickson, 1999; Koo, 2001).

The second explanation is from internal union matters. Even though ten or more years have passed since the Great Labor Offensive in 1987, the workers who built new unions in the late 1980s still run most of the unions at present. They are not workers anymore who occupy the lower end of wage distribution and those they represented in the late 1980s. Their personal needs regarding wages may have moved from the contents of wage increase from the workers at the lower end to workers at the middle or upper half of wage distribution. Also the unions have faced accumulated complaints from workers at the upper end who have gained the least advantage from collective bargaining until the mid-1990s (Jung, 1992). As a result, the number of bargaining outcomes to increase wages according to the fixed-rate method rather than the fixed-amount method has increased in the 1990s (Jung, 1992).

The explanation focusing on union leaders assumes that there has been no change in the composition of union leaders, but their location in the wage distribution has moved from the bottom to the median or the upper part of wage distribution. However, a different explanation should be considered, too. That is, the emergence of well-paid workers with a higher union wage premium may be a result of their entrance into unions. Many report that wage differentials between high school graduates and university graduates and between blue-collar and white-collar workers decreased considerably since 1987.³³ Before 1987, university graduates and white-collar workers had been given large educational or occupational wage differentials due to the employers wage policy to protect them from

³³ As will be explained in chapter later, the return rate of university graduates relative to high school graduates (100%) in the wage equation has decreased from 152% in 1988 to 130% in 1999 in non-unionized sector and from 144% in 1988 to 121% in 1999 in unionized sector, respectively, when estimated by OLS. Regarding the wage gap between blue- and white-collar workers, average wages for blue-collar manufacturing workers have increased from 49.0% in 1981 to 60.1% in 1987 to 80.5% in 1996 of the average wages for white-collar workers (Chang, 1998).

the influence of unions. As new unions reduced the wage differentials and a more favorable political environment to establish or join unions was created since 1987, many workers had incentives to join unions. In fact, a large portion of new unions, established in the 1990s, were white-collar unions (Jeong, 1993). It was not difficult even to find foremen, who expected to be at the upper part of wage distribution, joining already-established unions in manufacturing firms. In addition, a decline in the manufacturing sector in the 1990s needs to be considered. The phenomenon, which occurred from 1996-1999 was a result of an important change in the driving-force from the less-paid workers at the bottom to the well-paid workers at the upper of wage distribution due to the emergence of new well-paid union members. Also the change may imply that the phenomenon of a larger union wage premium for well-paid workers in the late 1990 would be continued in the near future as long as no other change regarding composition of union membership occurred.

This line of explanation is related to the criticism of labor-autocracy and trade unions for well-paid workers two segmented labor market theory. The high cost of organizing for temporary workers, part-timers, and workers hired on small-sized firms resulted in extremely low union density in the marginal sector and unions only for well-paid permanent workers.

Another possibility to explain the unexpected higher union wage premium for better-paid workers who are located in the upper tail of wage distribution comes from whether a specific 'wage norm' existing in Korea produce the result. While wage norms are generally defined as a nominal wage series, wage norm is about "the direction of the (union wage) premium (Wachter and Carter, 1989; 234)." In the context of this study,

wage norm is defined as an implicit collective norm, shared by most of employees, regarding how to distribute union wage premium across different groups of workers differently locating in the wage distribution and which types of order regarding the distribution should be chosen by trade unions. Assuming that wages are very limited resources to be distributed among employees, egalitarian institutions like trade unions may decide to boost wages for less-paid workers first, and to increase wages for better-paid workers later. The situation in Asian countries such as Korea and Japan might be true. In fact, all government, employers, and employees had accepted the principle of 'generous to the less-paid and strict to well-paid' for a long time (Song, 1991; Bae, 1995). According to the wage norm argument, higher union wage premium for well-paid workers in 1996-1999 become a phase of the process realizing the norm, existing after higher premium for the less-paid in 1987-1993 and for the median workers in 1994-1995. The prevalence of relatively short-term labor contract between employers and unions in Korea may contribute to preventing internal conflicts within unions, regarding which group of workers will benefit first and which group will be next, from developing to serious organizational contention, through adjusting different interests from various workers group every year.

So far we have no empirical data to solve the question of why the phenomenon occurred. Therefore, the three explanations listed above remain merely speculation.

The finding that the quantile benefiting from bargaining varies depending on the year investigated also implies that median voter model cannot always hold. This study appears to support the finding by Parsons (1992), arguing that the egalitarian wage policies, benefiting low-skilled workers, are also found in the bargaining units, which high-skilled

majorities dominate. The median voter model assumes the important role of the median voter is favorable to less-paid workers than well-paid workers under the condition of wage rigidity resulting from long-term bargaining contracts and their high level of risk aversion (Booth, 1984). Wage rigidity means that long-term union contracts make it possible for union wages to be insensitive to factors regarding aggregate demand conditions in the economy such as unemployment and inflation (Hendricks, 1981). While unexpected unemployment pull down wages in unorganized firms, for example, wages in unionized firms can be protected by long-term contracts. Also the introduction of cost-of-living adjustment (COLA) clauses into bargaining contracts between the unions and employers guarantee union wages helped to keep pace with inflation. It has been said that the relatively constant union-nonunion wage differential in the U.S. since 1970s is due to the long-term contracts and the COLA clauses (Kaufman & Hotchkiss, 1999; 614-615).

Different from the U.S., collective bargaining in Korea can be characterized by the lack of long-term contracts and the COLA clauses. Since 1987, bargaining over wages and fringe benefits between employers and unions in most bargaining units has been repeated every year (Bae, 1995). In Korea, it is difficult to find long-term contracts such as three years or five years, which are common in the U.S. As a result, no need for the COLA clauses exists in Korea in that if unexpected inflation occurs in a year, the inflation could be reflected in the bargaining table next year. This situation in Korea may undermine the role of the median voter in the Korean unions and distort the distribution of a union premium in wage distribution. A U-shape union coefficient varied by quantile, found in the case of men in the period of 1989-1993 and in the case of women in 1996 in Figure 4-3, may be a sign of the weak role of median voter in unions. Also relative higher

union premiums for well-paid workers compared to less-paid or median workers for 1996-1999 may result from the weak role of the median voter.

The findings with regard to yearly changes of union wage effect, 'a gradual decline for the late-1980s and early-1990, some fluctuations of a narrow range in the mid-1990s, and the relative high union wage premium during 1998-1999 under the crisis,' may give us a hint regarding the changes in union density. The economic perspective regarding unions by Dunlop (1944) implies that union wage effect will determine how workers view trade unions as attractive and become union members. In other words, the size of the union wage effect impacts union density. In fact, it appears that the changes in the union wage effect have kept pace with changes in union density. While the period of a declining union wage effect for 1987-1993 is the time revealing such a decline, union density increased as the relative large union wage effect occurred in 1998 and 1999.

4. Conclusion

This chapter shows that the level of the estimated union wage effect is sensitive to the choice of the quantile in the distribution of wages, when using quantile regression. The number of studies on the union wage effect by using quantile regression is still extremely limited.³⁴ Furthermore, most studies adopt quantile regression in the context of wage inequality (Buchinsky, 1994 and 1998; Chamberlain, 1994). In the context of wage inequality, the focus analysis would be on the return to education, experience, or tenure,

³⁴ Within my best knowledge, there has been no study has been done based on the quantile regression, examining union wage effect in Korea.

not the union itself.³⁵ By connecting the union premium in the distribution of wages with union governance, it is expected that this study may contribute to the reversal of some important theoretical issues in industrial relations, such as which group of workers governs trade unions, and how the group which benefits from unions the most changes, and why.

I found that the focus of the union wage effect moves across the entire conditional distribution of wages and across years. In most years, it is shown that a significant difference among union premiums for workers at the bottom, median, and upper part of wage distribution is evident. Therefore, it is interpreted that the OLS estimation assuming equal size of union wage premium regardless of quantile in wage distribution cannot hold.

Also traditional wisdom in industrial relations claims that workers at the bottom of wage distribution are likely to benefit the most from unions. The wisdom is revealed to be true for the period of 1987-1995. However, a surprise surfaced, for the period of 1996-1999, well-paid workers at the upper of wage distribution enjoyed more union premium, while less-paid workers at the lowest of wage distribution faced less union premium, contrary to traditional wisdom. Assuming that the size of a union premium is a mirror of who governs a trade union, the wisdom cannot be effective at least in the period of 1996-1999 in Korea. The full quantile regressions at every quantile in every year for all, men, and women samples seem to support the findings.

I examined four possibilities regarding employers' offensive demands supported by the government, wage norm argument, and changes by the unions themselves, in order to

³⁵ Another study needs to focus the union effects on return to education, experience, and tenure in the conditional wage distribution.

explain the seemingly exceptional phenomenon. To date, it is unclear why this phenomenon occurred. Doeringer (1984) introduces a similar case that the emergence of industrial unions in the 1940s and 1950s in the U.S. negotiated equal absolute pay increases between skill levels, resulting in a narrowed wage difference; a wage gap between skilled and semi- or non-skilled workers widened again due to union policy resulting from a conflict between skilled and semi-skilled workers. One clear thing is that the finding in this study also may be found in other countries at other times.

This study implies that the size of the union premium at different quantiles of wage distribution and the issue of which group of workers will benefit the most from unions is to be found empirically, and not to be assumed. Therefore, this study calls for more studies in the near future on schemes for wage increases adopted by trade unions, in order to more understand better why the size of the union premium varies in wage distribution and across the years and how unions can change groups of workers, and who benefits from wage bargaining the most.

This paper is not free from limitations, however. At least, two weaknesses are worth recognizing. First, this paper assumes that the union wage premium is the only reason for workers to join and participate in the decision-making process within unions. However, the assumption in this study is too limited because many other issues such as employment, working conditions including health and safety, autonomy in the workplace, and so on may become incentives for workers to be union members. When considering those issues together such as employment, working conditions, as well wages, we could be more confident in judging which group of workers benefit the most from unions.

The second limitation is related to sample-selection bias. Many such as Lee (1978), Duncan and Leigh (1980), and Abowd and Farber (1982), to name a few, pointed out that the potential selection biases should be considered in the research on the union wage effect. However, this chapter has not explored the problem because it is difficult to find appropriate variables that are likely to affect the probability of unions, but not affect wages, and consequently could be used to identify selection models. All studies in fact (Poterba & Rueben, 1994; Schultz & Mwabu, 1998) using quantile regression (QR) on union wage effect also confronted the same methodological problems. No econometric method, unfortunately, allows us to explore union effects on various quantiles in the distribution of wages and at the same time to overcome selectivity bias problem (Buchinsky, 2001). Overall, it is undesirable, but inescapable to present results from quantile regressions without a correction of selection bias (Montenegro, 2001). Therefore, the direction for future analysis should be to solve the selection bias problem under quantile regression.

CHAPTER FIVE

UNION EFFECT ON WAGE DISPERSION

1. Introduction

The purpose of this chapter is to answer the questions, whether any union wage-equalizing effect is evident in Korea and if so how large is the union effect to decrease wage dispersion. To answer the questions, establishment-level data will be used to see whether unionized establishments show lower wage dispersion than unorganized establishments, after controlling wages, personal characteristics, occupational composition within establishments, and organizational characteristics such as industry, region, and establishment size. For the estimation method, the OLS and 2SLS will be adopted for establishment-level data.

The most important finding is that union wage-equalizing effects have existed in Korea for the period of 1987-1999. With respect to the size of union wage-equalizing effect, Korean trade unions reduced the wage dispersion by 7%-25% when using variance of logarithm of wages in the 1990s, compared to the unorganized sector, after controlling for other variables. Also, the size of union wage-equalizing effects is revealed to be 7%-15%, when using the standard deviation of logarithm of wages, in the 1990s.

The chapter is organized as follows: Section 2 describes the estimation methods. Section 3 describes the data set. Section 4 introduces the results and explains the implications from the results. Finally, section 5 concludes.

2. Model & Estimation Method

The literature on union effect on wage dispersion includes several observational units regarding wage dispersion: establishment level (Freeman, 1980 and 1982), intermediate level such as occupation-industry cell level (Kahn and Curme, 1987; Asher and DeFina, 1997), industry level (Belman and Heywood, 1990; Budd and McCall, 2001), state or SMSA (Flaherty and Caniglia, 1992). It might be reasonable to focus on the industry level where industrial unions dominate and where the union's role to reduce wage dispersion within and between industries becomes important.

In Korea, the enterprise unions have predominated for the last decades and unions are expected to affect mainly wage dispersion within and between establishments. In addition, prior studies on the topic indicate that the effects of unions on wage dispersion within and between industries are varied (Bae, 1990; Jeong, 1991, Uh and Lee, 1992). This study assumes that the establishment level is more important than the industry level, considering the form of unionism and the results from prior studies.

One of the methodologically important ideas to be kept in mind is that any differences in characteristics regarding workers between unionized and nonunionized sectors should be controlled because they may affect wage dispersion between the two sectors, independent of union effects on wage dispersion. The predicted average log wage is added into the equation because many point out that the average wages may be highly correlated with wage dispersion (Hirsh, 1982; Belman and Heywood, 1990). The use of the predicted average of log wages makes it possible to use an instrumental variable

approach in order to reduce any bias resulting from the correlation between average wages and wage dispersion.

To prevent an endogeneity problem between wages and variance of wages, a two-stage least square estimation will be adopted. By using 2SLS, squared experience will be employed as instrumental variables, which will be included in the first-stage but not included in the second-stage equation, following Belman and Heywood (1990).

In this chapter, I will use two dependent variables: a variance of logarithm of real hourly wages and standard deviation of logarithm of real hourly wages per establishment. The independent variables are the variance (or standard deviation) of education, tenure, experience, and the percentage of female workers, skilled workers, married workers, and salesmen. Also the dummy variables representing seven one-digit industries, nine regions, and three establishment sizes will be included. Finally, the wages will be included into the equation to control any correlations between wages and the variance of wages.

With respect to the sign of the independent variables, I assume that the variance of average wages in the establishments will be larger, when the establishment is located in Seoul. These establishments are mostly larger-sized firms hiring more employees, who have greater variances in education, experience, and tenure. It is expected that variance of human capital such as education, experience, and tenure, is positively associated with variance of wages. Also the percentage of female workers in an establishment is expected to be negatively associated with wage dispersions because the average wages of females are lower than those of males. In addition, the percentage of skilled, sales-, and technician workers within these establishments is expected to be related to the variance of wages

positively in that the average level of wages for them is higher than that of unskilled workers. Furthermore, the wages are more likely to be applied by using the concept of the pay for performance, which is likely to increase the variance of wages. Finally, I expect that the average level of logarithm of wages within these establishments is associated positively with the variance of wages.

3. Data

Data here come from the Basic Survey on Wage Structure (BSWS)³⁶ for 1987-1999, which is conducted by the Ministry of Labor (MOL) in Korea every year. The Survey contains information on individual workers such as sex, marital status, age, tenure, career, occupation, and level of skill held by workers, the characteristics of firms, respondent's work for, such as region, industry, firm size, and existence of unions, and the working conditions for individual workers such as wages and hours worked (Lee & Kwon, 1995). Agricultural workers, civil servants, and those serving in the armed forces are not included in the data source.

Some drawbacks of the BSWS should be remembered. First of all, the population of the survey is an establishment hiring 10 or more employees, and thus excludes small-sized establishments and employees hired in the establishments, estimated as about one-third of the nonagricultural labor force (Kim and Topel, 1995). It is reasonable to expect that wage dispersion in the wage distribution for all employees including the employees hired in the small-sized firms is likely to be larger than that for employees working for the establishment that hire 10 or more employees.

³⁶ More details for the BSWS can be found in the previous chapter.

The data used in this chapter are establishment-level data, constructed from the BSWS. I selected the establishments where at least five employees are found in the BSWS. Then, I calculated the means of log wages, average years of education, experience, and tenure within the establishments. Also I calculated the variance of log wages, of education, of experience, and tenure within the establishment. To control other personal characteristics and occupational composition, the percentage of female workers, married workers, skilled workers, salesman, and technicians within establishments is calculated.

What should be kept in mind is that, even though the population of the BSWS is establishments hiring at least ten employees, the sample establishments are biased towards larger establishments due to the selection process of establishments having at least five respondents. As a consequence, the number of establishments hiring 10-29 employees decreases, compared to the composition of the individual-level data from the BSWS.

It would be more desirable to construct establishment-level data every year for the entire period of this study, 1987-1999, to discover how union effects on variance of log wages change year by year. However, the job would be beyond my ability because the sample size would be over 20,000 for the entire period. Thus, I have constructed the establishment-level data for five years, 1987, 1990, 1994, 1997, and 1999.³⁷

Descriptive Characteristics of the Data

Table 5-1 represents the descriptive characteristics of the data for 1987, 1990, 1994, and 1999. The number of establishments used is 2,251 in 1987, 2,015 in 1990, 1,680 in

³⁷ The each year was selected due to the Great Labor Offensive in 1987, the resumed oppression towards collective bargaining and unions in 1990, general changes in wage inequality shown in Table 5-3 in 1994, the condition of pre-crisis in 1997, and the Korean financial crisis in 1999.

1994, and 2,096 in 1999. The percentage of establishments in the manufacturing industry is quite high, for example, 65.6% in 1987 and 46.7% in 1999. Among the eight industries including the manufacturing industry as an omitted reference group, the share of the trade (*Dindus_4*), transportation (*Dindus_5*), finance (*Dindus_6*), and service (*Dindus_7*) industry is larger than 5% as a whole, while the number of establishments in the mining (*Dindus_1*), electricity, gas, and public utility industry (*Dindus_2*), and construction industry (*Dindus_3*) remains small. The number of unionized establishments is 1,180 (52.4%) in 1987, 1,197 (59.4%) in 1990, 1,065 (63.4%) in 1994, and 1,135 (54.1%) in 1999.

The variances of the average logarithm of wages within establishments (hereafter variance of wages), a main dependent variable in this chapter, is presented at the top of the table. While the variance of wages in the unorganized sector is lower than in the organized sector in 1990, the variance of wages in the unionized sector is smaller than that in the non-unionized sector in 1987, 1994, and 1999. Especially, the variance of wages in the unionized sector (.125) in 1987 is much smaller by 60% than that in the non-unionized sector (.314). It implies that an unfair sized possibility of union to decrease wage dispersions within establishments exists, although not controlling for the effects of other factors on wage dispersions.

Regarding the size of the establishments, the table indicates that a unionized establishment is likely to be larger than a non-unionized establishment. The percentage of establishments (*Dsize_3*) hiring 500 employees or more is larger in the unionized sector than in the non-unionized sector for all four years. Except for 1999, the situation is same as the percentage of establishments (*Dsize_2*) hiring 300-499 employees. The finding

Table 5-1. Descriptive Statistics Between Non-unionized and Unionized Sectors in 1987, 1990, 1994, and 1999 (unweighted).

	1987 (N=2,252)		1990 (N=2,015)		1994 (N=1,680)		1997 (N=1,672)		1999 (N=2,099)	
	Non-TU	TU	Non-TU	TU	Non-TU	TU	Non-TU	TU	Non-TU	TU
Vlwave	.314 (6.442)	.125 (.104)	.109 (.093)	.114 (.181)	.108 (.068)	.103 (.064)	.112 (.078)	.106 (.086)	.105 (.093)	.099 (.095)
Busan	.136 (.343)	.117 (.321)	.138 (.345)	.120 (.325)	.089 (.286)	.091 (.288)	.077 (.267)	.075 (.264)	.066 (.249)	.072 (.259)
Kyungki	.224 (.417)	.220 (.425)	.216 (.412)	.216 (.411)	.192 (.394)	.209 (.407)	.215 (.411)	.221 (.415)	.231 (.422)	.203 (.459)
Kangwon	.008 (.091)	.043 (.203)	.017 (.130)	.025 (.156)	.049 (.216)	.038 (.192)	.033 (.179)	.046 (.209)	.030 (.171)	.048 (.215)
Chungbuk	.016 (.125)	.029 (.167)	.017 (.130)	.028 (.166)	.024 (.154)	.038 (.193)	.035 (.183)	.039 (.194)	.032 (.177)	.043 (.203)
Chungnam	.035 (.185)	.047 (.211)	.033 (.179)	.050 (.218)	.055 (.299)	.055 (.299)	.052 (.222)	.057 (.231)	.054 (.226)	.073 (.260)
Junbuk	.025 (.157)	.032 (.177)	.022 (.147)	.020 (.140)	.046 (.209)	.036 (.186)	.028 (.165)	.045 (.206)	.033 (.179)	.041 (.197)
Junnam	.015 (.121)	.044 (.205)	.033 (.179)	.047 (.211)	.042 (.201)	.056 (.231)	.027 (.161)	.062 (.241)	.050 (.218)	.064 (.245)
Kyungbuk	.139 (.346)	.081 (.272)	.123 (.329)	.107 (.309)	.117 (.321)	.108 (.310)	.104 (.305)	.092 (.290)	.112 (.316)	.102 (.303)
Kyungnam	.063 (.242)	.125 (.330)	.064 (.244)	.099 (.299)	.075 (.263)	.100 (.300)	.072 (.258)	.104 (.306)	.072 (.258)	.094 (.292)
Mining	.003 (.053)	.038 (.192)	.002 (.049)	.015 (.122)	.011 (.106)	.017 (.129)	.005 (.073)	.020 (.139)	.007 (.085)	.019 (.134)
Constructio n	.004 (.061)	.012 (.108)	.000 (.000)	.011 (.104)	.000 (.000)	.015 (.122)	.001 (.036)	.05 (.218)	.000 (.000)	.028 (.166)
Transp.	.032 (.175)	.008 (.087)	.039 (.194)	.011 (.104)	.080 (.271)	.034 (.181)	.040 (.196)	.025 (.156)	.060 (.238)	.028 (.167)
Wholesale	.063 (.242)	.034 (.181)	.083 (.276)	.031 (.173)	.102 (.303)	.063 (.243)	.117 (.322)	.102 (.303)	.139 (.346)	.078 (.269)
Finance	.031 (.173)	.190 (.392)	.022 (.147)	.141 (.348)	.033 (.178)	.149 (.357)	.049 (.216)	.118 (.323)	.023 (.149)	.167 (.373)

Service	.067 (.250)	.071 (.257)	.065 (.246)	.105 (.307)	.154 (.361)	.126 (.331)	.197 (.398)	.118 (.323)	.171 (.377)	.129 (.334)
Public	.074 (.261)	.057 (.232)	.106 (.308)	.124 (.330)	.084 (.278)	.107 (.309)	.114 (.318)	.102 (.303)	.107 (.309)	.105 (.306)
100≤Ees<3 00	.287 (.453)	.225 (.418)	.385 (.487)	.327 (.469)	.341 (.475)	.303 (.460)	.388 (.488)	.342 (.474)	.329 (.470)	.108 (.311)
300≤Ees<5 00	.103 (.304)	.157 (.364)	.112 (.316)	.226 (.418)	.133 (.340)	.258 (.437)	.133 (.340)	.250 (.433)	.402 (.490)	.364 (.481)
Ees≥500	.188 (.390)	.513 (.500)	.104 (.305)	.328 (.470)	.143 (.350)	.359 (.480)	.117 (.322)	.323 (.468)	.245 (.430)	.523 (.500)
Vedu	4.203 (2.825)	4.069 (2.412)	4.401 (3.030)	4.227 (2.698)	4.143 (3.183)	4.406 (2.930)	4.041 (3.106)	4.432 (2.998)	3.952 (3.275)	4.163 (2.884)
Vexpe	85.809 (69.13)	142.470 (2437)	101.420 (77.08)	77.663 (46.97)	100.294 (72.68)	84.668 (64.76)	95.795 (74.38)	86.348 (51.62)	92.970 (76.24)	79.456 (48.17)
Vtenure	7.350 (11.46)	13.903 (13.08)	7.586 (10.60)	16.054 (17.08)	11.304 (14.84)	23.737 (19.34)	11.944 (13.91)	28.572 (22.48)	11.949 (14.92)	27.309 (20.84)
Female	.427 (.300)	.307 (.281)	.430 (.295)	.311 (.277)	.360 (.272)	.264 (.242)	.368 (.266)	.246 (.230)	.357 (.277)	.249 (.247)
Married	.516 (.259)	.612 (.259)	.550 (.255)	.639 (.244)	.625 (.243)	.684 (.225)	.612 (.253)	.707 (.213)	.603 (.247)	.716 (.220)
Skilled	.272 (.351)	.239 (.331)	.259 (.343)	.205 (.301)	.187 (.291)	.181 (.248)	.131 (.224)	.167 (.233)	.167 (.270)	.157 (.233)
Salesman	.078 (.186)	.062 (.150)	.116 (.227)	.078 (.168)	.351 (.303)	.337 (.286)	.357 (.305)	.334 (.275)	.298 (.284)	.303 (.271)
Technician	.284 (.297)	.249 (.267)	.294 (.298)	.301 (.303)	.117 (.183)	.123 (.187)	.160 (.220)	.144 (.200)	.226 (.261)	.206 (.231)
Lwage	7.813 (.360)	8.102 (.437)	8.047 (.354)	8.332 (.361)	8.427 (.342)	8.681 (.321)	8.630 (.343)	8.923 (.356)	8.510 (.391)	8.387 (.365)
Sqexpe	215.02 (198.33)	254.09 (188.19)	273.124 (262.54)	278.306 (218.05)	342.716 (348.66)	325.042 (244.32)	379.519 (426.26)	354.607 (268.42)	338.821 (375.03)	354.985 (254.32)
N =	1,072	1,180	818	1,197	615	1,065	752	920	964	1,135

Note: the values in parentheses are standard deviations.

Note: $Vlwage$ =variance of logarithm of hourly wages, $Vedu$ =variance of average years of education within

Establishments, $Vexpe$ =variance of average years of experience within establishments, $Vtenure$ =variance of tenures within establishments, $Lwage$ =logarithm of wages, and $Sqexpe$ =squared term of average year of experience in the industry which an establishment concerned belongs to.

means that the percentage of unionization is high in the larger establishments hiring 300 employees or more, but is low in the smaller establishments hiring less than 300 employees.

With regard to the variances of three human capitals, the variance of education is higher in the non-unionized sector than in the unionized sector in 1987 and 1990, while the relationship is reversed in 1994 and 1999. The variance of tenure in the unionized establishments is shown to be consistently higher than that in the non-unionized establishments. However, opposite to the case of the variance of tenure, the variance of experience is higher in the non-unionized establishments than in the unionized establishments, except in 1987. All three variances of human capital are expected to increase the variance of wages positively. However, only with the descriptive statistics between the two sectors regarding human capital, we cannot yet determine what is the relationship between union and wage dispersions.

The descriptive statistics between the two sectors also imply that the percentage of females in the non-unionized sector is higher than in the unionized sector, while the percentage of married workers is higher in the unionized establishments than in the non-unionized establishments, for all four years. Regarding occupations, the percentage of skilled workers is higher in the non-unionized sector than in the unionized sector for all four years. The situations regarding salespersons are similar, except for 1999. The percentage of technician workers varies according to year. Finally, the level of wages is always higher in the unionized establishments than in the non-unionized establishments.

Overall, some factors, which are expected to increase the variance of wages, including the size of establishments, the variance of tenure, the percentage of married workers, and

the level of wages are found more often in the unionized sector, while the non-unionized sector shows the high values of other factors such as the variance of experience, and the percentage of skilled and salespersons, which are expected to increase wage dispersions within establishments.

4. Result

1) General trends of wage inequality indexes between the two sectors

Since the empirical literature implies that union wages are likely to be less affected by market-related factors than nonunion wages due to the standard-rate wage policy, union wages are expected to have a lower dispersion than nonunion wages. In Korea for 1987-1999, this is the case. Table 5-2 presents the standard deviation of log wages in every year for the period. It shows that the wage dispersion of union workers is smaller than that of nonunion workers, as seen in the second column. For the whole period, wage dispersion in the unionized sector is less by 15.7% than in the non-unionized sector. When focusing on each year, however, the table presents that the difference of wage dispersion between unionized and nonunionized sector becomes smaller than that in the whole period. Except for the year of 1987, the difference in wage dispersion between the two sectors is no more than 9% in every year. Another finding from the second column of Table 5-2 is that the difference in wage dispersion between unionized and nonunionized sector for 1994-1999 is stabilized at about 7.4% or 7.5%, while there was very small wage dispersion between the two sectors for 1988-1992.

Table 5-2. Standard Deviation of Log Wage for All, Male, and Female Workers in All Industries for 1987-1999

Period	All		Male		Female	
	Union	Nonunion	Union	Nonunion	Union	Nonunion
87-99	.75 (84.3%)*	.89	.66 (79.5%)	.83	.71 (86.6%)	.82
1987	.72 (87.8%)	.82	.65 (83.8%)	.78	.57 (83.8%)	.68
1988	.55 (96.5%)	.57	.47 (87.0%)	.54	.36 (97.3%)	.37
1989	.54 (98.2%)	.55	.48 (90.6%)	.53	.36 (97.3%)	.37
1990	.53 (94.6%)	.56	.46 (88.5%)	.52	.40 (105.3%)	.38
1991	.52 (92.9%)	.56	.47 (90.4%)	.52	.39 (102.6%)	.38
1992	.50 (96.2%)	.52	.42 (89.4%)	.47	.38 (108.6%)	.35
1993	.52 (94.5%)	.55	.45 (91.8%)	.49	.40 (102.6%)	.39
1994	.49 (92.5%)	.53	.42 (89.4%)	.47	.41 (107.9%)	.38
1995	.50 (92.6%)	.54	.44 (91.7%)	.48	.42 (105.0%)	.40
1996	.50 (92.6%)	.54	.45 (90.0%)	.50	.44 (102.3%)	.43
1997	.50 (92.6%)	.54	.44 (89.8%)	.49	.45 (102.3%)	.44
1998	.50 (92.6%)	.54	.44 (89.8%)	.49	.46 (102.2%)	.45
1999	.51 (91.1%)	.56	.46 (86.8%)	.53	.48 (104.3%)	.46

* % compared to nonunion

Data source: BSWs in each year

Note: Employees included in the calculation are all workers regardless of age and occupations.

A striking discovery found in Table 5-2 is that wage dispersion of women workers in the 1990s is larger in the organized sector than in the unorganized sector, while wage dispersion for men workers in the organized sector is always lower than in the unorganized sector as expected. The results appear to be unexpected in that wage dispersion literature implies that the union effects on wage dispersion would be stronger for women workers than for men workers because women whose personal characteristics would have placed them in the low end of wage distribution are thought to have benefited from unions (Farber and Saks, 1980). In fact, many personal characteristics for women are not as great as the characteristics for men with regard to education, tenure (3.5 years

for women and 6.6 for men), age (28 for women and 36 for men), and etc. More explanation regarding this finding is discussed later in the chapter dealing with return rates for gender.

However, the facts that wage dispersion is lower in the unionized sector than in the non-unionized sector might be caused by the differences in personal characteristics between the two sectors, not by the direct union effect (Freeman, 1980). The simple comparison of wage dispersion between the two sectors in Table 5-2 is incomplete and the comparison should be done after controlling for differences between union and nonunion workers' personal characteristics.

Table 5-3. Trends in the Three Wage Inequality Measures between Union and Nonunion Sectors, 1987-1999

	Standard deviation of log wages		Gini-coefficient		Coefficient of variation	
	union	nonunion	union	nonunion	union	nonunion
1987	.721	.825	.364	.420	.704	.886
1988	.550	.569	.313	.340	.630	.757
1989	.539	.554	.307	.325	.626	.686
1990	.529	.559	.301	.327	.617	.691
1991	.525	.560	.294	.326	.583	.697
1992	.497	.523	.278	.303	.554	.627
1993	.515	.545	.284	.307	.553	.608
1994	.487	.529	.266	.299	.514	.590
1995	.496	.537	.271	.301	.517	.599
1996	.502	.541	.275	.305	.527	.612
1997	.503	.541	.270	.304	.511	.618
1998	.501	.539	.270	.304	.515	.608
1999	.506	.559	.274	.314	.547	.642

Data source: BSWs in each year

Note: Employees included in the calculation are all workers regardless of age and occupations.

Table 5-3 gives overall changes in three wage inequality measures for 1987-1999, the standard deviation of the natural logarithms of wages, Gini coefficient, and coefficient of variation. All three measures show a considerable trend toward a decline in the wage inequality over the whole period. Despite of the stable wage increase, for example, the standard deviation of log wages decreased from 0.721 in the unionized and 0.825 in nonunionized sector in 1987 to 0.506 in the unionized and 0.559 in the nonunionized sector in 1999. Also the Gini-coefficient of 0.364 in the unionized and 0.420 in the nonunionized sector in 1987 dropped to 0.274 in the unionized and 0.314 in the nonunionized sector in 1999, which indicates a decrease of approximately 25 percent in both sector. The coefficient of variation for the period shows similar pattern. While the coefficient of variation in 1987 was 0.704 in the unionized and 0.886 in the nonunionized sector, the values decreased to 0.547 in the unionized and 0.642 in the nonunionized sector in 1999. It means the decrease of 22.3% in the unionized and 27.5% in the nonunionized sector, respectively. As not seen in Table 5-2, the 90/10 log wages differential, which is a difference of log wages between 10% and 90% in the wage distribution, has decreased from 2.23 in 1987 to 1.41 in 1999. These findings are consistent with the findings of others who have recently examined at wage inequality (e.g., Jeong and Choi, 2001).

The majority of this big change mitigating wage inequality occurred in the late 1980s. Especially in 1988, just after a year since Great Labor Offensive from June of 1987, all three wage inequality measures dropped by over 10 percent. This summarizes how the Great Labor Offensive in 1987 shocked wage structures as well as general industrial relations at the time. Considering the low union density in 1987, in addition, massive

reduction of wage inequality in the 1987-1988 implies that there must have been a big spillover effect transferring a relatively large wage boost for employees at the bottom half of the wage distribution from the union sector to the nonunion sector.

Furthermore, a considerable decrease in wage inequality, another finding that can be drawn from Table 5-3 is that the degree of wage inequality began to increase from the mid-1990s as the wage-equalizing trend stopped at that time. While steadily declining from 1987 to 1994, the standard deviation of log wages began to increase from 1996. Though it is less clear than the trend of the standard deviation of log wages, the Gini coefficient also has decreased from 1987 to 1994 and increased from 1995. The coefficient of variation shows a similar phenomenon revealing in stead a decrease for 1987-1994 and an increase from 1995. However, it appears that the small size of increase in wage inequality from the mid-1990s cannot sweep away the striking achievement in wage equality since 1987. Rather it means a return to the year 1991 or 1992 with regard to the degree of wage inequality.

2) Results from establishment-level data

Union effects on the variance of wages

From the establishment-level data, Table 5-4 presents the estimates of various independent variables on the variance of log real hourly wages within establishments, estimated by the OLS and 2SLS, between non-organized and organized sectors in 1987, 1990, 1994, 1997, and 1999.

Table 5-4. Estimates of Union Effects on Variance of Log Hourly Wages
 In 1987, 1990, 1994, 1997 and 1999 by OLS and 2SLS

	1987		1990		1994		1997		1999	
	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS
Busan	-.076*** (.004)	-.112*** (.010)	-.013*** (.002)	-.005 (.004)	-.030*** (.001)	-.028*** (.002)	-.021*** (.002)	-.014*** (.002)	-.014*** (.002)	-.009*** (.002)
Kyungki	.023*** (.003)	.087*** (.010)	.002 (.002)	-.002 (.002)	-.007*** (.001)	-.015*** (.001)	-.01*** (.001)	-.004*** (.001)	-.004*** (.001)	-.006*** (.001)
Kangwon	.046*** (.010)	.370*** (.030)	-.022*** (.003)	-.028*** (.003)	-.010*** (.002)	-.013*** (.003)	.005 (.004)	-.005 (.003)	-.005 (.003)	.004 (.003)
Chungbuk	.034* (.016)	.165*** (.023)	.012*** (.003)	.011** (.004)	-.014*** (.002)	-.020*** (.002)	-.007** (.003)	.006* (.002)	.006* (.002)	.008** (.002)
Chungnam	-.002 (.007)	-.163*** (.018)	.006* (.003)	.017** (.006)	-.010*** (.002)	-.013*** (.002)	.004* (.002)	.001 (.003)	.001 (.003)	-.001 (.003)
Junbuk	-.001 (.007)	-.084*** (.017)	.011* (.004)	.021** (.007)	-.003 (.002)	-.007** (.003)	-.004 (.003)	-.002 (.002)	-.002 (.002)	-.004 (.003)
Junnam	-.029*** (.006)	-.125*** (.020)	.013*** (.003)	.015*** (.004)	-.021*** (.001)	-.018*** (.002)	-.012*** (.002)	-.017*** (.002)	-.017*** (.002)	-.019*** (.002)
Kyungbuk	.001 (.004)	-.010 (.010)	-.002 (.002)	.001 (.002)	-.023*** (.001)	-.031*** (.002)	-.018*** (.002)	-.012*** (.002)	-.012*** (.002)	-.013*** (.002)
Kyungnam	.009** (.003)	.151*** (.014)	.002 (.002)	-.006* (.002)	-.023*** (.001)	-.043*** (.002)	.025*** (.001)	-.031*** (.002)	-.031*** (.002)	-.016*** (.002)
Mining	-.112*** (.008)	-.277*** (.024)	.031*** (.003)	.031*** (.004)	-.017*** (.003)	-.023*** (.002)	.013*** (.004)	.006 (.004)	.042*** (.004)	.029*** (.004)
Construction	-.106*** (.010)	.207*** (.038)	.002 (.006)	-.002 (.007)	.021*** (.002)	-.042*** (.004)	.024*** (.003)	-.002 (.002)	-.002 (.002)	-.005*** (.002)
Transp.	-.047*** (.010)	-.124*** (.028)	.007* (.004)	.001 (.004)	.008*** (.002)	.012*** (.002)	.011*** (.002)	-.008*** (.002)	-.008*** (.002)	.001 (.002)
Wholesale	.104*** (.027)	.196*** (.038)	-.016** (.006)	-.033*** (.003)	-.015*** (.002)	.001 (.002)	-.01*** (.002)	.009*** (.002)	.009*** (.002)	.014*** (.002)
Finance	.078*** (.006)	.155*** (.015)	.010** (.003)	.013** (.005)	.010*** (.001)	.019*** (.002)	.019*** (.002)	.012*** (.002)	.012*** (.002)	.013*** (.002)
Service	-.032*** (.006)	.008 (.020)	.003 (.005)	-.003 (.003)	-.008*** (.001)	-.001 (.002)	.003* (.001)	.030*** (.002)	.030*** (.002)	.037*** (.002)

Public	.087*** (.007)	.181*** (.018)	.067*** (.003)	.042*** (.012)	-.009*** (.002)	-.006** (.002)	.017*** (.003)	.015*** (.003)	.007* (.003)	-.001 (.003)
100≤Ees<300	.040*** (.008)	.321*** (.029)	.012*** (.002)	.004 (.005)	-.006*** (.002)	-.021*** (.002)	-.002 (.002)	-.004* (.002)	-.024 (.013)	-.035* (.015)
300≤Ees<500	.010 (.007)	.412*** (.033)	.002 (.002)	-.021** (.008)	-.009*** (.002)	-.025*** (.002)	-.01*** (.002)	-.018*** (.002)	.018 (.013)	.032* (.015)
Ees≥500	.020* (.008)	.623*** (.045)	.002 (.002)	-.034** (.013)	-.001 (.002)	-.031*** (.003)	.004* (.002)	-.010*** (.003)	.021 (.013)	.045** (.015)
Vedu*100	1.057*** (.003)	.443 (.232)	.166*** (.022)	.128*** (.025)	.145*** (.019)	.147*** (.026)	-.01 (.022)	.028 (.024)	.113*** (.025)	.097*** (.026)
Vexpe*100	.008 (.010)	-.176*** (.021)	.009*** (.002)	.026** (.008)	.007*** (.000)	.025*** (.004)	.02*** (.001)	.030*** (.002)	.020*** (.001)	.040*** (.002)
Vtenure*100	.163*** (.019)	.017*** (.001)	.112*** (.006)	.045* (.023)	.080*** (.000)	.022*** (.006)	.078*** (.003)	.053*** (.005)	.083*** (.003)	.051*** (.005)
Female	-.028*** (.007)	-.809*** (.059)	.002 (.005)	.075* (.030)	.016*** (.002)	.117*** (.007)	.024*** (.002)	.076*** (.007)	.014*** (.003)	.074*** (.007)
Married	.002*** (.000)	.005*** (.000)	-.052*** (.003)	-.076*** (.011)	-.052*** (.002)	-.100*** (.004)	-.053*** (.002)	-.077*** (.004)	-.036*** (.002)	-.053*** (.003)
Skilled	-.011** (.004)	.034*** (.010)	.026*** (.001)	.012* (.005)	-.002 (.001)	-.019*** (.002)	.004** (.001)	-.01*** (.002)	.007*** (.002)	-.007*** (.002)
Salesman	-.012 (.014)	-.333*** (.051)	.054*** (.014)	.075*** (.007)	.040*** (.002)	-.024*** (.005)	.024*** (.002)	-.015** (.005)	.034*** (.002)	-.000 (.005)
Technician	.164*** (.006)	.568*** (.034)	.083*** (.003)	.029 (.020)	.045*** (.002)	-.042*** (.006)	.084*** (.003)	.043*** (.006)	.067*** (.003)	.023*** (.005)
Lwage	-.102*** (.012)	-.351*** (.088)	-.001 (.004)	.136** (.052)	-.000 (.002)	.169*** (.012)	-.012*** (.002)	.067*** (.01)	.004 (.002)	.099*** (.010)
Union	.023*** (.002)	.124*** (.009)	.000 (.004)	-.009 (.005)	-.011*** (.001)	-.024*** (.001)	-.007*** (.001)	-.014*** (.001)	-.012*** (.001)	-.025*** (.002)
Contant	.821*** (.080)	8.980*** (.574)	.072* (.034)	-1.029* (.418)	.112*** (.014)	-1.283*** (.100)	.193*** (.014)	-.475*** (.085)	.045 (.026)	-.749*** (.085)
R ²	0.087	0.087	0.139	0.056	0.237	-	0.232	0.232	0.135	0.042
N	2,251	2,251	2,015	2,015	1,680	1,680	1,672	1,672	2,096	2,096

Note: coefficients and standard errors for Vedu, Vexpe, Vtenure, SQexpe are multiplied by 100.

Note: robust standard errors for OLS in parentheses Note: * significant at the 5% level ** significant at the 1% level *** significant at the 0.1% level

First of all, the table shows that the wage dispersions, captured by the variance of wages, within establishments are much higher in the establishment that is located in Seoul (omitted reference group) than in the establishments in other regions. This result makes sense because the establishments in Seoul tend to show a higher level of wages, resulting from an increase of wage dispersions. Also this result implies that our expectation regarding the sign of regions in the equation, mentioned earlier, is reasonable. The differences in wage dispersion between Seoul and other regions are not big, approximately 1% or 2% in most cases. Also it appears that the differences in wage dispersion between Seoul and other regions are the least in 1997 among the five years. The bottom part of the first page of Table 5-4 indicates that the effects of industries on the variance of wages varies according to years and estimation method, either in the OLS or 2SLS. Considering that the omitted reference category is the manufacturing industry, the wage dispersion was lower in the trade (*Dindus_4*), finance (*Dindus_6*), and service (*Dindus_7*) industries than in the manufacturing industry in 1987, 1990, and 1994, as a whole. In 1999, however, the variance of wages in the trade industry and finance industry rose higher than in the manufacturing industry.

The results regarding the size of establishments are mixed. The belief is that the establishment size is associated with the variance of wages. In 1987 and 1999, the variance of wages for establishment (*Dsize_3*) hiring 500 or more employees is higher than that for smaller-sized establishments. In 1999, for instance, the variance of wages for establishments hiring 500 or more employees is more by .045 than that for the establishments hiring less than 100 employees as a reference category, when estimated by

the 2SLS. However, the effects of the establishment size on the wage dispersion proved the opposite in 1990 and 1994, when estimated by 2SLS.

All three human-capital-related variables, the variance of education, the variance of experience, and tenure, are found to affect wage dispersion positively, except the effect of tenure in 1987. The positive effects of the three variables can be seen in the results of the four years except 1997, both by OLS and 2SLS. This finding means that an increase in heterogeneity of human capital for workers is likely to result in an increase in wage dispersion, as we expected.

The table also implies that the portion of female workers within establishments is positively related to the variance of logarithm of hourly wages in 1990, 1994, 1997, and 1999, against our expectations. I set an expectation earlier that the variance of wages and the percentage of females are negatively related to each other, because most female workers are paid less, due to less education, experience, and tenure relative to male workers in the sense and structural discrimination existing in firms regarding wages. In addition, the percentage of married workers is shown to be negatively associated with the wage dispersion in all four years, both by the OLS and 2SLS. This finding may be connected to the characteristics of the sample. In the sample, the average percentage of married workers ranges from about 50% to over 70%. In other words, married workers are close to the mean value and an increase in married workers receiving wages close to mean wages is likely to result in decrease of wage dispersion. Currently, I have no exact answer about the unexpected findings.

Also the results from the table show that the increase in the percentage of skilled workers and technician workers is related to the increase in wage dispersion within

establishments, in 1987 and 1990. These results fit previous studies on this issue in that skilled and technician workers tend to earn larger wages than unskilled workers, resulting in an increase in wage inequality. An increase in the percentage of technician workers within establishments is shown to affect positively wage dispersion more than an increase in the percentage of skilled workers. Thus, I can infer from the result that the level of technical workers would be higher than that of skilled workers.

The effects of salesmen on wage dispersion are not clear for the four years. In the 1990s, the introduction of pay for performance in Korea was applied more to the occupation of salesman than in any other occupation within firms (KLSI, 1998). If so, the increase in the percentage of salesmen should be related to an increase in wage dispersion. However, the results are not consistent with this prediction. From this inconsistent result, we may conclude that the introduction of pay for performance for salesman has not been great enough to make a significant and consistent difference in wage dispersion yet. In fact, a survey conducted by the Ministry of Labor (MOL) in 1999 reported that only 27.1% of 4,998 firms that answered already had introduced pay for performance (Don-A Ilbo, March 3, 2000). Furthermore, the portion of wages variable to performance is only 30 % or less in 78.6% of the firms endorsing pay for performance.

The level of the logarithm of hourly wages is found to be associated with an increase in wage dispersion, when estimated by the 2SLS in 1990, 1994, and 1999. The finding fits what we anticipated earlier.

Different from some independent variables listed above that appear to be unclear, the results regarding the effects of the unions on the wage dispersion seem to be clear. In 1987, the unions are shown to have reduced the variance of wages by 8.8% (OLS) and

7.4% (2SLS). However, the union effects decreased to .011 (1.1%) by the OLS or .024 (2.5%) by the 2SLS in 1994 and .012 (1.2%) by the OLS or .025 (2.5%) by the 2SLS in 1999,³⁸ even though the effects of unions on the variance of wages become insignificant in 1990, the coefficient for union ($t=1.65$) is close to the 5% significant level when estimated by the 2SLS. We found that the results for unions, estimated by the OLS, are not much different from the results estimated by the 2SLS. This finding implies that the true size of union estimate is likely to be close to those estimated by OLS and 2SLS.

Table 5-5 presents the results from first-stage estimation regressing the observed logarithm of hourly wages on other variables including the squared experience as an instrumental variable, which is not included in second-stage estimation in Table 5-4. The coefficients of the squared experience are significant at the 0.1% significance level in 1987, 1990, 1994, 1997, and 1999. This fact indicates that the use of the instrumental variable works and the estimation by the 2SLS are likely to be justifiable.

Union effects on the standard deviation of wages

From Table 5-4, I found that the unions are associated with the decrease in the variance of wages within establishments in 1994, 1997, and 1999. However, some unexpected results are found such as the percentage of females and the married and inconsistent results across years. In addition, the value of R -squared in the equation that is estimated by the OLS in 1987 remains low (0.087), although the values of R -squared for

³⁸ When using 2SLS, the value of R^2 does not have same meaning as in the OLS. Thus, no value of R^2 in 2SLS in 1994 or very low value of R^2 in 2SLS in 1999 is not problematic.

Table 5-5. Results from first-stage in 2SLS in equation with variance of logarithm of wages as dependent variable in 1987, 1990, 1994, 1997 and 1999

	1987	1990	1994	1997	1999
Busan	-.030*** (.007)	-.065*** (.004)	-.019*** (.005)	-.084*** (.006)	-.054*** (.007)
Kyungki	.046*** (.006)	.019*** (.004)	.035*** (.004)	-.003 (.005)	.003 (.005)
Kangwon	.247*** (.014)	.042*** (.009)	.004 (.008)	-.047*** (.009)	-.039*** (.010)
Chungbuk	.103*** (.014)	.001 (.008)	.024** (.008)	.028** (.008)	-.051*** (.009)
Chungnam	-.135*** (.010)	-.085*** (.007)	-.003 (.007)	-.003 (.007)	-.007 (.007)
Junbuk	-.072*** (.012)	-.071*** (.010)	.011 (.008)	-.011* (.008)	-.013 (.009)
Junnam	-.081*** (.012)	-.030*** (.006)	-.044*** (.006)	.034*** (.007)	.004 (.007)
Kyungbuk	-.015* (.007)	-.027*** (.004)	.030*** (.005)	-.005 (.006)	-.012* (.006)
Kyungnam	.111*** (.007)	.053*** (.005)	.098*** (.005)	.061*** (.005)	.012 (.006)
Mining	-.106*** (.014)	.067*** (.013)	.083*** (.012)	.184*** (.016)	.224*** (.016)
Construction	.264*** (.025)	.001 (.018)	-.124*** (.013)	-.148*** (.01)	.044*** (.013)
Transportation	-.049*** (.015)	.056*** (.010)	.004 (.008)	-.065*** (.009)	-.062*** (.009)
Wholesale	.074*** (.012)	.081*** (.007)	-.073*** (.006)	-.081*** (.006)	-.019** (.006)
Finance	.082*** (.007)	-.016*** (.005)	-.037*** (.005)	-.04*** (.006)	.017** (.006)
Services	.045*** (.010)	.071*** (.006)	.001 (.005)	-.021*** (.005)	-.017** (.005)
Public	.076*** (.009)	.181*** (.004)	.010 (.006)	.06*** (.006)	.119*** (.006)
100≤Ees<300	.224*** (.009)	.062*** (.005)	.087*** (.006)	.024*** (.006)	.127*** (.023)
300≤Ees<500	.314*** (.009)	.159*** (.005)	.087*** (.006)	.09*** (.006)	.152*** (.023)
Ees≥500	.471*** (.008)	.259*** (.005)	.164*** (.005)	.162*** (.006)	.245*** (.023)
Vedu*100	-.017 (.099)	.366*** (.056)	.262*** (.056)	-.097 (.063)	.630*** (.067)
Vexpe*100	-.144*** (.005)	-.104*** (.003)	-.096*** (.003)	-.125*** (.003)	-.187*** (.004)
Vtenure*100	1.242*** (.018)	.505*** (.010)	.360*** (.008)	.332*** (.008)	.355*** (.009)
Female	-.643*** (.007)	-.508*** (.006)	-.556*** (.006)	-.62*** (.007)	-.586*** (.007)
Married	.002*** (.000)	.371*** (.009)	.441*** (.006)	.463*** (.009)	.340*** (.009)

Skilled	.038*** (.007)	.089*** (.005)	.088*** (.006)	.141*** (.007)	.116*** (.007)
Salesman	-.244*** (.012)	-.076*** (.009)	.229*** (.007)	.396*** (.008)	.229*** (.009)
Technician	.289*** (.010)	.338*** (.006)	.410*** (.009)	.403*** (.009)	.315*** (.009)
SQexpe*100	-.014*** (4.34e-06)	-.032*** (.001)	-.023*** (.001)	-.023*** (.7.69e-06)	-.028*** (.001)
Union	.083*** (.004)	.062*** (.003)	.068*** (.003)	-.074*** (.004)	.117*** (.004)
Contant	6.561*** (.011)	7.997*** (.008)	8.241*** (.009)	8.505*** (.01)	8.400*** (.024)
R^2	0.529	0.636	0.597	0.596	0.547
N	2,251	2,015	1,680	1,672	2,096

Note: coefficients and standard errors for Vedu, Vexpe, Vtenure, SQexpe are multiplied by 100.

Note: robust standard errors for OLS in parentheses

Note: * significant at the 5% level ** significant at the 1% level *** significant at the 0.1% level

equations, estimated by the OLS, in 1990 (0.139), 1994 (0.237), 1997 (0.232), and 1999 (0.135) appear to be fairly acceptable.³⁹

To double-check the results from the equation with the variance of wages as a dependent variable in Table 5-4, I ran another equation with the standard deviation of logarithm of wages within establishments in all the four years both by the OLS and the 2SLS. The results are presented in Table 5-6.

The results from Table 5-6 are not considerably different from the findings from Table 5-4. The unexpected positive effects of females earlier are repeated in Table 5-4, becoming stronger due to the positive effects in 1987. Also the negative effects of married workers are consistently repeated in all five years, both by the OLS and the

³⁹ The low value of R -squared in the equation for 1987 is not usual. Thus, I examined the data and checked whether an important variable is excluded from the equation. However, I have found nothing wrong so far.

2SLS. All three kinds of human-capital-related variables are found to be positively significant in most cases.

Our interest is in the coefficients for the unions. Table 5-6 indicates that the effects of union on wage dispersion still exist, even though a different dependent variable is used. Except for 1987 estimated by the OLS, all equations show that unions tend to decrease wage dispersions within establishments, captured by the standard deviation of wages. The size of the coefficients for the unions in Table 5-6 is slightly different from Table 5-4. The larger effects of unions decreasing the wage dispersions in Table 5-4 become smaller in Table 5-6. However, the size of the union effects to decreasing the wage dispersions is not much changed in 1990, 1994, 1997, and 1999. Again, it is shown that unions are associated with a reduction in wage dispersion by 0.004 (.4%) by the 2SLS in 1987, by 0.005 (0.5%) by the OLS or 0.026 (2.6%) by the 2SLS in 1990, by 0.018 (1.8%) by the OLS or 0.041 (4.2%) by the 2SLS in 1994, by .013 (1.3%) by the OLS or 0.038 (3.9%) by the 2SLS, and by .025 (2.5%) by the OLS or .043 (4.4%) by the 2SLS.

When using the standard deviation of wages as a dependent variable, the size of the effects of unions on decreasing wage dispersions is larger when estimated by the 2SLS than when estimated by the OLS. Even though the value of R-squared in the OLS estimation remains quite low (.059) in 1987 as in Table 5-4, the values of R-squared in other years are acceptable. Table 5-7 presents the results from first-stage estimation regressing observed logarithm of hourly wages on other variables including the squared experience as an instrumental variable, which is not included in second-stage estimation in Table 5-4. The coefficients of squared experience are significant at the 0.1%

Table 5-6. Estimates of Union Effects on Standard Deviation of Log Hourly Wages Within Firms in 1987, 1994, and 1999 by OLS and 2SLS

	1987		1990		1994		1997		1999	
	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS
Busan	-.077*** (.003)	-.081*** (.003)	-.018*** (.002)	-.001 (.003)	-.044*** (.002)	-.044*** (.003)	-.029*** (.002)	-.017*** (.003)	-.020*** (.002)	-.012*** (.003)
Kyungki	.019*** (.003)	.032*** (.004)	.008*** (.002)	-.001 (.002)	-.007*** (.002)	-.022*** (.002)	-.013*** (.002)	-.014*** (.002)	-.002 (.002)	-.005* (.002)
Kangwon	.018* (.007)	.076*** (.012)	-.019*** (.004)	-.030*** (.005)	-.007 (.004)	-.014** (.005)	.000 (.005)	.004 (.005)	-.006 (.004)	-.006 (.004)
Chungbuk	-.016 (.009)	.007 (.010)	.019*** (.004)	.020*** (.005)	-.014*** (.003)	-.024*** (.004)	-.005 (.003)	-.012*** (.004)	.013*** (.003)	.015*** (.003)
Chungnam	.002 (.005)	-.025*** (.007)	.019*** (.003)	.045*** (.005)	-.013*** (.003)	-.016*** (.004)	.008** (.003)	.006 (.003)	-.003 (.003)	-.007* (.003)
Junbuk	-.007 (.005)	-.019** (.007)	.013** (.005)	.040*** (.006)	-.004 (.003)	-.013** (.004)	-.006 (.003)	-.006 (.003)	.001 (.003)	-.002 (.003)
Junnam	-.028*** (.005)	-.044*** (.006)	.027*** (.003)	.036*** (.004)	-.028*** (.002)	-.019*** (.003)	-.019*** (.003)	-.025*** (.003)	-.019*** (.002)	-.022*** (.003)
Kyungbuk	.006* (.003)	.005 (.003)	.007*** (.002)	.011*** (.002)	-.032*** (.002)	-.048*** (.003)	-.032*** (.002)	-.033*** (.002)	-.017*** (.002)	-.018*** (.002)
Kyungnam	.008** (.003)	.035*** (.005)	.009*** (.002)	-.010*** (.003)	-.033*** (.002)	-.071*** (.004)	-.039*** (.002)	-.050*** (.002)	-.014*** (.002)	-.020*** (.002)
Mining	-.085*** (.006)	-.108*** (.008)	.056*** (.005)	.052*** (.006)	-.023*** (.004)	-.040*** (.004)	.028*** (.006)	.013* (.006)	.073*** (.006)	.051*** (.007)
Construction	-.112*** (.007)	-.046*** (.014)	.019** (.007)	.003 (.010)	.038*** (.003)	.075*** (.006)	.039*** (.004)	.064*** (.005)	.004 (.004)	-.003 (.003)
Transp.	-.056*** (.007)	-.068*** (.009)	.001 (.004)	-.016** (.005)	.006* (.003)	.010** (.003)	.006 (.003)	.017*** (.004)	-.009** (.003)	.004 (.003)
Wholesale	.029*** (.008)	.046*** (.011)	-.011** (.004)	-.050*** (.004)	-.024*** (.002)	.005 (.004)	-.018*** (.002)	-.003 (.003)	.010*** (.002)	.017*** (.003)
Finance	.033*** (.004)	.051*** (.006)	.008** (.003)	.017*** (.004)	.012*** (.002)	.027*** (.003)	.023*** (.002)	.031*** (.002)	.008*** (.002)	.009*** (.002)
Service	-.049*** (.005)	-.040*** (.006)	.007* (.003)	-.012** (.004)	-.014*** (.002)	-.005 (.003)	.001 (.002)	.011*** (.002)	.034*** (.002)	.045*** (.003)
Public	.060*** (.005)	.076*** (.006)	.067*** (.003)	.008 (.004)	-.023*** (.002)	-.025*** (.003)	.008** (.002)	.003 (.002)	-.010** (.002)	-.025*** (.003)

100≤Ees<300	(.005) .037*** (.007) .088*** (.003) .014***	(.007) -0.05 (.004) -0.41*** (.005) -0.73*** (.008) .002	(.003) -0.10*** (.003) -0.13*** (.002) -0.02 (.002) .006***	(.003) -0.03 (.003) -0.06** (.003) -0.12** (.004) .000	(.003) -0.16 (.014) -0.07 (.014) -0.13 (.014) .004***	(.004) -0.034 (.017) -0.029 (.017) -0.049** (.018) .003**
300≤Ees<500	(.005) .025*** (.013) .097*** (.002) .008**	(.005) -0.041*** (.005) -0.73*** (.008) .002	(.002) -0.13*** (.002) -0.02 (.002) .006***	(.003) -0.06** (.003) -0.12** (.004) .000	(.003) -0.07 (.014) -0.13 (.014) .004***	(.017) -0.029 (.017) -0.049** (.018) .003**
Ees≥500	(.005) .030*** (.018) .137*** (.002) .008**	(.008) -0.02 (.001) -0.14*** (.001) .014***	(.002) -0.02 (.002) .006***	(.004) .000	(.014) .004***	(.018) .003**
SDedu	(.003) .011*** (.003) .007**	(.001) .002	(.001) .006***	(.001) .000	(.001) .007***	(.001) .013***
SDexpe	(.003) .005*** (.001) -0.01	(.001) .014***	(.001) .004***	(.001) .010***	(.001) .007***	(.001) .013***
SDtenure	(.001) .019*** (.001) .043***	(.001) .014***	(.000) .012***	(.001) .005***	(.000) .012***	(.001) .006***
Female	(.001) -0.10** (.004) -0.146***	(.000) .003	(.000) .022***	(.001) .128***	(.000) .023***	(.001) .117***
Married	(.003) .002*** (.022) .002***	(.003) -0.104***	(.003) -0.096***	(.003) -0.087***	(.003) -0.070***	(.010) -0.098***
Skilled	(.000) -0.024*** (.003) -0.17**	(.000) .018***	(.003) .001	(.003) -0.017***	(.003) .009***	(.004) -0.13***
Salesman	(.006) .161*** (.015) .229***	(.007) .141***	(.003) .084***	(.002) .054***	(.003) .059***	(.003) .008
Technician	(.005) -0.086*** (.012) -0.317***	(.003) .007*	(.004) .001	(.004) -0.017***	(.003) .006**	(.006) .035***
Lwage	(.004) .023*** (.037) .039***	(.003) -0.005***	(.002) -0.018***	(.002) -0.041***	(.016) -0.027***	(.015) -0.043***
Union	(.002) .873*** (.027) 2.366***	(.001) .140***	(.001) .258***	(.002) -2.466***	(.002) -0.831***	(.002) -1.137***
Contant	(.002) 0.059 2,251	(.024) 0.279 2,015	(.021) 0.275 1,680	(.186) 1,680	(.020) 1,672	(.130) 0.044 2,096

Note: robust standard errors for OLS in parentheses Note: * significant at the 5% level ** significant at the 1% level *** significant at the 0.1% level

Table 5-7. Results from first-stage in 2SLS in equation with standard deviation of logarithm of wages as dependent variable in 1987, 1990, 1994, and 1999

	1987	1990	1994	1997	1999
Busan	-.017* (.007)	-.057*** (.004)	-.011* (.005)	-.082*** (.006)	-.055** (.007)
Kyungki	.053*** (.006)	.020*** (.004)	.036*** (.004)	-.001 (.005)	.004 (.005)
Kangwon	.240*** (.014)	.036*** (.009)	.006 (.008)	-.043*** (.009)	-.032** (.010)
Chungbuk	.101*** (.014)	-.005 (.008)	.022** (.008)	.030*** (.008)	-.048*** (.009)
Chungnam	-.125*** (.010)	-.085*** (.007)	-.008 (.007)	-.001 (.007)	-.008 (.007)
Junbuk	-.060*** (.012)	-.075*** (.009)	.012 (.007)	-.012 (.008)	-.012 (.009)
Junnam	-.071*** (.012)	-.034*** (.006)	-.048*** (.006)	.034*** (.007)	-.003 (.007)
Kyungbuk	-.011 (.007)	-.021*** (.004)	.029*** (.005)	-.005 (.006)	-.015* (.006)
Kyungnam	.112*** (.007)	.055*** (.005)	.096*** (.005)	.060*** (.005)	.014* (.006)
Mining	-.077*** (.014)	.077*** (.012)	.088*** (.012)	.190*** (.016)	.222*** (.016)
Construction	.298*** (.024)	.022 (.017)	-.128*** (.013)	-.145*** (.010)	.053*** (.013)
Transportation	-.043** (.015)	.062*** (.010)	.003 (.008)	-.058*** (.009)	-.054*** (.009)
Wholesale	.072*** (.012)	.083*** (.007)	-.069*** (.006)	-.078*** (.006)	-.013* (.006)
Finance	.099*** (.007)	-.019*** (.005)	-.032*** (.005)	-.036*** (.006)	.022*** (.006)
Services	.049*** (.010)	.080*** (.006)	.011* (.005)	-.015** (.005)	-.012* (.005)
Public	.076*** (.009)	.176*** (.004)	.027*** (.006)	.066*** (.006)	.133*** (.007)
100≤Ees<300	.220*** (.008)	.055*** (.005)	.076*** (.006)	.019** (.006)	.118*** (.023)
300≤Ees<500	.301*** (.009)	.141*** (.005)	.076*** (.006)	.084*** (.006)	.143*** (.023)
Ees≥500	.447*** (.008)	.238*** (.005)	.147*** (.005)	.153*** (.006)	.230*** (.022)
SDedu	-1.83e-06 (.004)	.019*** (.002)	.011*** (.002)	-.002 (.002)	.024*** (.003)
SDexpe	-.028*** (.001)	-.023*** (.001)	-.023*** (.001)	-.026*** (.001)	-.036*** (.001)
SDtenure	.108*** (.001)	.050*** (.001)	.039*** (.001)	.036*** (.001)	.040*** (.001)
Female	-.607*** (.007)	-.486*** (.006)	-.548*** (.006)	-.612*** (.007)	-.579*** (.007)
Married	.002*** (.000)	.378*** (.009)	.437*** (.009)	.462*** (.009)	.339*** (.009)
Skilled	.029*** (.007)	.080*** (.005)	.089*** (.006)	.142*** (.007)	.108*** (.007)

Salesman	-.253*** (.012)	-.077*** (.009)	.281*** (.007)	.385*** (.008)	.216*** (.009)
Technician	.262*** (.010)	.307*** (.006)	.382*** (.009)	.392*** (.009)	.285*** (.009)
SQexpe	-.000*** (4.31e-06)	-.000*** (9.53e-06)	-.000*** (8.16e-06)	-.000*** (7.63e-06)	-.002*** (8.62e-06)
Union	.071*** (.004)	.052*** (.003)	.059*** (.003)	.07*** (.004)	.109*** (.004)
Contant	6.502*** (.013)	8.010*** (.008)	8.256*** (.010)	8.548*** (.010)	8.467*** (.025)
R^2	0.531	0.645	0.602	0.593	0.552
N	2,251	2,015	1,680	1,672	2,096

significance level in all five years. Again, this fact assures that the instrumental variable works and the estimation by the 2SLS are likely to be reliable.

Discussion

Our expectation was to find a considerable size of union effect reducing wage inequality just after the Great Labor Offensive in 1987. The expectation appears to be supported by the fact from Table 5-2 and 5-3 that the various values of wage inequality in the both unionized and nonunionized sector dropped from 1987 to 1988. However, our regression results shows that there was no statistically significant union wage-equalizing effect at least in 1987, regardless of the dependent variable used, standard deviation of log wages or variance of logarithm of wages. Rather, we found a significant union effect increasing wage inequality. How can we interpret the unexpected result? I think that the finding occurred, due to union threat effect toward nonunionized employers. Facing massive labor offensive in 1987, employers without unions in their establishments had a strong incentive to prevent their employees from establishing new unions, through

providing a wage increase more generous to potential workers who are likely to involve in the process of unionization. Thus, the unexpected finding should not be read a sign showing that unions increased wage inequality at that time.

The incentive held by employers became smaller as the government began to repress union movement from 1990. Also, employers in the nonunionized sector started to introduce pay-for-performance wage schemes in the 1990s. As a result, union wage equalizing effects become visible in the 1990s.

Many trade unions have resisted many employers' will to introduce performance-based wage system, resulting in increased wage dispersion, in the 1990s and a large portion of the unions succeeded in deterring the employers from introducing the system (KSLI, 1998). It is very likely that the union, in which blue-collar workers, high school graduates, and workers with longer tenures are a majority, can succeed in deterring their employers from introducing the pay for performance (KSLI, 1998). For example, 79.3% of unionized firm can introduce a change in wage payment only after being agreed upon by unions, according to a survey conducted by the KSLI (1998).

This study supports the role of trade unions by finding union diminishing wage dispersion within establishments. However, the size of union effects on wage dispersion is smaller than that of the United States ranging 10-25% (Freeman, 1980 & 1982). It appears that the small size of union wage-equalizing effect comes from the relative higher level of wage equality in Korea. Egalitarian societies like Asian countries like Korean and Japan have emphasized the symbolic role of pay equity. The Korean government also has valued equality in wages until at least the early part of the 1990s in order to minimize workers' complaints about low wages resulting from export-driven

economic development and about chaebols dominating the economy. In this situation, the gap in wage dispersion between unorganized and organized sectors has been lower than that in the western countries. The partial introduction of pay for performance in the 1990s appears not to change the wage dispersion completely within firms. The relative smaller size of the union effect on wage dispersion found here should be attributed to the egalitarian wage structure, which has existed for a long time.

5. Conclusion

This study does not emphasize greatly how differences in bargaining structures are related to the different levels of wage dispersion. It is argued that the bargaining structures have a significant influence on the level of wage dispersion (Rowthorn, 1992). For example, wage dispersions among workers are much higher in the countries where bargaining is decentralized, as in the U.S. and Japan, than in the centralized economies of Scandinavia (Rowthorn, 1992). Korea seems to be an exception to the argument in that the Korean economy with a decentralized enterprise union system has shown a extremely low level of wage dispersion, compared to the U.S. and Japan with a similar decentralized bargaining structure. However, we already know that the level of wage inequality in economy in Korea is much smaller than that in United States. While greater wage inequality in U.S. may allow a larger union wage-equalizing effect to exist, small wage inequality may not allow for big union wage-inequality in Korea.

Therefore, an interesting question for future research is to investigate how different levels of wage dispersion are found across the three countries, where they share similar

decentralized bargaining structures. In addition, it would be useful to examine to see if different levels of decentralization of bargaining structures across industries produce different levels of wage dispersion in Korea.

The findings in this chapter have indicated that the trade unions in Korea have decreased wage dispersion within establishments for the period examined. Prior research on wage dispersion, however, has not answered the question of what amount of wage dispersion is optimal (Bloom & Michel, 2002). It is difficult to tell whether union effects on wage dispersion so far are close to an optimal level or already beyond a desirable level. The question depends on which criterion would be adopted to judge the optimum of degree of wage dispersion. In addition, the judgment will be varied according to the organizational characteristics (e.g., manufacturing versus non-manufacturing), the subject of the judgment (employers, unions, average workers, and a few employees at the top of the wage structure, and the conflicting goals of the subject (e.g., competition versus collaboration). Thus, most of the research on the union wage-equality effect including this study has remained focused on the existence of the effect and has not gone further in understanding whether the size of the effects is desirable or how the reduced wage dispersion affect outcomes such as job-related satisfaction, organizational commitment, productivity, product quality, and profit level. Hopefully, future study on union wage-equality effect will answer the questions.

As expected, wage inequality will continue to increase for the time being when considering the expectations from management, labor, and government. The principle of 'generosity to the less-paid and lesser generosity to the better-paid before 1987 is not supported by the government currently. However, the implicit policy on low wage

providing a wage increase more generous to potential workers who are likely to involve in the process of unionization. Thus, the unexpected finding should not be read a sign showing that unions increased wage inequality at that time.

The incentive held by employers became smaller as the government began to repress union movement from 1990. Also, employers in the nonunionized sector started to introduce pay-for-performance wage schemes in the 1990s. As a result, union wage equalizing effects become visible in the 1990s.

Many trade unions have resisted many employers' will to introduce performance-based wage system, resulting in increased wage dispersion, in the 1990s and a large portion of the unions succeeded in deterring the employers from introducing the system (KSLI, 1998). It is very likely that the union, in which blue-collar workers, high school graduates, and workers with longer tenures are a majority, can succeed in deterring their employers from introducing the pay for performance (KSLI, 1998). For example, 79.3% of unionized firm can introduce a change in wage payment only after being agreed upon by unions, according to a survey conducted by the KSLI (1998).

This study supports the role of trade unions by finding union diminishing wage dispersion within establishments. However, the size of union effects on wage dispersion is smaller than that of the United States ranging 10-25% (Freeman, 1980 & 1982). It appears that the small size of union wage-equalizing effect comes from the relative higher level of wage equality in Korea. Egalitarian societies like Asian countries like Korean and Japan have emphasized the symbolic role of pay equity. The Korean government also has valued equality in wages until at least the early part of the 1990s in order to minimize workers' complaints about low wages resulting from export-driven

inequality in tandem with low wages cannot be sustained as real wages have increased rapidly. Overall, increase of wage dispersion during the Korean financial crisis cannot be viewed as a short-lived phenomenon.

CHAPTER SIX

UNION EFFECT ON FOUR WAGE DETERMINANTS: EDUCATION, EXPERIENCE, TENURE, AND GENDER

1. Introduction

In the previous chapter, it is stated that the Korean unions had narrowed wage dispersion in the organized sector, which was greater than in the unorganized sector during the period of 1987-1999. Therefore, the question here is whether trade unions affect the rates of returns for human capital for workers regarding education, experience, and tenure, and the effects of personal characteristics such as gender, regarding wages, when compared to the unorganized sector. The question is accompanied by another related question, how significantly unions reduce return rates for education, experience, and tenure and the coefficient of gender. Regarding the whole period concerned in this study 1987-1999, whether any significant changes in the union effects on the coefficients for the four variables within the period are evident should be one of our interests, too.

To answer these questions, this chapter will use individual-level data from the BSWs that were used in the previous chapter dealing with the union wage premium in the distribution of wages. Individual level-data will be utilized to determine if significant negative effects of unions on return rates for education, experience, tenure, and sex are present. The results from individual-level data will be estimated by OLS and quantile regression.

The results, estimated by OLS and quantile regression, from individual-level data show that trade unions really did reduce the return rates for education and tenure in most of the years between 1987-1999 and experience and gender in many years during the 1990s.

2. Model and Data

The data used here are individual-level data from the BSWS, which are the same as the data in the previous chapter, which examines the union wage effect on the distribution of wages. This individual-level data are used to see if significant differences exist in return rates for education, experience, and tenure and in the coefficient of sex between unionized and non-unionized sector.

The model that will be estimated in this chapter is

$$\ln W_i = \alpha + X_i\beta_\tau + \varepsilon_i \quad (6.1)$$

whether $\ln W_i$ represents the natural logarithm of monthly gross wages, divided by hours worked, for individual i , X_i represents a vector of individual characteristics and organizational characteristics regarding the establishments which the individual works for, and ε_i is a normally distributed error term. When estimating in unionized sector, the equation of 7.1 will be as follow,

$$\ln W_{iu} = \alpha_u + X_{iu}\beta_\tau + \varepsilon_{iu} \quad (6.2)$$

whether $\ln W_{iu}$ represents the natural logarithm of monthly gross wages, divided by hours worked, for individual i , whose establishment is unionized. Also, the wage equation estimated in the non-unionized sector would be as follow,

$$\ln W_{in} = \alpha_n + X_{in}\beta_\tau + \varepsilon_{in} \quad (6.3)$$

whether $\ln W_{in}$ represents the natural logarithm of monthly gross wages, divided by hours worked, for individual i , whose establishment is not unionized.

Due to space limitation, I do not present descriptive statistics for all variables of all, unionized, and non-unionized workers, in each year in the period 1987-1999. Therefore, instead of those statistics, the descriptive statistics for the period 1987-1999 are presented in Table 4-1 in the previous chapter examining union effect on wages.

3. Results

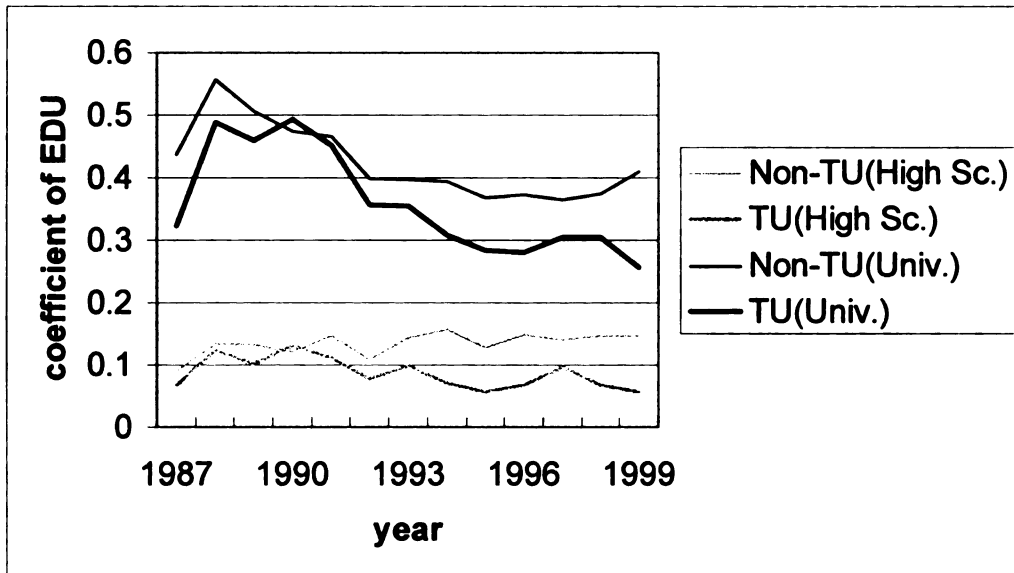
Results from OLS estimation

Figure 6-1 shows the graphs for the coefficients of four major wage determinants, estimated by the OLS, between unionized and non-unionized sectors for 1987-1999. The logarithm of hourly real wage is used as the dependent variable in the wage equation. The covariates of the four major wage determinants are and four regional dummies, seven industry dummies, four establishment dummies, marital status, experience squared, tenure squared, and a remaining education-related variable for two-year college graduates.

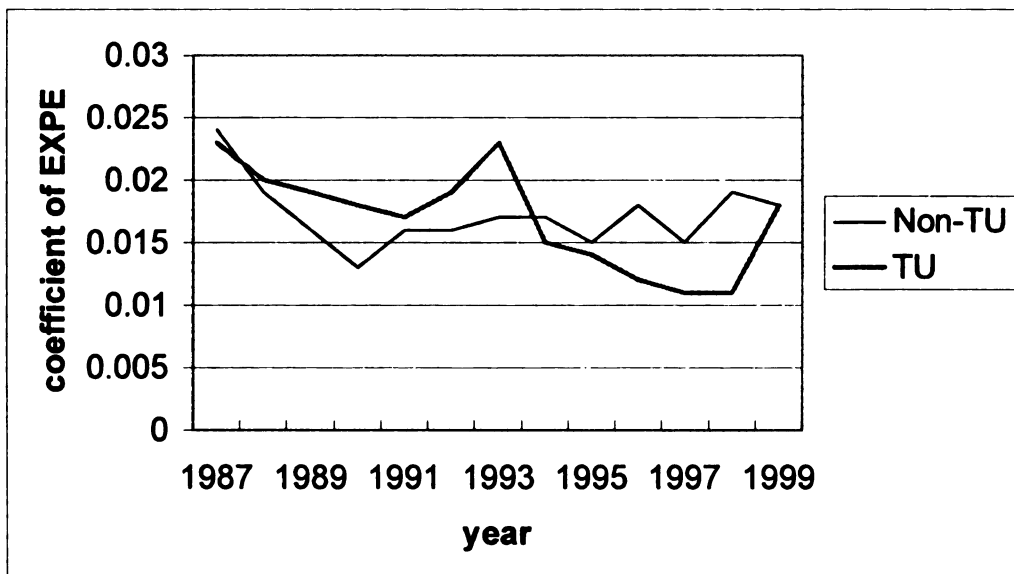
Figure 6-1, (a), shows the effect size of education, which is represented by high school and university graduates compared to elementary and middle school graduates, between the unionized and non-unionized sectors during the period 1987-1999. With an exception of 1990, the sizes of coefficients for high school and university graduates are larger in the non-unionized sector than in the unionized sector in all years. It appears that the unions are associated with the reduced effects of education on wages in every year.

Figure 6-1. Return rates for the four determinants of wages, estimated by the OLS, between non-unionized and unionized sector for 1987-1999.

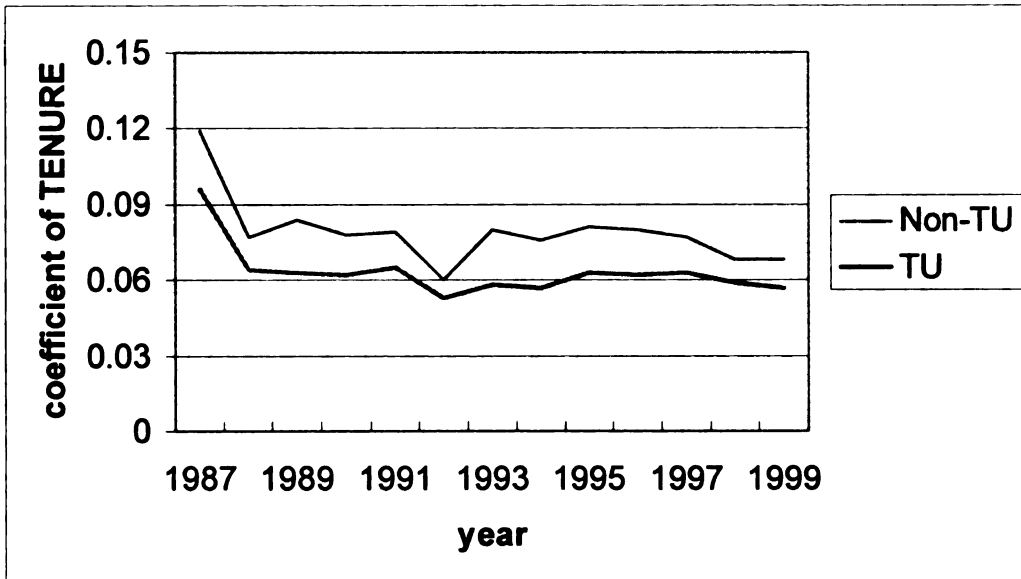
(a) education (university and high school graduates)



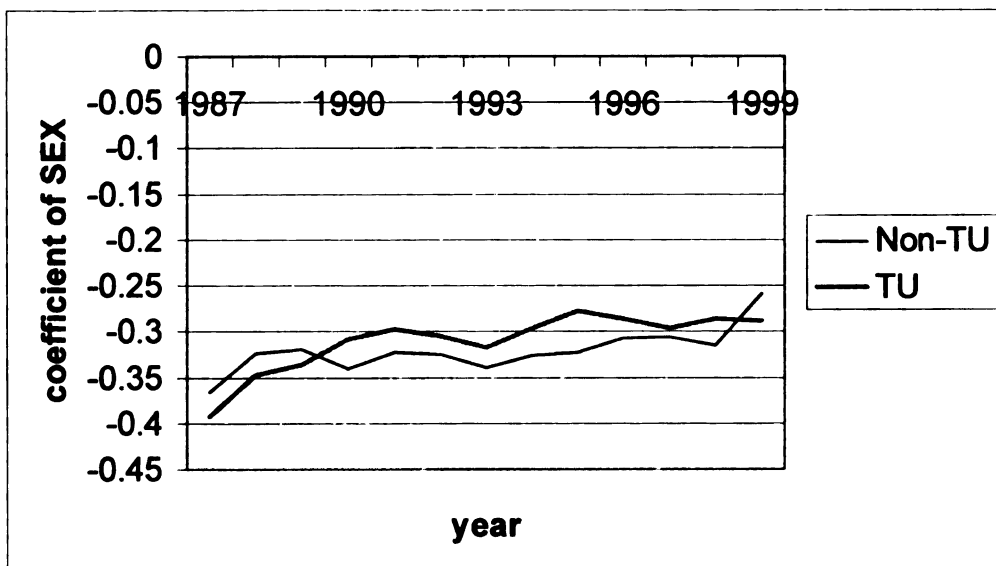
(b) experience



(c) tenure



(d) sex



The gap in the size of coefficients between the unionized and non-unionized sectors becomes wider in the 1990s, for both high school and university graduates. Although it might be an extreme case, the difference in the size of the coefficients between the two sectors is .09 (9.4%) for high school graduates and .152 (16.4%) for university graduates in 1999. It means that the wage difference between workers who graduated elementary or middle schools and workers who graduated high schools is larger in the non-unionized sector by 9.4% than in the unionized sector. Furthermore, it means that the wage difference between workers who graduated elementary or middle schools and workers who graduated universities is greater in the non-unionized sector by 16.4% than in the unionized sector. The amounts of difference regarding education between the two sectors are quite large, assuring our prediction with respect to the impact of unions on human capital.

The results relating to experience, (b) in Figure 6-1, are confusing in that the size of a year of experience is higher in the unionized than non-unionized sector for 1988-1993 and lower in the unionized than the non-unionized sector for 1994-1998. Our expectation that size of experience would be lower in the unionized than the non-unionized sector fits the fact only for 1987 and 1994-1998.

The Figure showing the size of the coefficient for a year of tenure for 1987-1999, (c) in Figure 6-1, appears simple. In every year, the size of coefficient for tenure is lower in the unionized sector than in the unorganized sector. Except for a considerable decrease in the effect of tenure for 1987-1988, the absolute sizes of the coefficient are stable in both the unionized and the non-unionized sector. For example, the difference in the effect size of tenure between the unionized and non-unionized sector is .014 (.077 for the non-

unionized and .063 for the unionized sector) and the mean of tenure for the entire sample is 6.62 in 1997. Thus, the difference between the two sectors results in the decrease of wages for average workers with mean values of other characteristics by 9.27% in the unionized sector, relative to comparable workers in the non-unionized sector. Figure 6-1 supports the notion that trade unions are likely to reduce the effect of human capital on wages.

In 1987, the size of the coefficient for sex is -.366 in the unorganized sector and -.392 in the unionized sector, as seen in (d) in Figure 6-1, implying that female workers earned smaller wages by 44.2% than male workers in the unorganized sector and by 48% than male workers in the organized sector. We may find that a huge gender discrimination toward female workers with regard to wages is evident. Also a seemingly interesting fact is that the size of the coefficient for females is lower in the organized sector than in the unorganized sector for 1987-1989 and 1999. However, the differences in the coefficients for female workers between unionized and non-unionized sectors for the period 1987-1989 are not statistically significant at the 5% level.⁴⁰ Even though unions are supposed to protect marginal workers like female workers more, in reality structural discrimination toward female workers is also severe in the organized sector as in the unorganized sector for 1987-1989.

From 1990, the trade unions appear to do what they are supposed to do, protecting marginal workers like female workers. Even though the results are not presented here, the size of the coefficient for interaction of the unions with gender in the wage equation having full interaction terms of the unions with independent variables is .038 in 1990,

⁴⁰ It means that, in the wage equation with full interactions of unions with other independent variables, the coefficient of 'union*gender' for 1987-1989 was not significant at the 5% level. The result for this fact is available upon request.

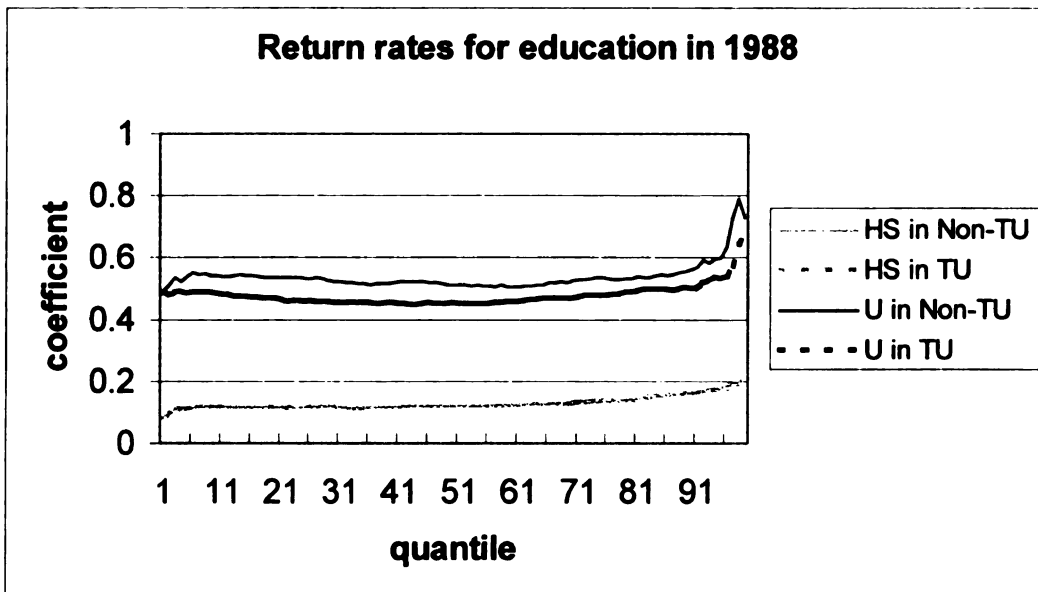
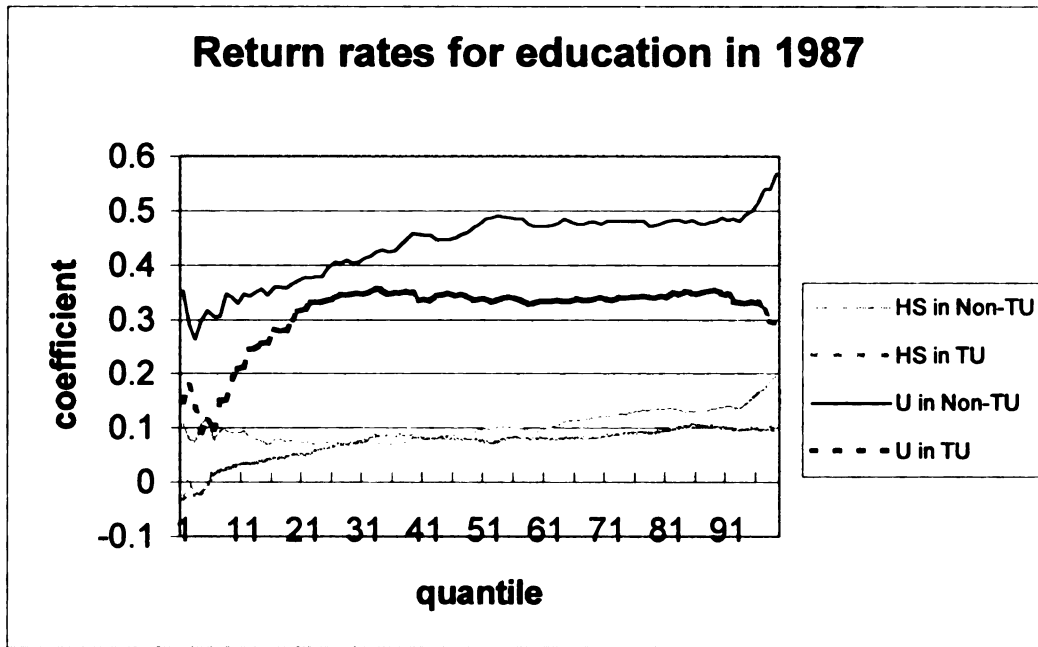
.030 in 1991, .027 in 1992, .029 in 1993, .044 in 1994, .055 in 1995, .040 in 1996, .022 in 1997, and .045 in 1998, respectively. The interaction terms are all significant statistically at the 1% level. Thus, the implication is that, due to trade unions, the wages for female workers in the unionized sector is larger by 2.7 % ($= \exp[.027]-1$) in 1992 or 5.7% ($= \exp[.055]-1$) in 1995 than in the non-unionized sector.

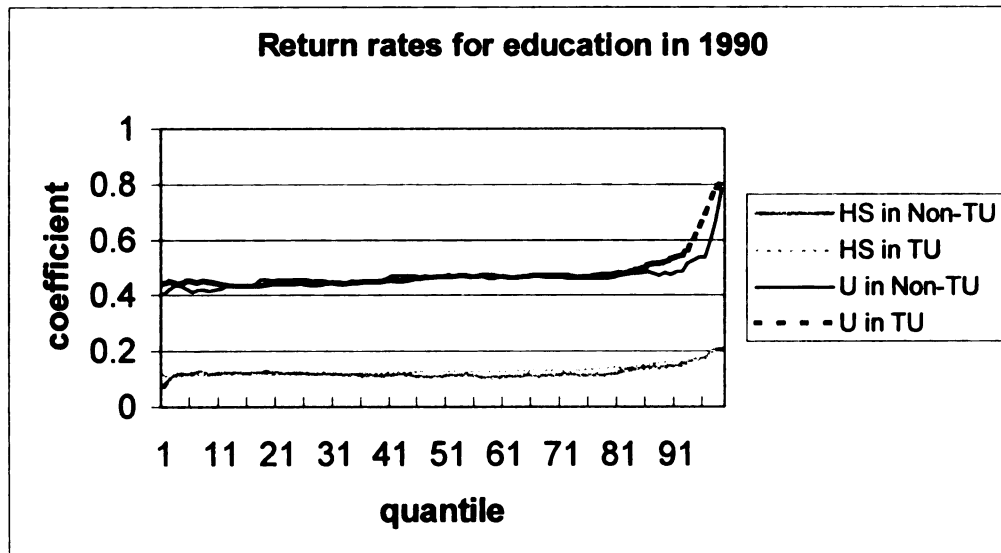
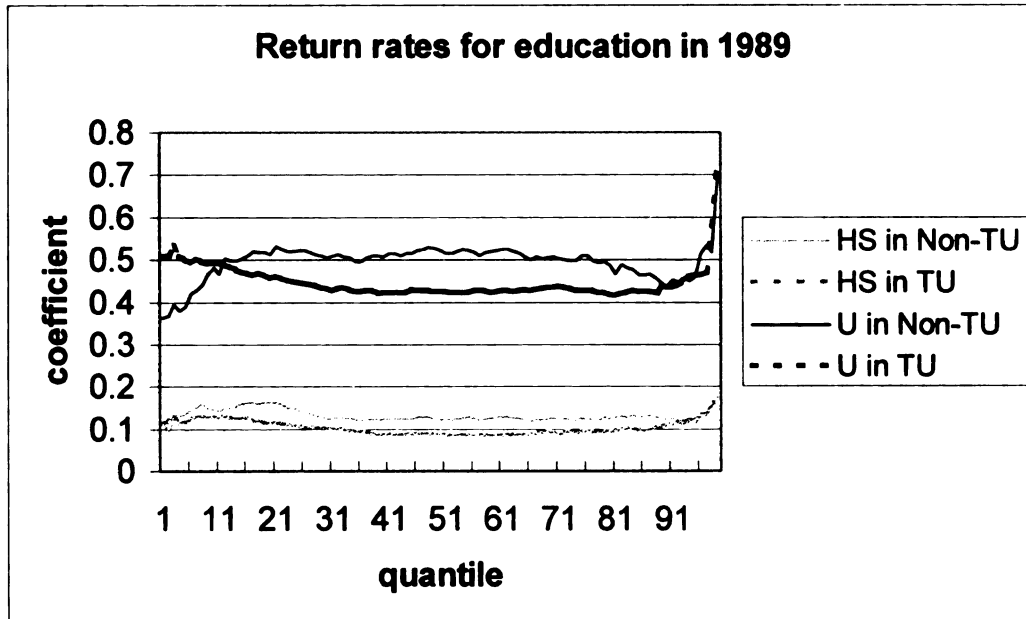
The difference in the coefficient for female workers between the unionized and non-unionized sectors becomes negative (-.023) again and it is statistically significant at the 5% level.

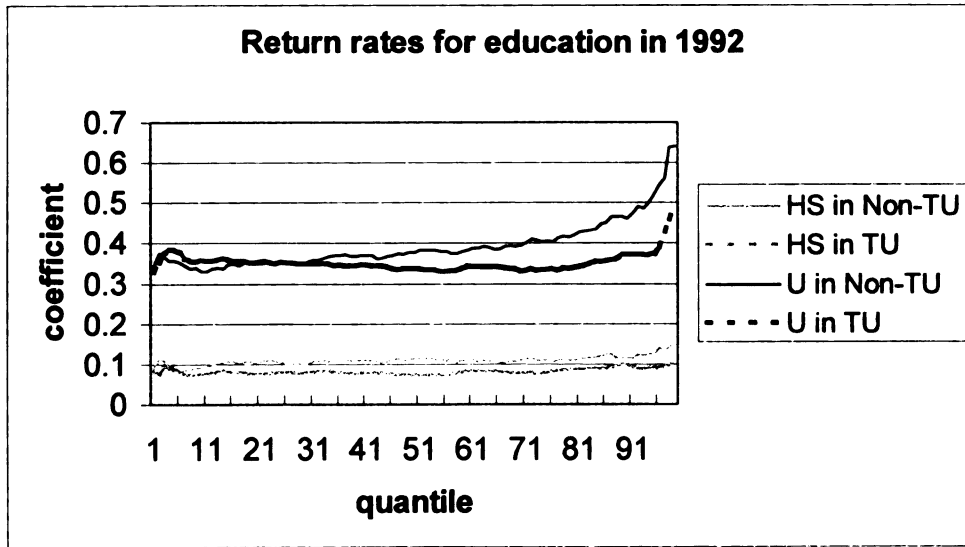
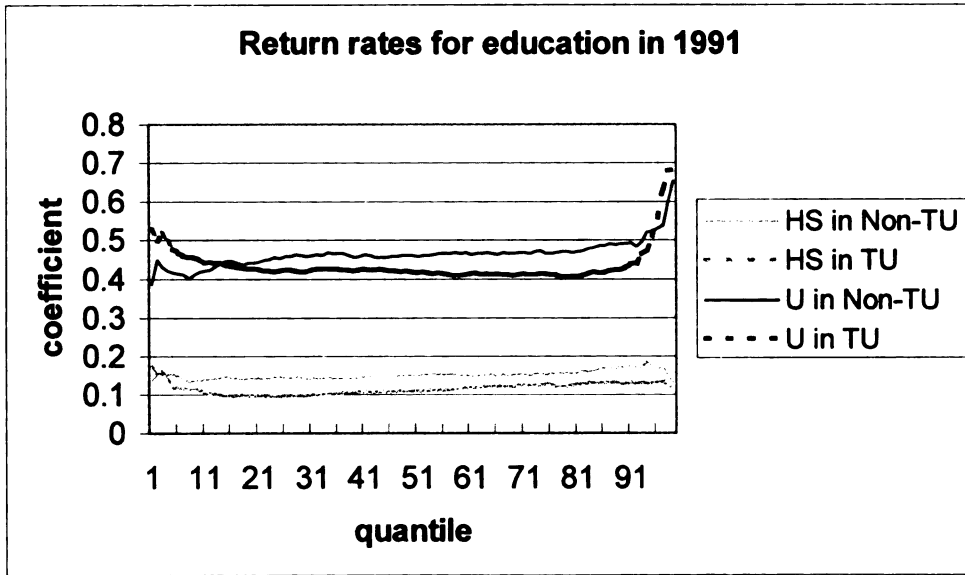
Figure 6-1 shows the decrease in the size of the coefficient for gender for 1987-1999. The size of the coefficient for female decreases from -.366 in 1987 to -.259 in the 1999 in the unorganized sector and from -.392 in 1987 to -.289 in 1999 in the organized sector. For the thirteen years, the size of the wage gap between female and male workers decreased 14.6% in the unorganized sector and 14.5% in the organized sector for the entire period of 1987-1999. For the period of 1990-1998, the size of the coefficient for female workers is higher in the organized sector than in the unorganized sector, meaning the union's contribution to reduces the gender wage gap.

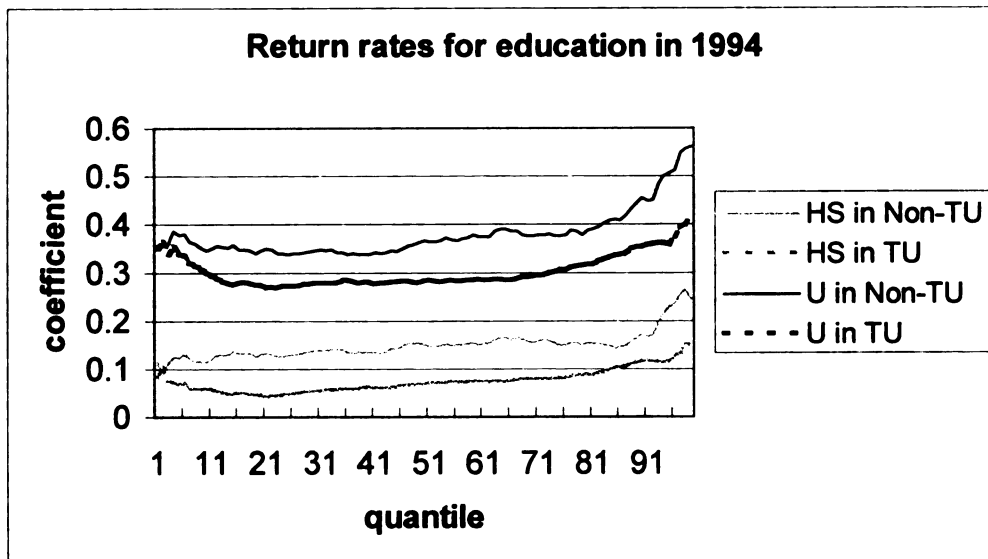
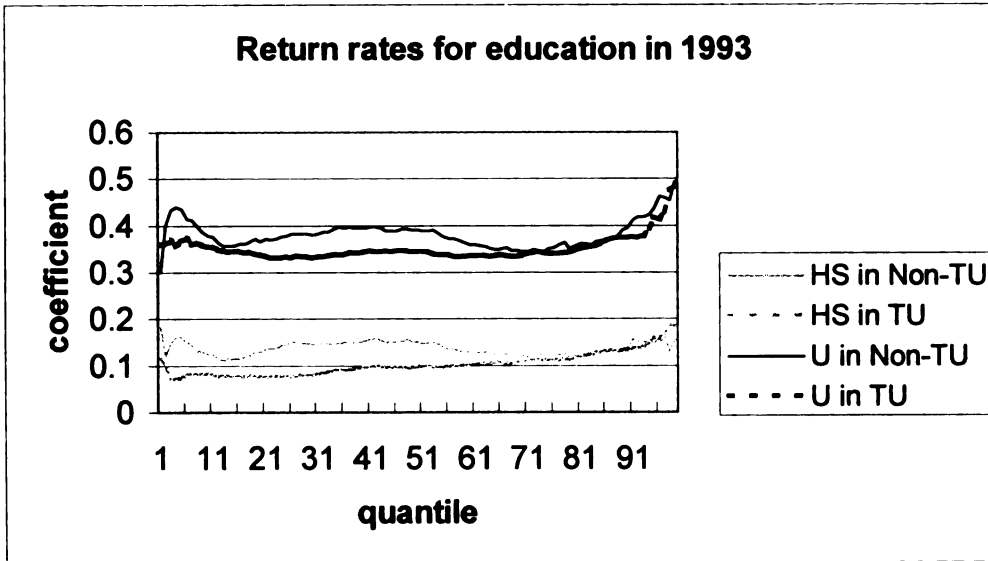
In sum, the results from OLS implies that the unions for 1987-1999 clearly reduced the effects of human capital such as education and a year of tenure on wages, except experience. Also trade unions for 1990-1998 increased the size of coefficient for female workers.

Figure 6-2. Return rates for high-school graduates and university graduates, estimated by quantile regressions, between non-unionized and unionized sector for 1987-1999. (HS and U means high-school and university, respectively. Non-TU and TU means non-unionized sector and unionized sector, respectively. Reference group is workers graduated middle-school or less.)

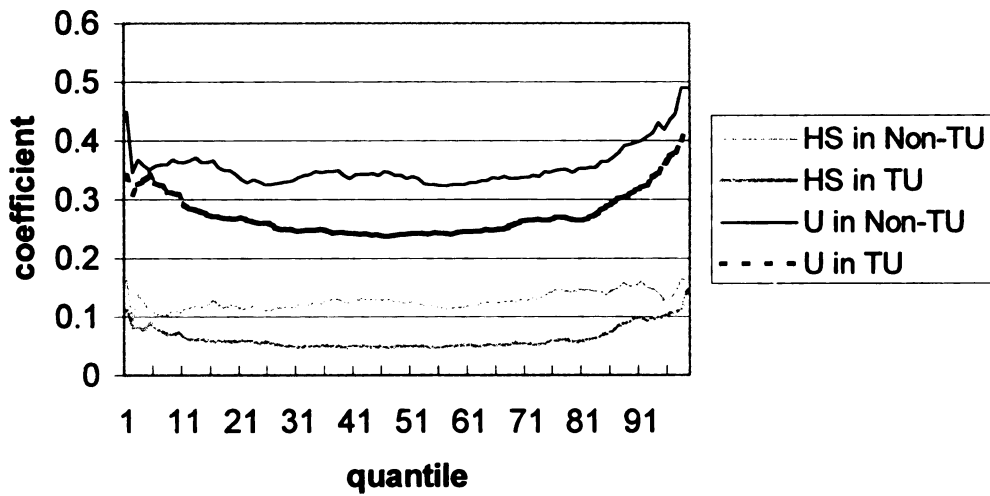




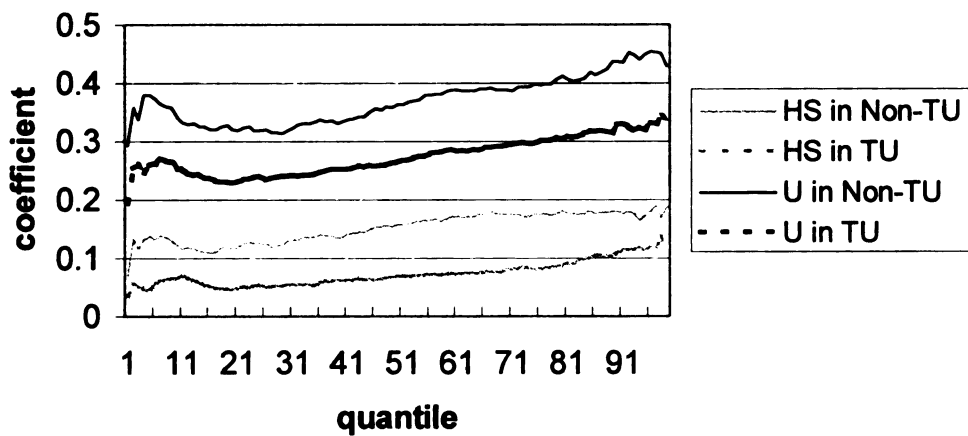


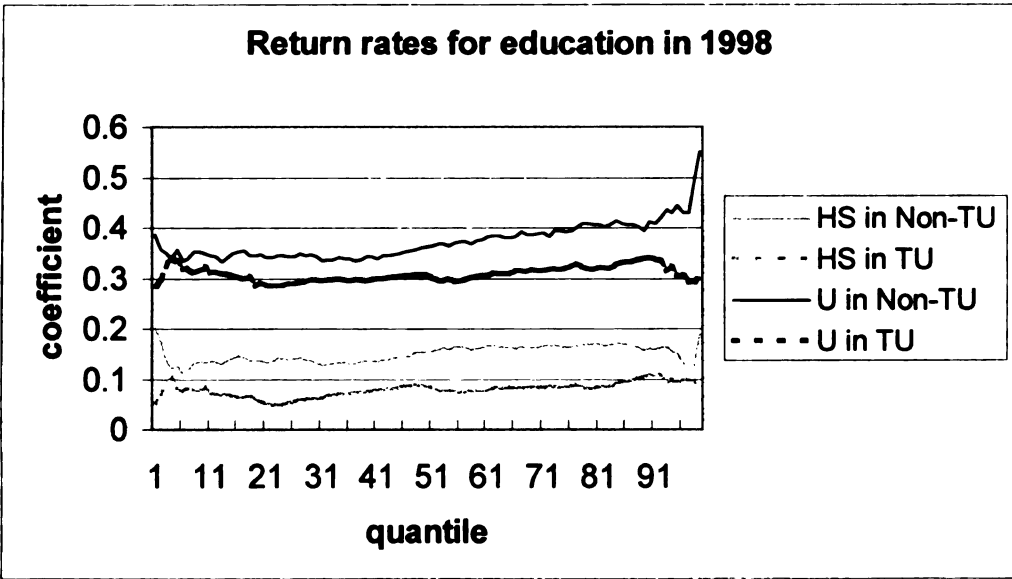
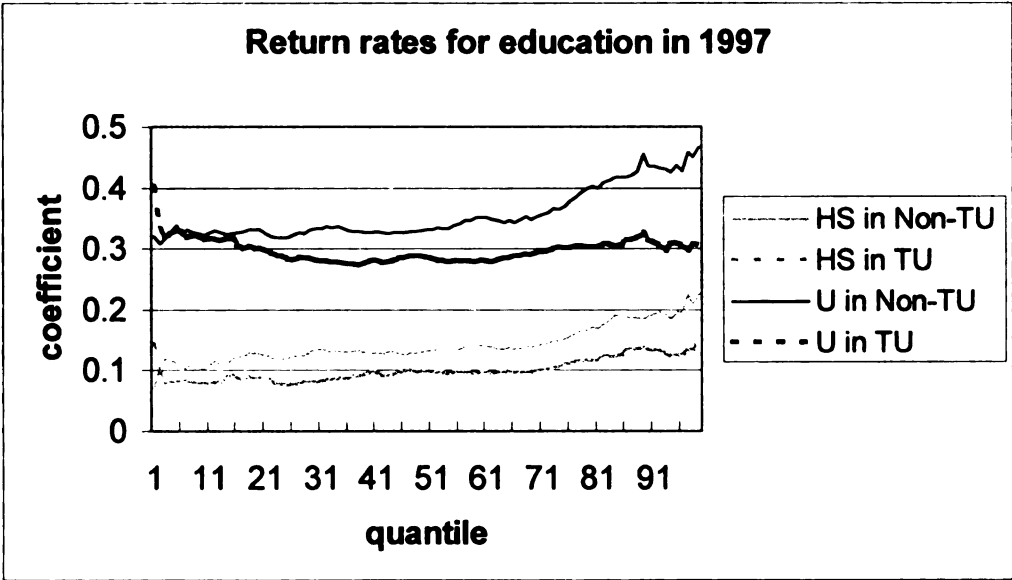


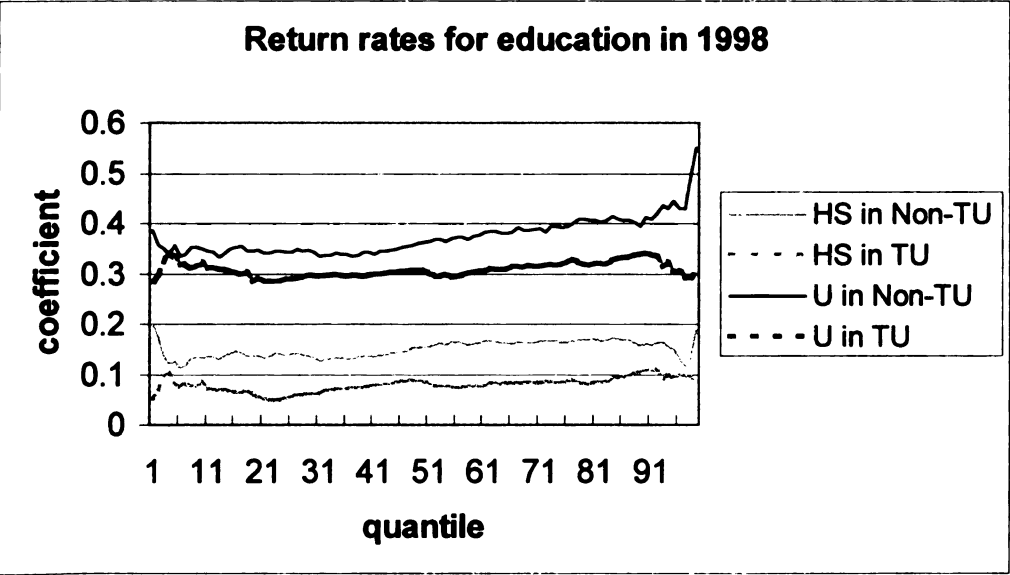
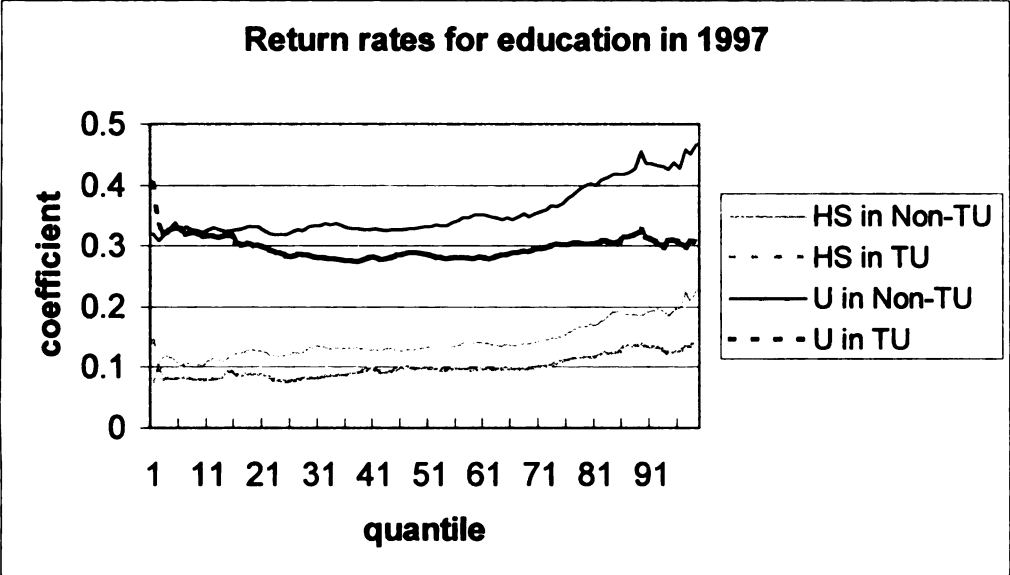
Return rates for education in 1995

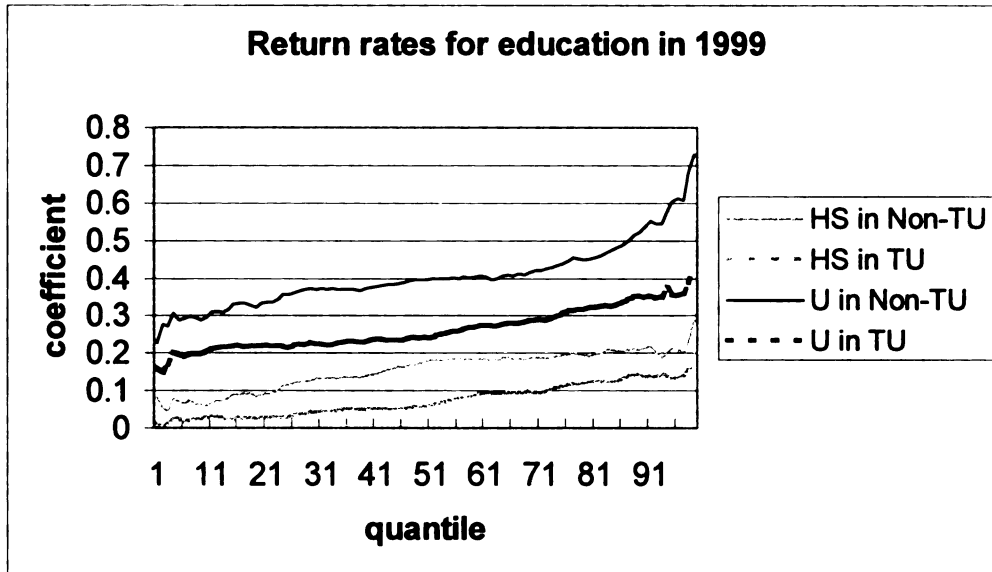


Return rates for education in 1996









Results from Quantile Regression

Figures from Figure 6-2 to Figure 6-5 displays the difference in the return rates for education (Figure 6-2), a year of experience (Figure 6-3), and a year of tenure (Figure, 6-4) and in the coefficient of sex (Figure 6-5) between the unionized and non-unionized sectors. These figures are drawn from individual level data from the BSWs. Also the figures are estimated by quantile regressions, which was used in the chapter 4. However, quantile regression is conducted on each sector separately, while it was done for the whole sample in the previous chapter.

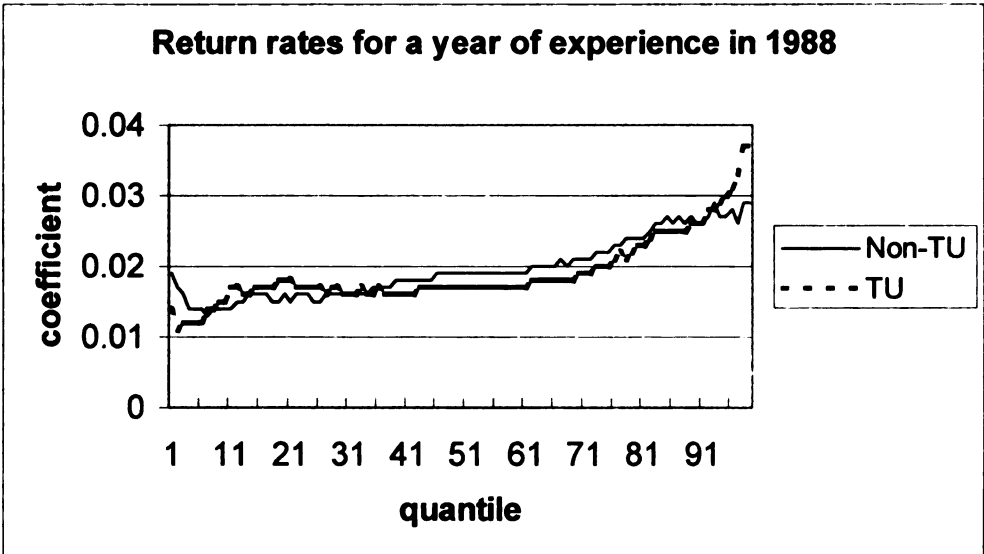
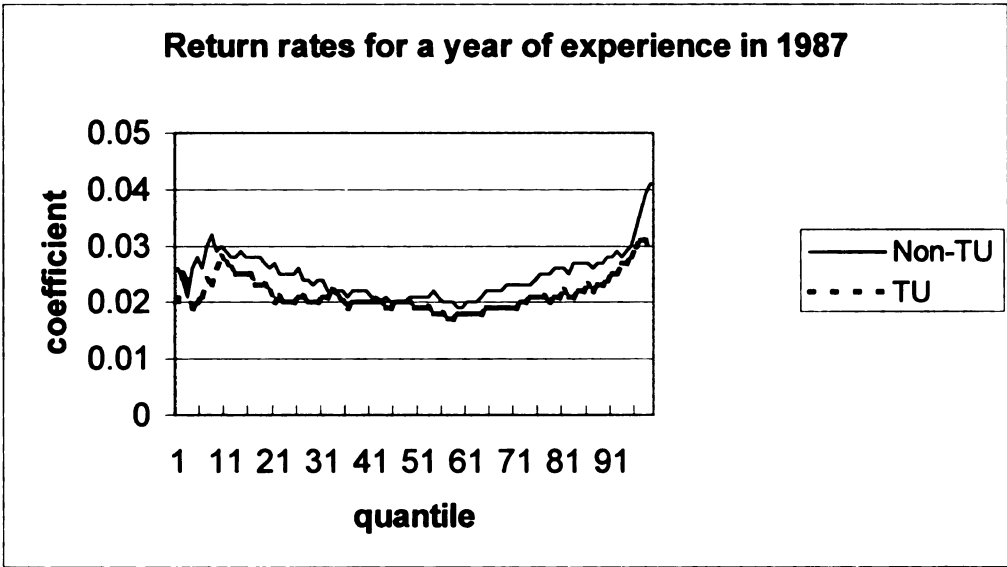
The comparison of the return rates for high school graduates and university graduates between the unionized and non-unionized sectors for 1987-1999 in Figure 6-2 is evident. For example, it is clear that the return rates for university graduates are larger in the non-unionized sector than the unionized sector in 1987, implying the union wage-equalizing effect. However, the difference in the return rates for high school graduates between the unionized and non-unionized sectors is much smaller than a comparable difference for

university graduates between the two sectors.⁴¹ Also a large difference in return rates is evident for high school and university graduates between the two sectors. The trend continues until 1993. The extreme case would be 1990, where it appears that only two lines are seen, one for high school graduates and another for university graduates, because no visual difference is evident in the return rates for both high school and university graduates between the unionized and non-unionized sectors. This finding indicates that little union effect on reducing return rates for education in that year is evident. However, the trend regarding the return rates for education changes are clear in 1994. The trade unions in that year clearly reduced the coefficient for high school graduates as well as university graduates, compared to the non-unionized sector. For example, the return rates for high school graduates in the unionized sector is below half of the rates in the non-unionized sector at the lower half of the wage distribution in 1999. Also the return rates for university graduates in the unionized sector are in the middle between the return rates for high school graduates for the non-unionized and university graduates for the non-unionized.

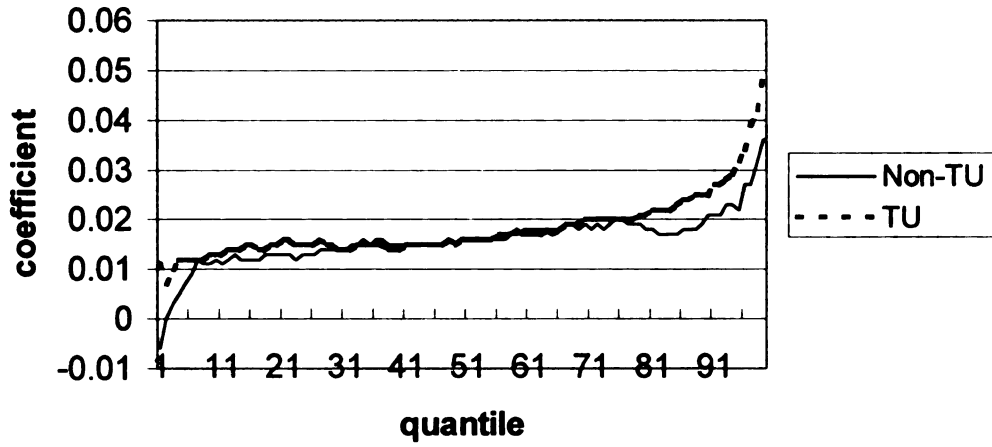
Figure 6-3 shows yearly changes in the return rates for a year of experience between the unionized and non-unionized sectors for 1987-1999. The figures show that the slope of the return rates for experience is upward, meaning that the workers at the top of the wage distribution are likely to benefit more from an added year of experience than do the workers at bottom or middle of the wage distribution. It is clear that the difference of the return rates between the two sectors over many years are not large, even though the

⁴¹ More precise comparison of coefficient size in between unionized and non-unionized sector should be done by statistical tests. It is possible to add a variable showing interactions between education and union in the equation. Because of time limit resulting from the nature of quantile regressions with 20 bootstrap repetitions, the job is not done in this study. The situation is the same for experience, tenure, and sex.

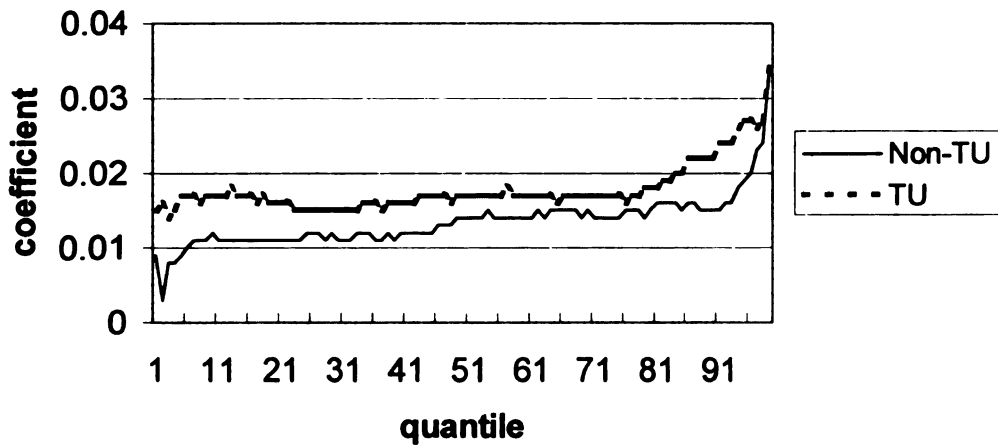
Figure 6-3. Return rates for a year of experience, estimated by quantile regressions, between non-unionized and unionized sector for 1987-1999.



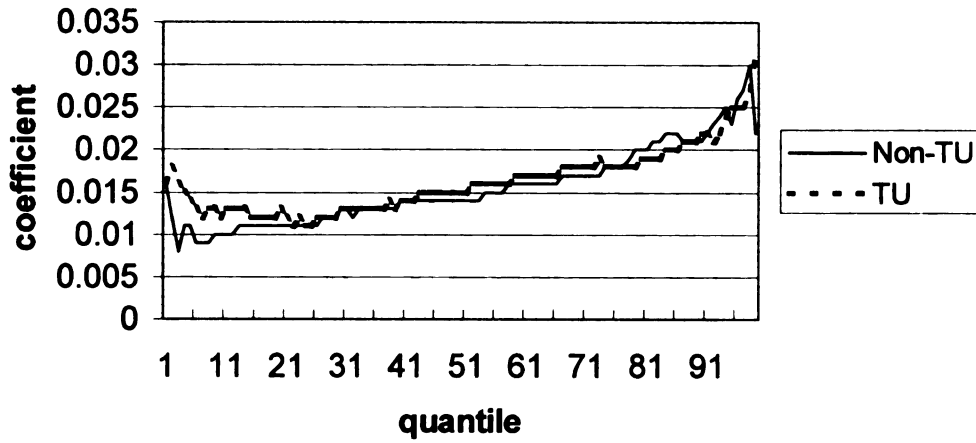
Return rates for a year of experience in 1989



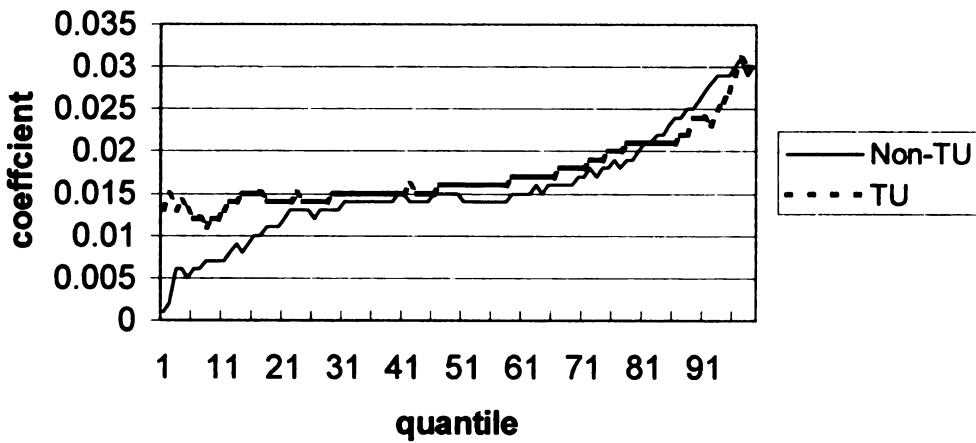
Return rates for a year of experience in 1990



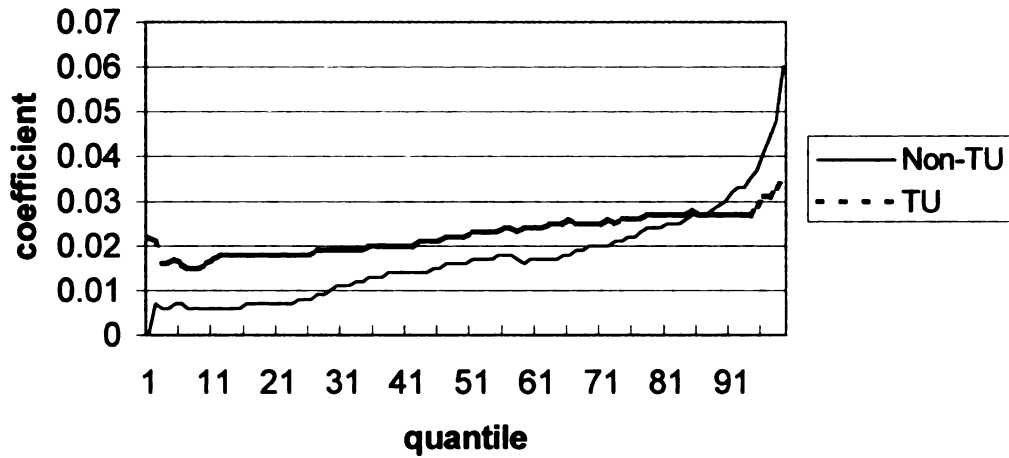
Return rates for a year of experience in 1991



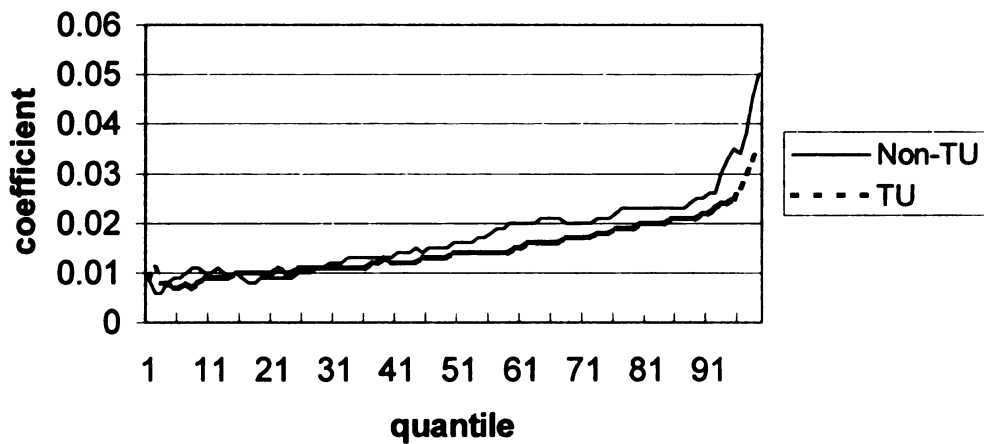
Return rates for a year of experience in 1992



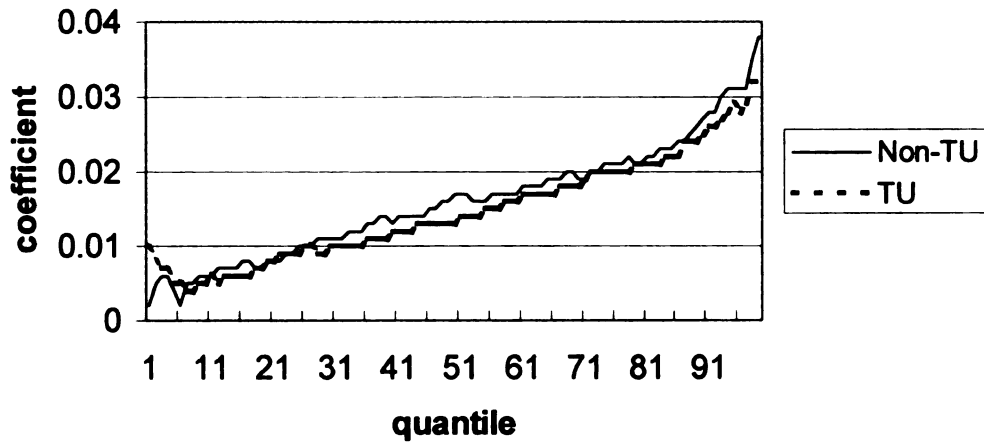
Return rates for a year of experience in 1993



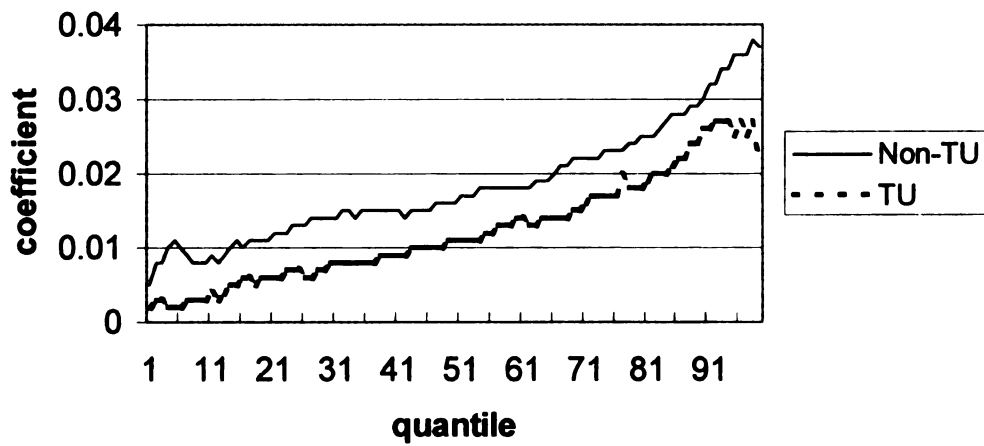
Return rates for a year of experience in 1994

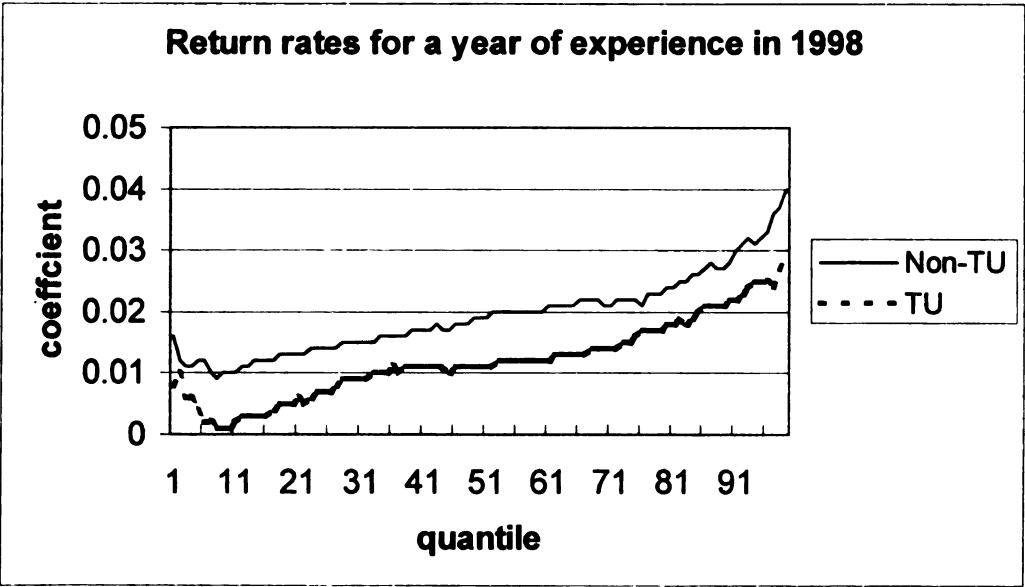
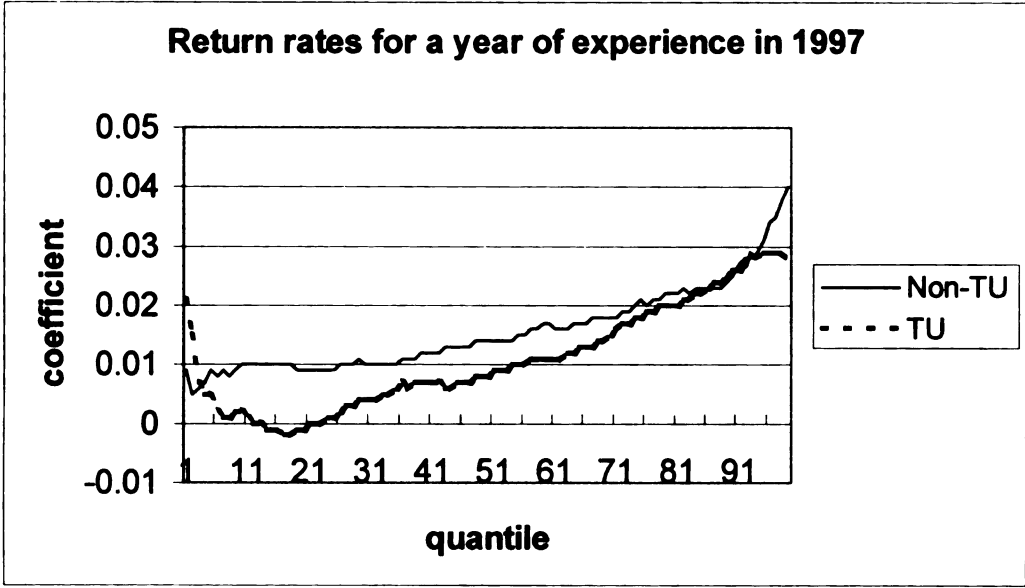


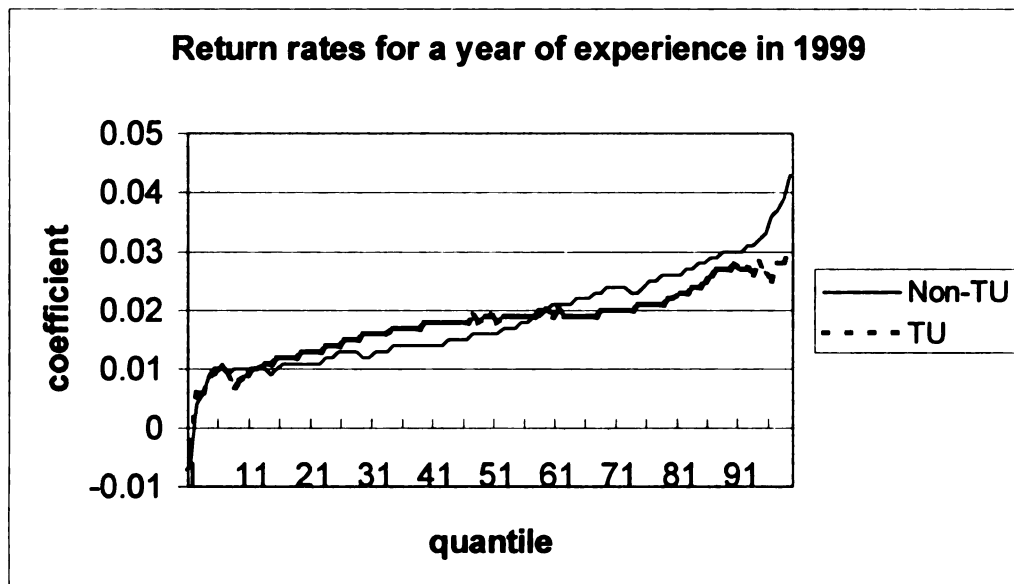
Return rates for a year of experience in 1995



Return rates for a year of experience in 1996



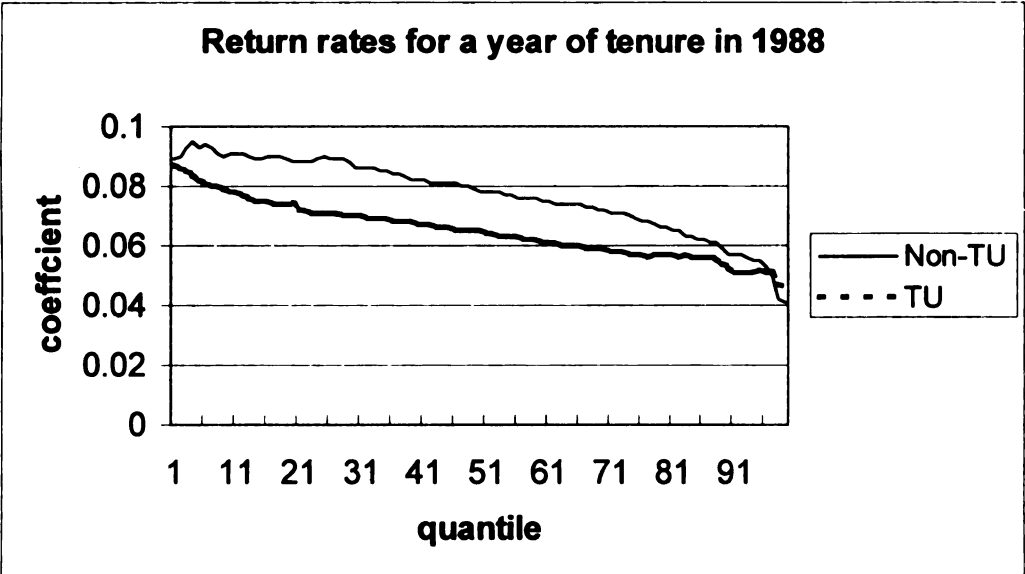
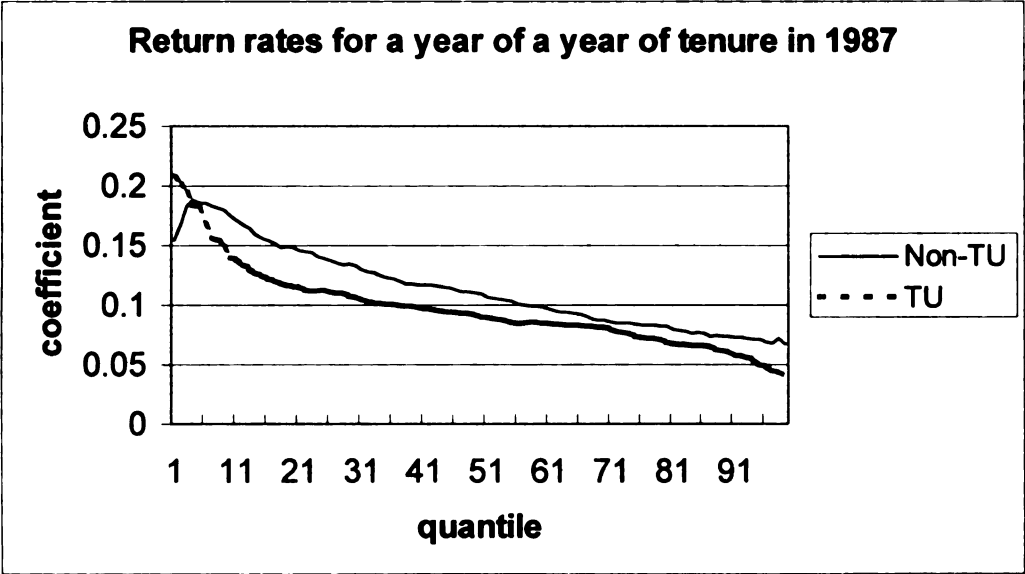




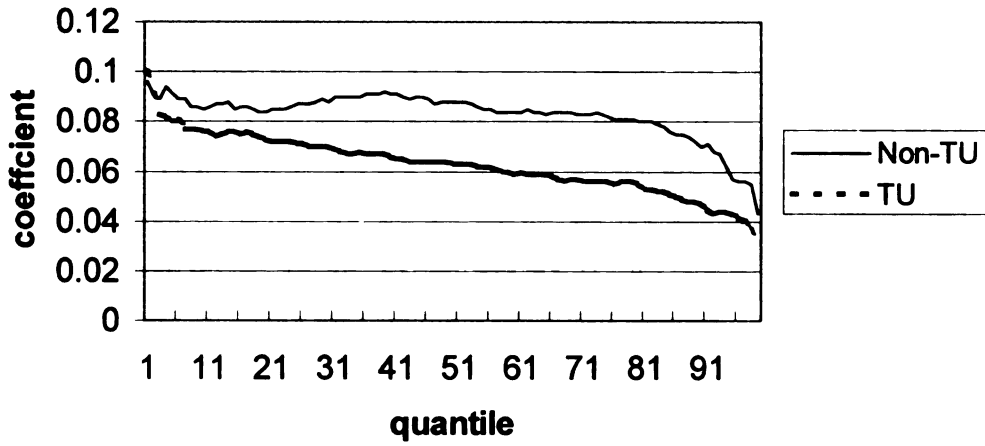
absolute size of the coefficient ranging from 0 to .04 is smaller than other coefficients such as education, tenure, and sex. Until 1995, we cannot determine that the return rates for a year of experience in the unionized sector are lower than in the non-unionized sector. Even the return rates for experience in the unionized sector are apparently larger than in the non-unionized sector in 1990 and 1993. It is the period of 1996-1998 when the return rates for a year of experience in the unionized sector exceed that in the non-unionized sector.

The comparison of the return rates for a year of tenure between the unionized and non-unionized sector for 1987-1999 is shown in Figure 6-4. First of all, it is evident that the slope of the coefficients for tenure is downward at a decreasing rate as a quantile in the distribution of wage increases. It implies that workers at lower end of wage distribution are likely to benefit less from an increase of a year of tenure than are workers at the upper part of the wage distribution. This finding cannot be obtained through the OLS estimation

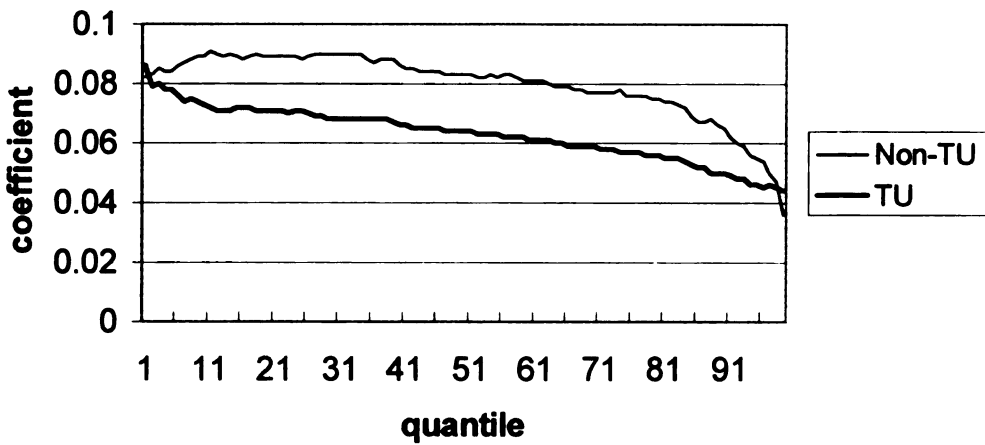
Figure 6-4. Return rates for a year of tenure, estimated by quantile regressions, between non-unionized and unionized sector for 187-1999.

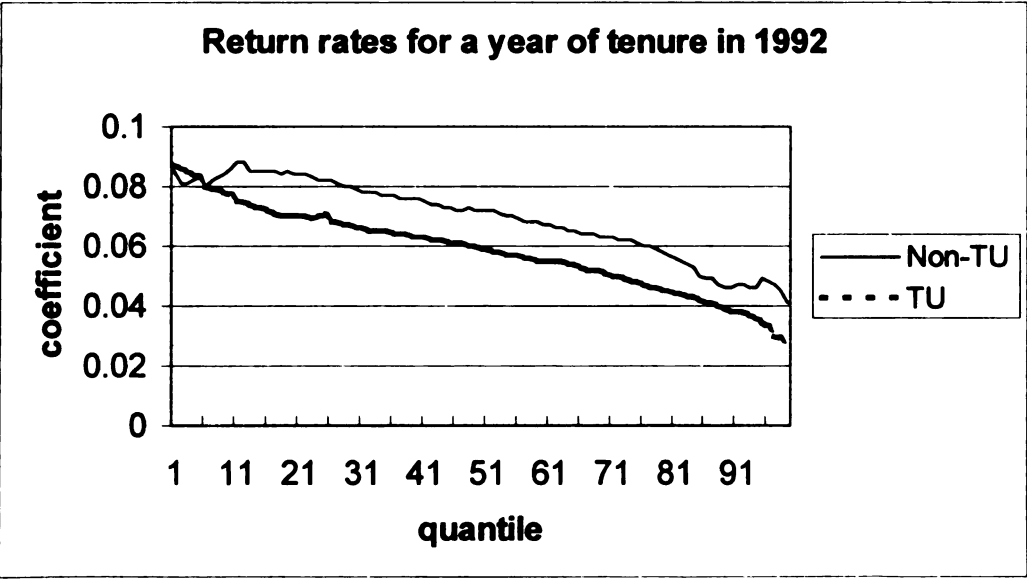
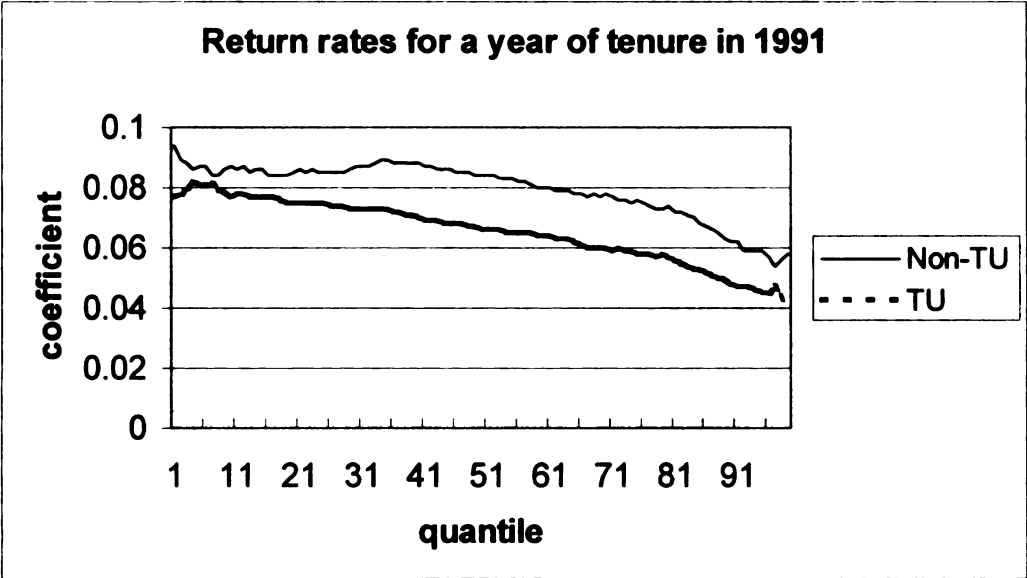


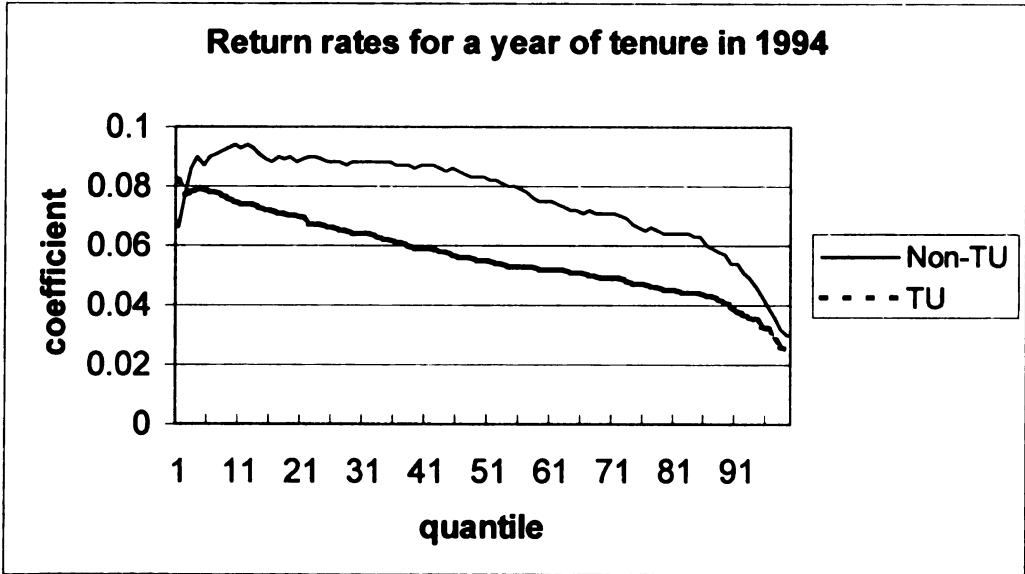
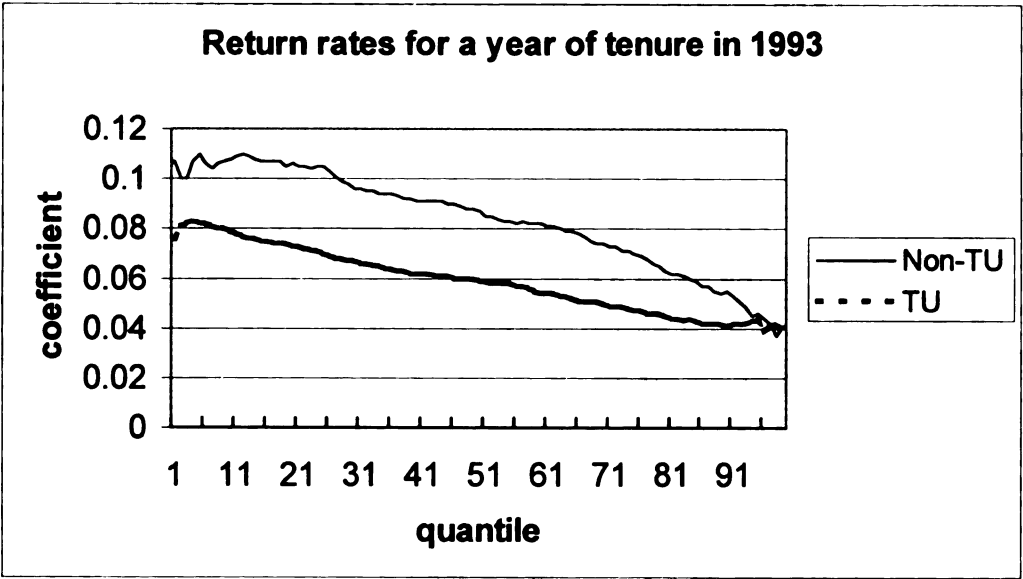
Return rates for a year of tenure in 1989



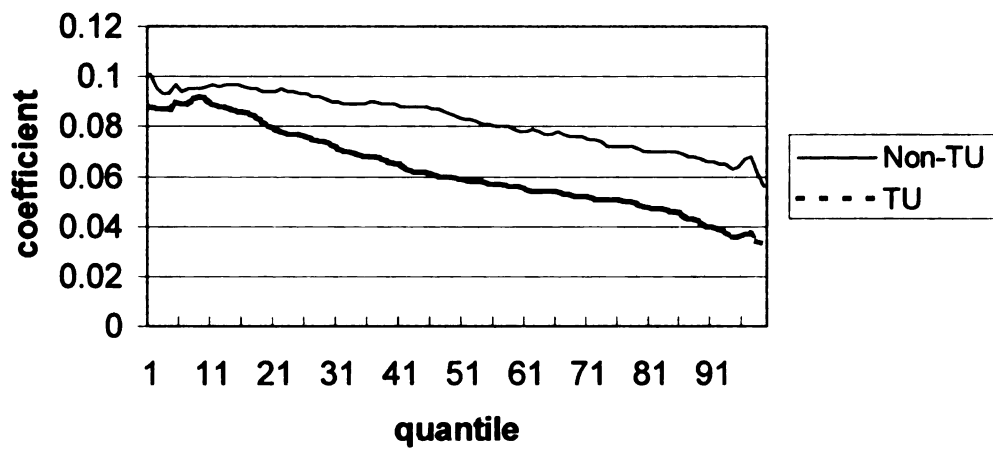
Return rates for a year of tenure in 1990



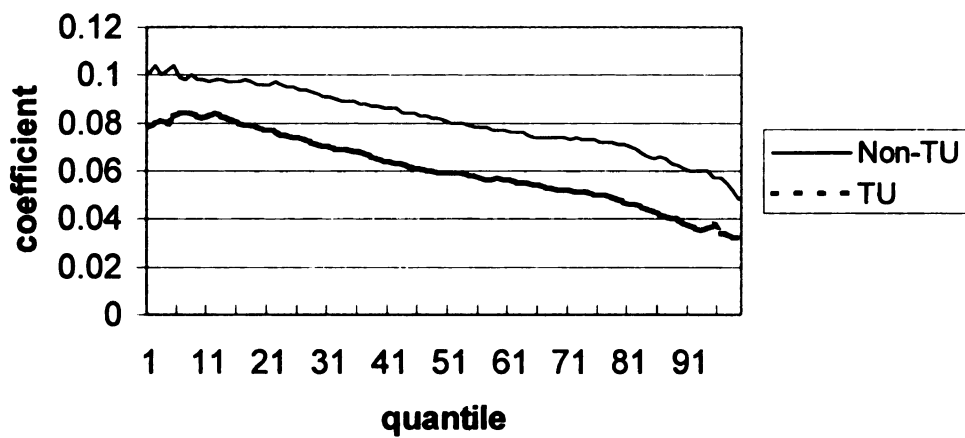




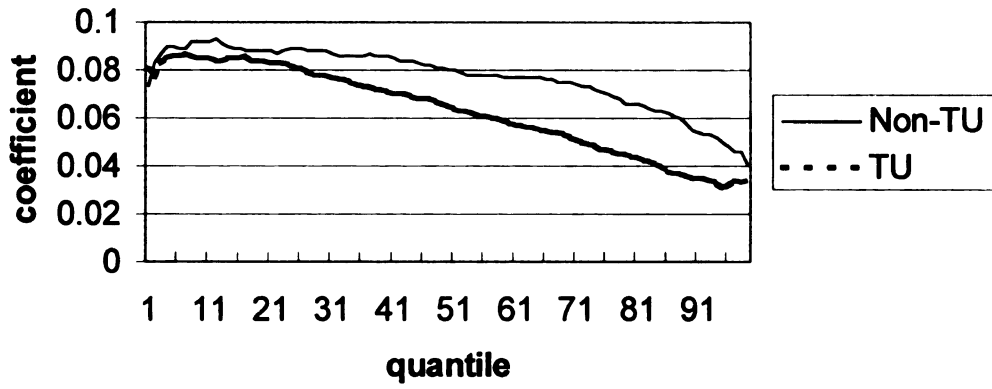
Return rates for a year of tenure in 1995



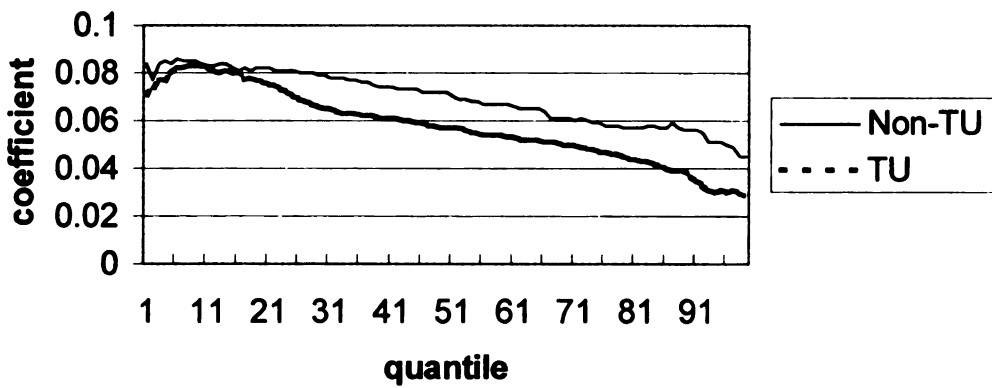
Return rates for a year of tenure in 1996

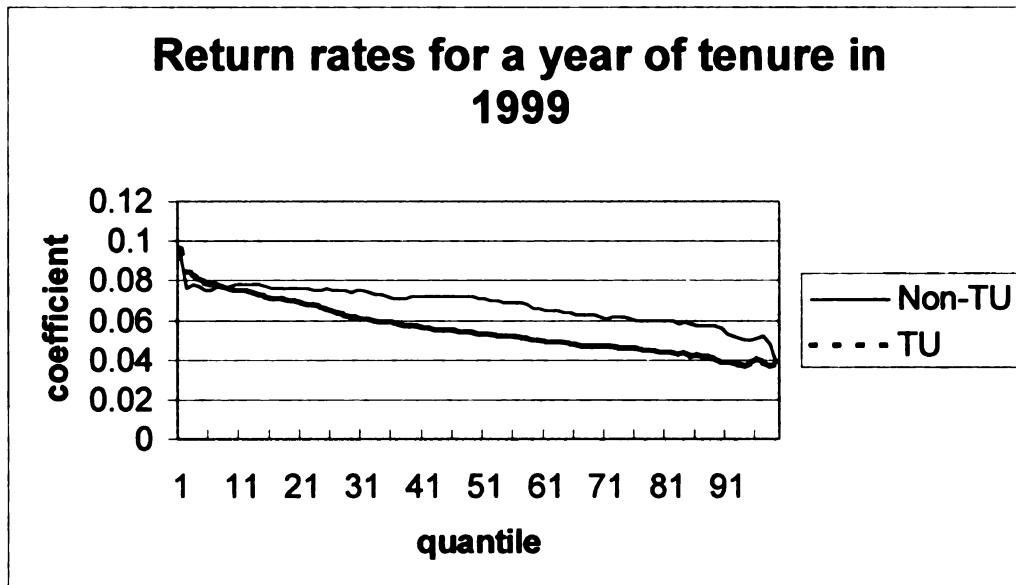


Return rates for a year of tenure in 1997



Return rates for a year of tenure in 1998





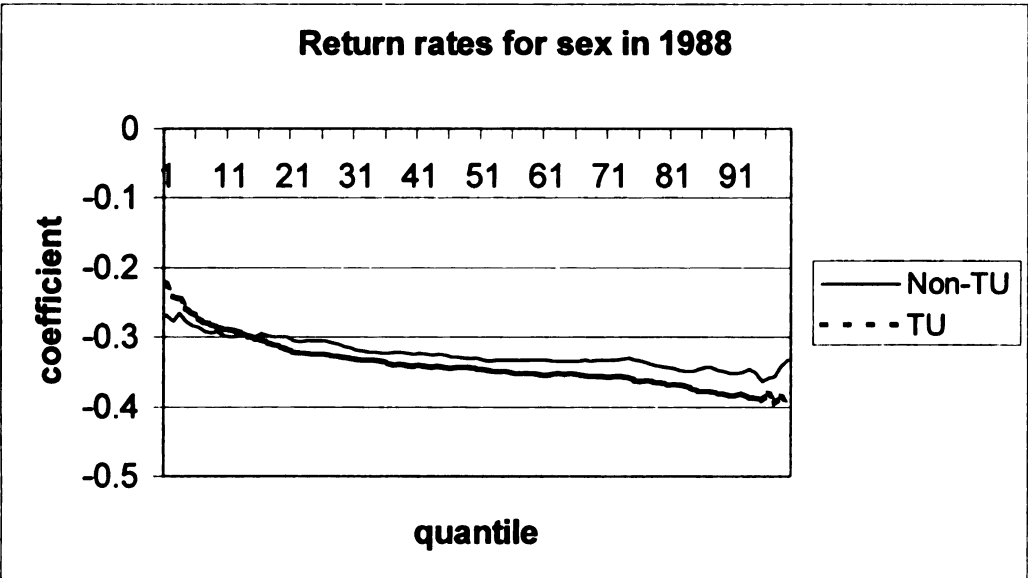
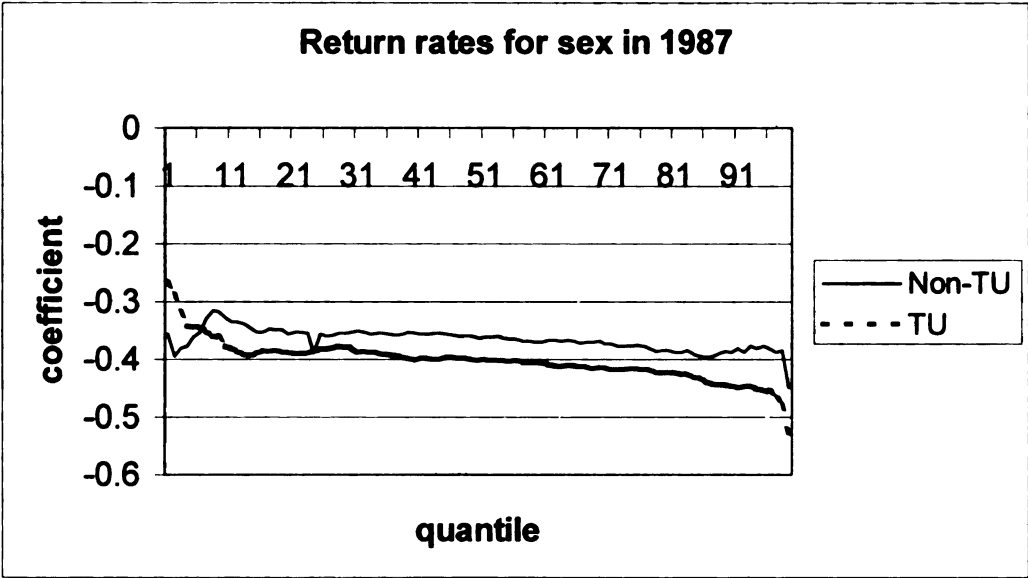
in the (c) in Figure 6-1. Second, the size of return rates for a year of tenure is less in the unionized sector than in the non-unionized sector in almost every quantile in every year for 1987-1999. It reveals clearly the union effects on reducing return rates for tenure. Third, the size of coefficient for a year of tenure is stable in both unionized and non-unionized sectors in the 1990s, as also seen in the results from the OLS in the (c) of Figure 6-1. It may mean that neither employers nor trade unions attempted to foster internal labor market by increasing the return rate of tenure in the 1990s.

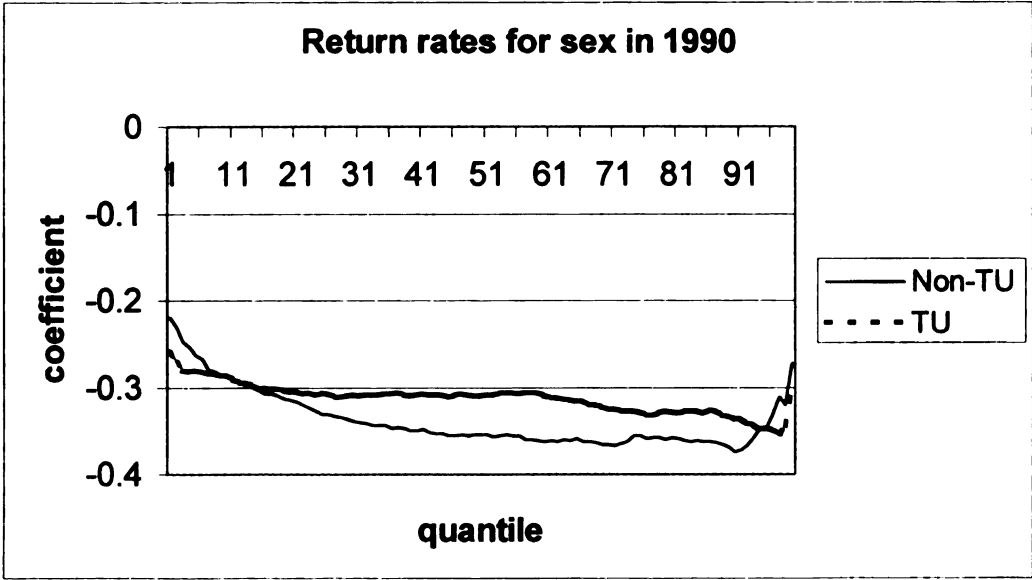
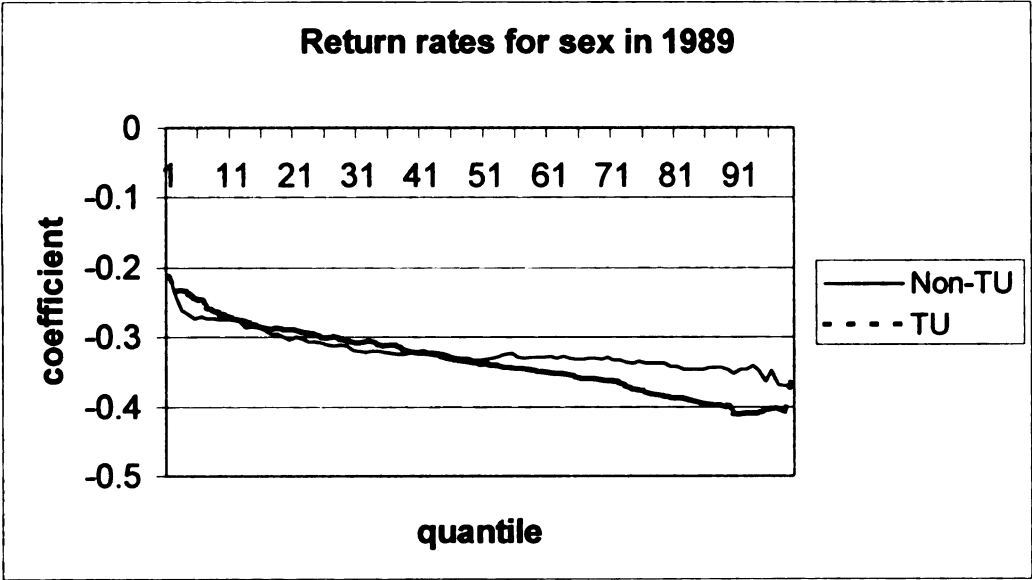
Figure 6-5 shows the relative loss of wages for female workers in the unionized and non-unionized sectors, compared to the male workers (reference group). First of all, the fact is discovered that the size of the negative coefficients for female workers was reduced throughout the late 1980s and 1990s. In the late 1980s and early 1990s, the coefficients for female workers were less than -.3 in most quantiles. However, from 1994 or 1995, not many quantiles show coefficients for female workers larger than -.3 in both

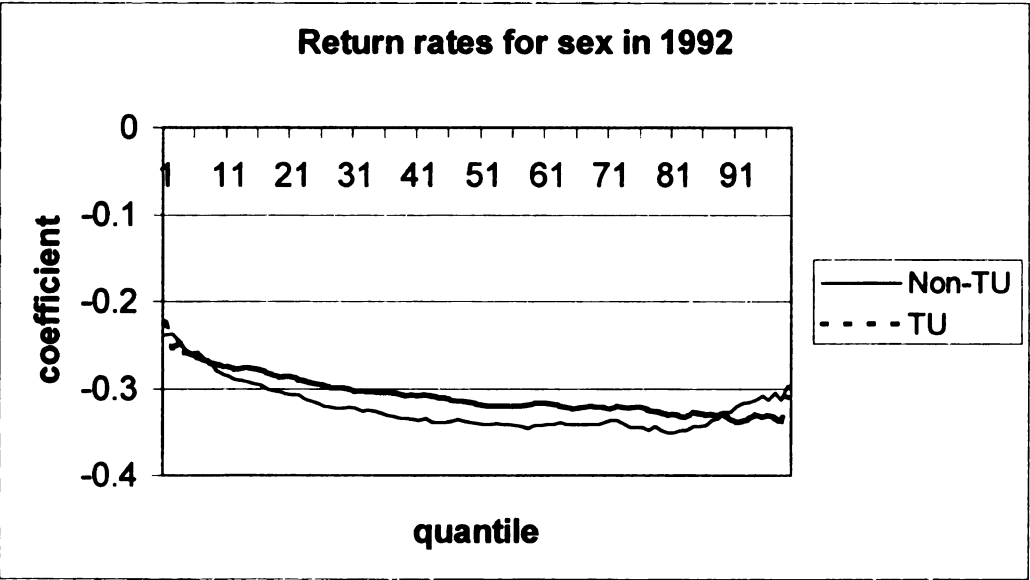
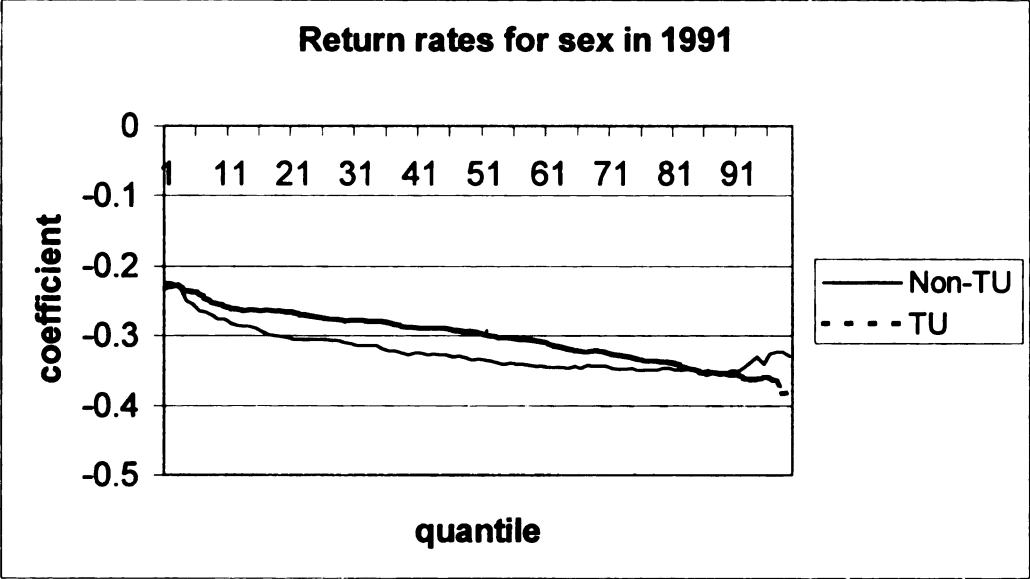
the non-unionized and especially unionized sectors. The result means that the serious issue of gender discrimination regarding wages lessened in the late 1990s. The finding was already predicted from the OLS estimation, as seen in (d) of Figure 6-1 presented earlier.

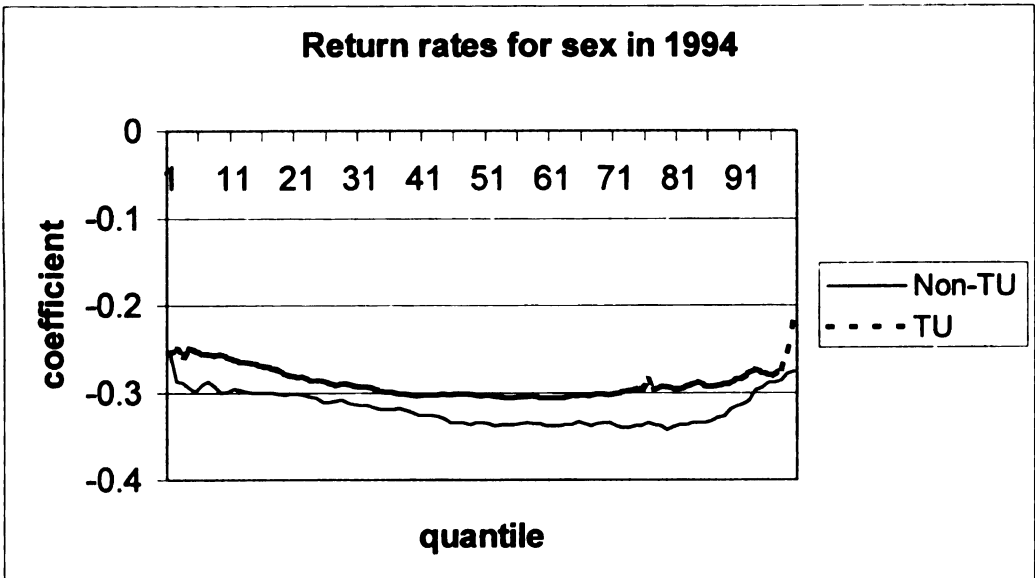
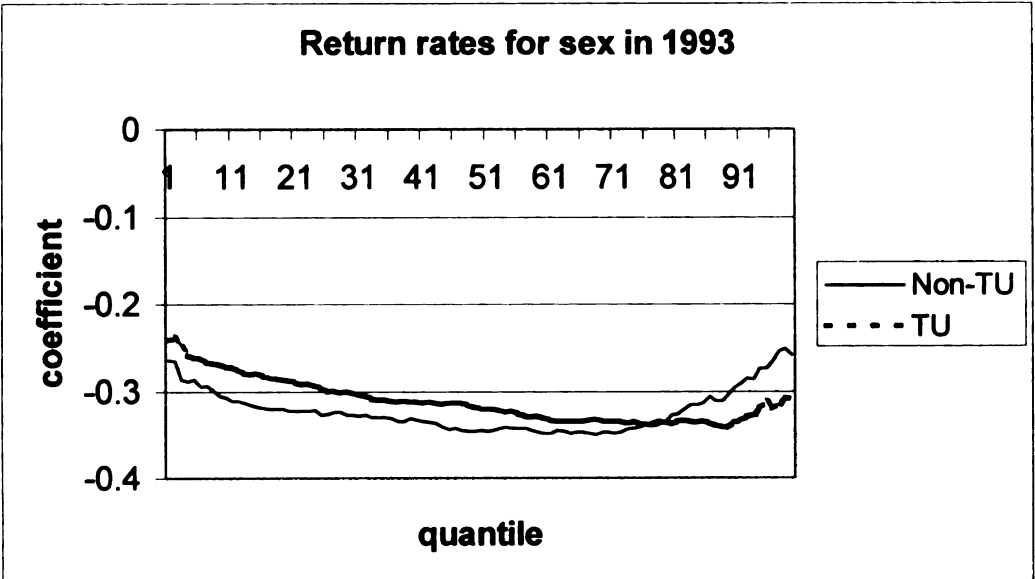
In 1987, the average coefficient for female workers for all 99 quantiles in wage distribution is $-.402$ in the unionized sector and $-.366$ in the non-unionized sector. This finding means that female workers earned less wages by 49.5% in the unionized sector and 44.2% in unorganized sector than comparable male workers having same characteristics. An interesting point is that the relative loss of all female workers in wage distribution except the workers in the lowest 6% is larger in the unionized sector than that in the non-unionized sector. This pattern of coefficients for female workers in unionized and non-unionized sector continued until 1989. From 1990, the return rates for female workers in the unionized sector rose above those in the non-unionized sector. The difference in coefficients for female workers, between the unionized and non-unionized sectors, is the largest in 1995. Then, the average coefficient for female workers for all 99 quantiles in the wage distribution is $-.274$ in the unionized sector and $-.311$ in the non-unionized sector. This fact means that the relative loss of wages for female workers in the unionized sector is less by 3.8% than that for comparable female workers in the unorganized sector. The result is what the literature expected regarding unions to protect less-paid or marginal workers. However, the trend stops in 1999 and the coefficient for female workers became less in the unionized sector than in the non-unionized sector. In sum, the union effect reducing the wage gap between male workers and female workers appears unstable for the entire period of 1987-1999.

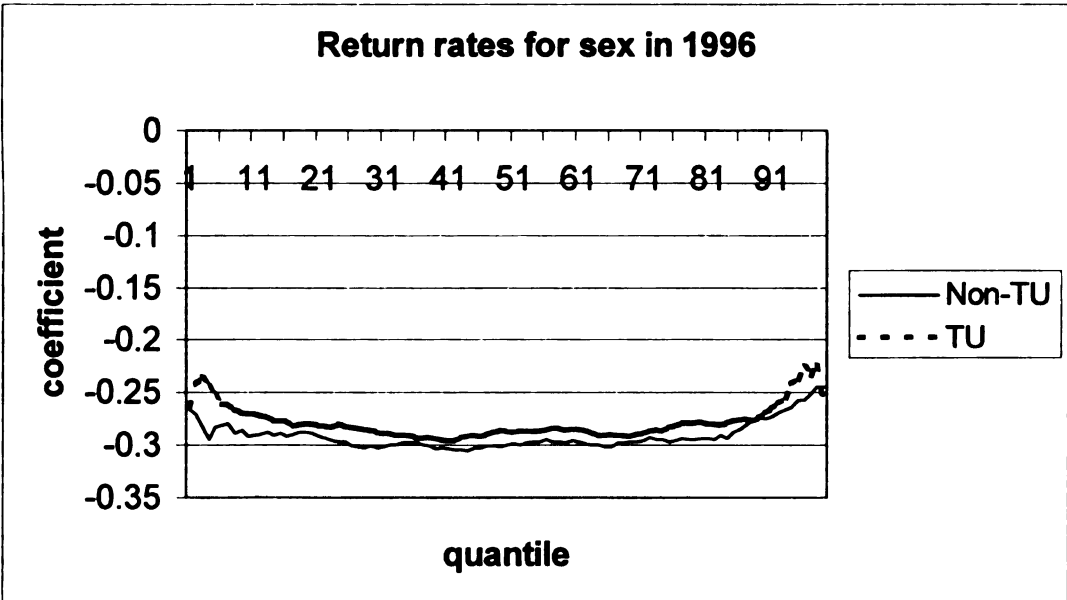
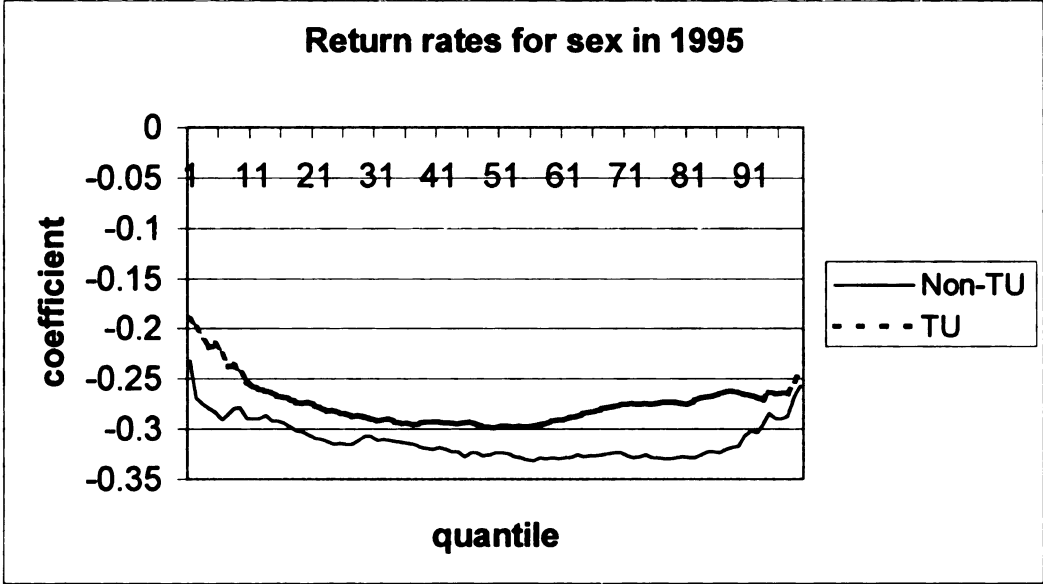
Figure 6-5. The coefficients for sex (female workers), estimated by quantile regressions, between non-unionized and unionized sector for 1987-1999.



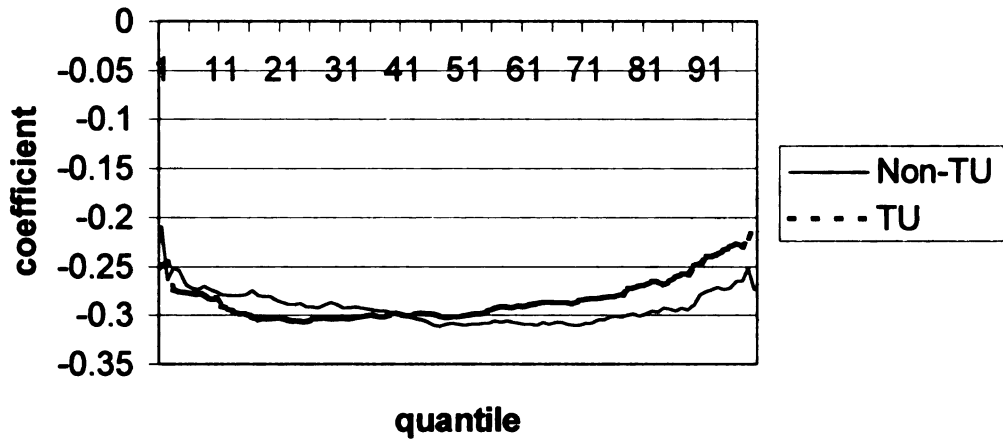




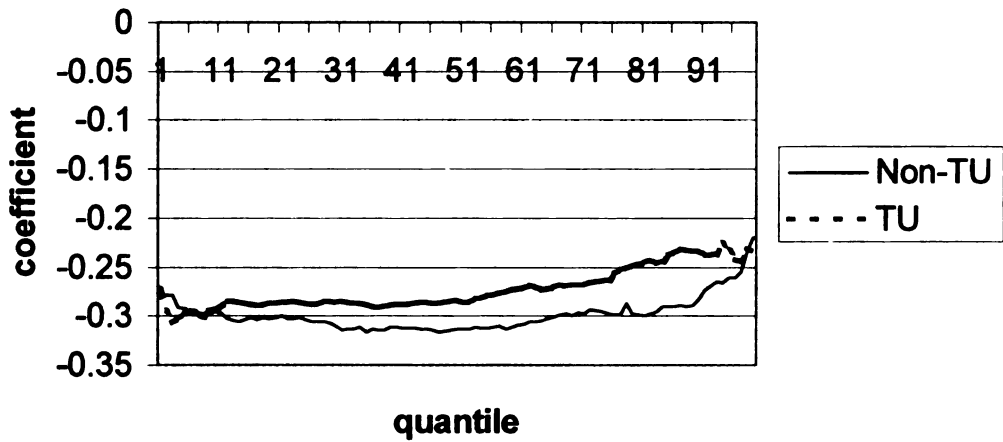


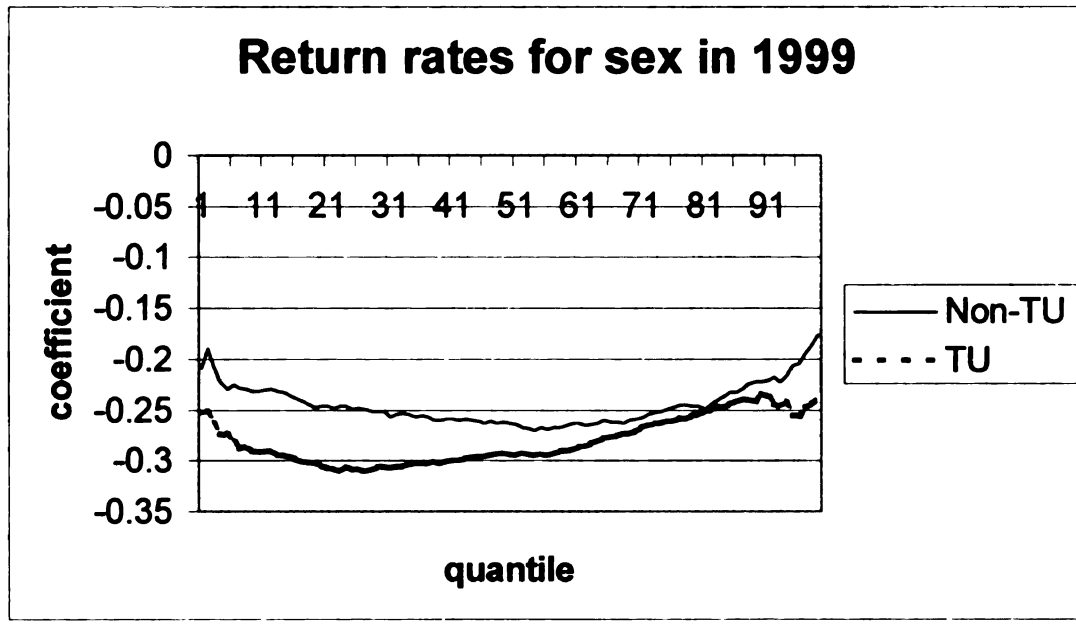


Return rates for sex in 1997



Return rates for sex in 1998





Also, Figure 6-5 shows that the size of the coefficients varies across quantiles and across years concerned. In the case of 1987, it appears that the size of coefficients for female workers is stable across quantile, except for the bottom and top 10%. However, the graph for size of the coefficients in 1988 and, especially, 1989 shows a slope downward trend in both unionized and non-unionized sector, as the quantile concerned increases. It means that the disadvantage of wages for female workers, compared to male workers, increases as the quantile increases. Again, the relative loss in wages for female workers is larger in the upper part of wage distribution than in the lower part of wage distribution. However, the situation changed from 1995, showing that the disadvantage of wages for female workers became larger in the median than in the lower or upper part of wage distribution. Once again, the distribution of the coefficients for female workers changes in 1998 and

1999, implying that the relative loss in wages for female workers became less in the upper part than in other part of wage distribution. It is especially evident, when comparing the figure for 1988 or 1989 to equivalent figure for 1998. While it shows a slope downward in 1988 or 1989, the graph for size of the coefficient turns to a upward sloping in both unionized and non-unionized sectors in 1998.

From Figure 6-5 through the quantile regressions, we can conclude that gender discrimination regarding wages was more severe for female workers in the upper part of wage distribution for the period 1987-1995, while gender discrimination becomes more serious for female workers located in the lower part of wage distribution in the late 1990s. Thus, it appears that no fixed pattern in the graph appears showing the size of the coefficients for female workers across quantiles and years and graphs showing the size of coefficients for female workers in the wage distribution varies, depending on quantiles and years examined. This finding cannot be obtained, when examining sizes of coefficients for female workers in the wage equation, which are estimated by the OLS, in (d) of Figure 6-1 shown earlier.

Discussion

In the 1990s, many trade unions showed their efforts to eliminate wage discrimination by gender, especially in the finance industry employing a large portion of the female workers (Jeong, 1993). This study reveals that the efforts by unions, especially in the finance and banking industry, resulted in reducing the wage gap between male and female workers with comparable characteristics. Also as expected, the Equal Employment Act, enacted in 1987, which required employers to pay the equal wage for work of equal value, contributed to the reduction of the wage gap between male and

female workers to some degree. However, it is unlikely that the wage gap between female and male workers today is optimal excluding wage discrimination by gender in reality. The wage schemes explicitly discriminating against female workers are found still in many firms (Hankyeorae, October 22, 2002).⁴² Structural discrimination towards female workers can be found even within trade unions. According to a survey by the Ministry of Labour in 1995, the ratio of female workers is 9 % among the union leaders and 4% in the presidents of unions, while the ratio of female workers is 22% of all the union membership (Kwon, 1997).⁴³

The yearly changes in return rates for education, experience, and sex between the unionized and non-unionized sectors may imply that the role of unions reducing return rates for those variables cannot be realized in a short time. In 1994, the union effects on reducing return rates for high school and university graduates, compared to the non-unionized sector, are visible. Also in 1990, the difference in return rates for female workers between the two sectors becomes clear. It takes time for free collective bargaining to reduce the return rates for much human capital for workers in the unionized sector.

One of the most unexpected findings in this chapter is that the return rate for an additional year of tenure is lower in the unionized sector than in non-unionized sector for the entire period, 1987-1999. It is expected that trade unions tend to increase the tenure for their workers by increasing the return rate for tenure (Freeman and Medoff, 1984).

⁴² In October 2002, the Ministry of Gender Equality issued a ministerial order requiring the Hanyang University, one of the big universities in Korea, to revise the existing wage scheme discriminating against female workers. So far the wage scheme forced female workers to earn less wages than comparable male workers. Also, compared to males, females who graduated universities and who graduated high school had to wait for three more years vs. two more years to be promoted, respectively (Hankyeorae, October 22, 2002).

⁴³ I assume that no significant difference between male and female workers is present in the level of intention to undertake the job of union leaders or union president.

However, the finding regarding tenure in Korea is contrary to the expectation. The result that the return rate for tenure is lower in the unionized than non-unionized sector also implies that a trade union in Korea is not a institution protecting and giving weight to the seniority-based wage scheme, which is still strong in Japan, even though the Korean industrial relations system are based on the enterprise union system as in Japan. It might be read as a sign showing that the Korean unions do not contribute to the increase in commitment of workers attached to their firms.

In fact, the average years of tenure for workers in the sample has changed a great deal in between the two sectors. The average year of tenure for workers in the non-unionized sector increased slowly from 3.75 in 1987 to 4.8 in 1999, while the number increased rapidly from 4.59 years in 1987 to 8.24 years in 1999. Thus, the difference of the average year of tenure for regular workers between the two sectors increased for 1987-1999, though the return rate for tenure in the unionized sector has been always lower than in the non-unionized sector. Thus, we can conclude that the increase in tenure in the unionized sector, compared to that in non-unionized sector, does not result from the increase in the return rate for tenure in the sector. Rather, the reason why the increase in the tenure occurred more visibly in unionized than in the non-unionized sector should be sought in the union wage premiums or other factors.

Why did the unexpected result of smaller return rate for a year of tenure in the unionized than non-unionized sector occur? The first probable explanation for the result is because younger workers, aged twenties or thirties with less years of tenure, have led trade unions from 1987.

Finally, the significant decrease in the return rate for education in the period of the 1980s and 1990s appears to have affected white-collar unionism. The 1990s witnessed the upsurge of white-collar unionism facing reduced wage differentials between blue- and white-collar workers. Therefore, we can imagine that the decreased return rates of education and other human capital could be the source of white-collar unionism to protect white-collar personnel facing decreasing return rates for education, experience, tenure, etc.

4. Conclusion

On the one hand, trade unions as institutions in the labor market affect the level of wages throughout union wage premiums. The variable of unions in the wage equation, indicating the direct effect of unions on wages, is shown to be significantly positive, as in the chapter 4. On the other hand, trade unions affect wages indirectly throughout changing the size of coefficients for some variables regarding human capital or personal characteristics such as education, experience, tenure, and sex, in the wage equation. This chapter shows the indirect effects of unions on wages, via education, experience, tenure, and sex.

CHAPTER SEVEN

UNION EFFECT ON FRINGE BENEFITS

1. Introduction

This study examines the union effects on fringe benefits, specifically voluntary benefits⁴⁴ which are not required by labor law, since 1987. The first question raised in this study is whether union effects on benefits are present in Korea. When union wage effects exist, the traditional explanation in industrial relations, assuming that unions are monopolistic organizations with bargaining power to increase benefits as well as wages, expect union effects on benefits exist, also. In addition, the greater importance of fringe benefits within firms due to a weak social welfare system and ‘one-digit wage guideline,’ recommending employers and unions to transfer wages to benefits, recommended by the government of Korea in the 1990s also support the existence of union benefit effects. However, the compensating wage theory assumes that no union benefit effects are present because of negative tradeoffs between wages and benefits. In addition, excluding major benefits such as pensions and health insurance from negotiations between employers and unions because of statutory benefits may imply no union benefit effects exist in Korea.

By using data from the Enterprise Labor Cost Survey (ELCS), this study examines both union effects on the level of total voluntary benefits expended by employers and on

⁴⁴ Examples of required (or statutory) benefits are national pension, medical insurance, employment insurance, and workers’ compensation. Voluntary benefits are defined as benefits which individual employers can determine the level and whether they are provided. For examples of voluntary benefits in Korea, refer to Table 2-3.

the provision of major benefits item. In addition, this study considers two additional bargaining-power-related variables, the union organizing rate and the affiliation of individual enterprise unions with either of the two national union confederations (the FKTU and the KCTU), on both the level of benefits and provision of benefits. Using the two variables will allow us to find any differences within the unionized sector regarding union benefit effects. From a methodological perspective, this study adopts the two-stage least square (2SLS) to minimize a possible endogeneity problem between benefits and wages.

The chapter is organized as follows: Section 2 describes Model to be estimated and data used. Section 3 introduces the results and explains the implications from the results. Finally, section VII concludes.

2. Model and Data

When we follow the traditional human capital earnings function (Mincer, 1974), introduced earlier in chapter 3, the basic OLS model for union effect on the level of benefits is as follows:

$$\ln B_i = X_i\beta_\tau + UNION_i\beta_{\tau+1} + \varepsilon_i \quad (7.1)$$

where B_i is the amount of benefits, X_i is a vector of independent variables, which may affect benefits, including personal characteristics such as sex, education, tenure, and experience and establishment characteristics such as region, industry, and establishment size, $UNION_i$ is union status, and ε_i is a random error term.

However, the equation (7.1) is not complete because it is recommended in the literature dealing with the union benefit effect that a trade union may indirectly affect fringe benefits via earnings or wages (Freeman, 1991; Belman & Heywood, 1991). It is likely that the level of benefits is positively correlated with the level of wages. Also it is reported that the preferential tax treatment⁴⁵ given to fringe benefits grows with the level of wages (Schiller and Weiss, 1980). Therefore, if the level of wages is placed into the equation (7.1), the OLS model for union wage effect will be as follows:

$$\ln B_i = X_i\beta_\tau + WAGE_i\beta_{\tau+1} + UNION_i\beta_{\tau+2} + \varepsilon_i \quad (7.2)$$

where $WAGE_i$ is the observed level of wages and B_i , X_i , $UNION_i$, and ε_i are same as in (7.1).

This basic model using a union dummy variable as one of independent variables assumes that the size of the coefficients for other independent variables except the union variable is constant across unionized/nonunionized firms. However, union wage differential studies report that many differences in characteristics regarding human capital exist (Bloch & Kuskin, 1978). In fact, Even and Macpherson (1991) report that the characteristics of unionized workers explain between one- and two-thirds of their higher benefit coverage. Also, the process of determining shares and levels of fringe benefits may be different in organized firms than in unorganized firms (Belman & Heywood, 1990). If so, a possibility exists that the size of coefficients for establishment characteristics such as size, industry, and region, and for personal characteristics such as

⁴⁵ Group health insurance and life insurance are examples of some non-wage benefits, which are excluded from the individual income tax base by the preferential tax treatment in the U.S. (Gentry and Peress, 1994).

education, experience, and tenure, are not the same between the two sectors. As a result, the basic model having union dummy variable may not capture the true union effects on shares and/or levels of benefits in total compensation (Fosu, 1984).

When the level of wages including bonuses and overtime payments is added into equation in order to control any potential relationship between benefits and wages (Mitchell and Smith, 1992), the equation (7.2) might still remain incomplete because OLS may not work to estimate correctly the union effect on benefits, due to possible correlated errors in wages and benefits (Belman & Heywood, 1991). To prevent the possibility from occurring, a two-stage least square (2SLS) estimation is recommended in the literature on union benefit effect.

The 2SLS estimation consists of two stages, first stage estimation using so-called ‘reduced form’ and second stage estimating the dependent variable in the OLS. First stage regresses the endogenous independent variable, the observed wages, on variables in X_i and (a) instrumental variable(s). Thus, the first stage equation will be expressed as follows:

$$\ln WAGE_i = X_i\beta_\tau + InstruV_i\beta_{\tau+1} + UNION_i\beta_{\tau+2} + u_i \quad (7.3)$$

where $WAGE_i$ is the level of observed wages, X_i is a vector of independent variables, which used in the equation (7.1), $InstruV_i$ is a instrumental variable, which should not be included in the second-stage equation, $UNION_i$ is union status, and u_i is a random error term.

The two-stage estimation using the predicted wages obtained from the first stage estimation, the equation (7.3), instead of actual wages in our study will be as follows:

$$\ln B_i = X_i\beta_\tau + \text{PredWAGE}_i\beta_{\tau+1} + \text{UNION}_i\beta_{\tau+2} + \varepsilon_i \quad (7.4)$$

where PredWAGE_i is the predicted level of wages rather than the observed level of wages, WAGE_i in the equation (7.2), and B_i , X_i , UNION_i , and ε_i are same as in (7.1). This study will estimate the equation (7.2) by using the OLS and also the equation (8.4) after estimating the equation (7.3) by using the 2SLS.

By using the two-stage least square estimation, an identification problem arises in that at least one of the independent variables, which is not included in the second stage estimation process, should be used in the first stage estimation. Assume that the z is the instrumental variable included in first stage, but excluded in second stage estimation. The instrumental variable, z , should satisfy two assumptions to obtain consistent estimators of β_τ and $\beta_{\tau+1}$ in the equation above,

$$\text{Cov}(z, \varepsilon) = 0 \quad \text{and} \quad \text{Cov}(z, \text{WAGE}) \neq 0.$$

The key in conducting 2SLS estimation is how to obtain an appropriate instrumental variable (Wooldridge, 2000; Olsen, 2002). This study uses squared experience as a instrumental variable, which is expected to affect wages, but assumed to have no great influence over benefit, following Belman and Heywood (1991). According to them, experience squared is known to affect wages, it has been seldom used in the benefit equation as one of independent variable in the literature.

In addition to the justification by Belman and Heywood (1991), another context-specific justification exists for using experience squared as an instrumental variable. In the U.S., where health insurance and pension share the majority of benefits, of which collective bargaining between employers and unions can determine the level, it is likely that it is married workers who have concerns about family health insurance and older workers who have to prepare for their life after retirement will prefer benefits to wages (Olsen, 2002). If so, experience squared might be related to benefits and, therefore, one of the assumptions above, $Cov(z, \varepsilon) = 0$, cannot hold. However, health insurance and pensions in Korea are not issues that can be negotiated between employers and unions because health insurance and pensions are categories of required benefits and the level of the two is set by law as a fixed rate of the level of wages. Thus, in the context, it is scarcely possible that experience squared affects benefits in Korea.

Data

Which data are appropriate and available for study on union effect on fringe benefits in Korea? Freeman and Medoff (1984) used two types of data in order to find the union effect on fringe benefits. One is the Survey on Expenditures for Employee Compensation (ECC) built by Bureau of Labor Statistics since 1982, reporting labor costs by individual firms (Choi, 1992). The other is various surveys for individual workers such as Current Population Survey where each individual worker is asked to answer questions about whether he or she is covered by specific fringe benefits and how much the benefits are. While surveys by firms make it possible to compare types and amounts of benefits across firms, surveys by individual workers allow us to see the difference across individuals

after controlling for demographics (Freeman and Medoff, 1984). Most previous studies on the union effect of fringe benefits are based on individual level data (Belman & Heywood, 1990; Even & Macpherson, 1991) because many of them depend on Current Population Surveys (CPS). However, this study uses establishment level data regarding employers' expenditures, the Enterprise Labor Cost Survey conducted by the Ministry of Labor.⁴⁶

The survey has been conducted annually since early 1980s and contains items asking about the existence of unions, and the amounts of obligatory and non-obligatory benefits paid by individual firms, etc. The population of the survey is all firms hiring at least 30 permanent employees (10 employees from 1997) and the size of the sample for the survey is 2,406 in 1997, for example. The data from the Enterprise Labor Cost Survey (ELCS) have plural strengths, compared to other data set used in other countries. First, the data are not limited to specific types of benefits such as pension and health insurance or a part of the benefits which employers offer to employees, but cover comprehensively all expenditures regarding benefits including statutory benefits, voluntary benefits, and even training-related expenditures and recruitment expenditures. Therefore, we can probably observe the union effect on the whole features of the benefits, not on a specific benefit, and not overlooking any misunderstanding resulting from the potential relationship between a specific benefits examined and other benefits, when focusing on a part of the benefits.

However, two important limitations of the data exist, too. Compared to individual-level data like the CPS data, one of limitations of ELCS data in this paper is that the data

⁴⁶ Data on employers' expenditures are frequently used in the literature on union benefit effects (e.g., Freeman, 1981; Leibowitz, 1983; Fichtenbaum and Olson, 2002).

in the sample lack information on human capital such as experience, education, and tenure.⁴⁷ Thus, it is expected that the weakness of lack of information relating human capital, except the percentage of female workers in the establishment, might be mitigated by adding average values of education, experience, and tenure for 169 three-digit industries from the Basic Survey on Wage Structure (BSWS)⁴⁸ in relevant years and information about employee wages into model in this study. A second limitation of the data is that the data do not include information on trade unions in establishments.

For the purpose of this study, I needed to find relevant information on unions and combine the information with the main data. Fortunately, the names of establishments for 1995-1999 could be identified.⁴⁹

Variables

The dependent variables in this study are logarithm of the total amount of voluntary benefits per employee and logarithm of total compensation per employee, divided by the CPI deflator (1995=100).⁵⁰ Also whether employers provide a specific form of voluntary benefits or provision of voluntary benefits is used as another dependent variable. Because the Enterprise Labor Cost Survey (ELCS) contains information on employers'

⁴⁷ The Employer Cost Index by the Bureau of Labor Statistics (BLS) in U.S. since 1982 also offers comprehensive information on various benefit expenditures by employers. Also it lacks information on human capital of employees such as education, experience, and tenure (Poterba and Rueben, 1994; Carrington, McCue, and Pierce, 2002). It seems that ECI in U.S. and ELCS in the Korea are similar to each other in this sense.

⁴⁸ The BSWS, which is conducted by the Ministry of Labor (MOL) every year, is already used in the chapter examining union wage premium in the distribution of wage. Refer to the relevant chapter.

⁴⁹ Names of establishment for data of 1994 also could be identified, based on regional codes, establishment identification number, and information of various benefit costs in previous year included in the data of 1995.

⁵⁰ When it is not possible to obtain data expended by employers for benefits, data on perceived value of benefits to employees might be arguably used (e.g., Leigh, 1981; Olson, 1994).

expenditures for a specific form of benefits, a dummy value for a benefit equals 1 when employers expended for the benefits, 0 otherwise.

Most studies focused on one or two forms of benefits to find any effects of unions on benefits such as pensions and health insurance (Freeman & Medoff, 1984; Belman & Heywood, 1990; Even & Macpherson, 1991). In addition, a number of studies regarding union effects on benefits are to focus exclusively on the provision of the particular benefit and to examine whether any significant difference of probability exists in receiving the particular benefit between union and non-union sector (Freeman, 1981; Fosu, 1984; Belman and Heywood, 1990; Even and Macpherson, 1991).

However, these studies might be not adequate to view one of the two benefits to judge the union effect on benefits. In addition, the approach to focus on the level of one of the two forms of benefits cannot rule out a possibility of trade-off relations between each form of benefits. Focusing only on the provision of benefits might not capture any differences in the generosity of benefits. This study will consider the union effects on the level of benefits and the provision of the particular benefits together, hoping a more thorough picture regarding union effects on benefits will appear. Also, another dependent variable, the share of benefits (and voluntary benefits) in total compensation, will be considered if needed to discover any trade-off relationship between wages and benefits.

The two kinds of fringe benefits are divided between the voluntary, which are offered voluntarily by employers, and the enforced voluntary fringe benefits, which the employers are required to pay by law or government regulations (for example, Social Security and unemployment compensation premiums). Little difference exists between the unionized and unorganized firms in the portion of employee benefits with regards to

required fringes (Woodbury, 1983; Kaufman & Hotchkiss, 1999). In order to see union differentials in fringe benefits, it is necessary to focus on part of the voluntary fringe benefits rather than the enforced fringe benefits.

Dummy variables for one-digit industries, based on the Standard Industrial Classification code, and dummy variables for region (omitted category is Seoul) are included in order to capture any difference in the union effect on benefits. Dummy variables for establishment size (omitted category is establishments hiring less than 30 employees) are added into the regression equation because it is expected that establishment size may be related to some benefits such as meals, employee housing, and facilities for employee vacation and recreation, due to the economies of scale (Lester, 1967; Feuille et al., 1981). Moreover, establishment size may affect the share of benefits positively because larger establishments, due to the possibilities of within-firm mobility, likely indicate workers who have a longer tenure, which may result in a larger fraction of benefits (Freeman, 1981). Also economies of scale regarding benefit purchase and administration costs are expected to produce positive relations between size and benefits (Fosu, 1979).

Regarding the characteristics of individual workers affecting organizational productivity and collective preferences towards benefits, four variables are considered: the percentage of female workers in the establishment, the average years of education, experience, and tenure. In the context of the U.S., it is reported that the difference in sex may result in different preference in the way that while males prefer wages, females have greater interest in non-wage benefits (Ashenfelter and Johnson, 1972; Feuille et al, 1981). However, a counterargument is presented in that females may have more interest in

wages rather than males because of relatively shorter tenure. Even though childcare among the various items of benefits can be affected by sex because females have much more interest in it, the portion of childcare in the total benefit is negligible as seen in the table 2-3. This study does not have any presumed expectation about the sign of the variable. The average years of education, experience, and tenure for 169 three-digit industries from the Basic Survey on Wage Structure (BSWS) are added into the equation. Previous studies suggest that well-paid workers, who are likely to have more education, experience, and tenure, prefer benefits to wages. Thus, we expect that education, tenure, and experience will be positively related to benefits.

Logarithm of monthly real wages per employee is included in the regression to distinguish between the union effects on benefits via the level of compensation and via the share of compensation (Freeman, 1981; Alpert, 1982; Fosu, 1984; Belman & Heywood, 1991; Swindinsky and Kupferschmidt, 1991; Even & Macpherson, 1991).

Three kinds of information of union are used in this study. For 1995-1999, the first union-related variable, whether or not union is organized within the establishment, for 10,389 establishments has been checked through *Annual Directory of Trade Unions in Korea*, published by the Ministry of Labor. Also four other union directories, provided by the FKTU, by the KCTU, by the Labornews (<http://www.labornews.co.kr>) and by the Laborworld (<http://www.laborw.com>), are used. Second are the union-organizing rates within the establishment, calculated from the ratio of number of union membership divided by total regular workers in the establishment.⁵¹ Third is the information regarding

⁵¹ It might be true that organizing rates, calculated from number of union membership divided by number of bargaining boundary within establishments, is a better indicator of union density than the organizing rates based on union membership divided by number of regular employees within establishments.

affiliation with the national union confederation (FKTU and KCTU).⁵² To identify organizing rates and the affiliation with national union organizations, annual activity reports by total 33 industrial union federations under the KCTU and FKTU and internal unpublished directory by the KCTU have been utilized as well as the four union directories listed. To minimize potential errors in calculating organizing rates, establishments having an organizing rate of over 100%, which occurred due to original incorrectness in the referred data or mismatch of survey between the ELCS and the five directories, have been excluded from this analysis. To make sure of the organizing rates and affiliation with either of two national unions, telephone interviews of 178 with at least union full-time officers, who belong to 148 unions, have been done from November 2001, to April 2002.

This study focuses on the period of 1995-1999. Due to the nature of data as a pooled cross-section data, year-dummy variables are used. Previous studies predict that employees want the higher share/level of benefits in periods of relative price stability (Mabry, 1973). Also employers are likely to cut benefits first before reducing wages in the period of economic recession. Then, we expect negative effects of the year-dummy variables during the Korean financial crisis, 1998-1999.

However, organizing boundary varies with each establishment and no data for it is available so far in Korea.

⁵² Until 1997, the government had not authorized the KCTU. Thus, all government records and union directory published by the FKTU until then argue that all individual unions are affiliated with the FKTU. To solve the obscure affiliation problem regarding national organizations, I mainly relied on the union directory published by the KCTU. When facing arguable cases, I sorted establishments according to two criterion: which national union could be given union dues from individual unions and which national union was 'practically' partner to individual unions in usual aspects, regardless of government records.

Table 7-1. Descriptive statistics for all variables in all, non-unionized, and unionized sector for 1995-1999

Variables	Explanation	All	Non-union	Union
Lvolunp	Logarithm of voluntary benefits per employee	6.621 (1.099)	6.487 (1.145)	6.885* (.949)
Lbenep	Logarithm of total benefits per employee	13.053 (1.855)	12.341 (1.563)	14.457* (1.561)
Rvolunta	Ratio of voluntary benefits in total compensation (%)	6.283 (4.821)	6.31 (5.009)	6.229 (4.428)
Rbene	Ratio of total benefits in total compensation (%)	20.214 (9.966)	19.124 (9.391)	22.659* (10.633)
Lcashp	Logarithm of wages per employee	6.894 (.434)	6.908 (.421)	7.135* (.421)
Union	0=nonunion, 1=union	.337 (.473)	- -	- -
Fpercent	percent of female (%)	27.326 (21.909)	29.858* (22.76)	22.342 (19.177)
Busan	1= Busan	.086 (.281)	.09* (.286)	.078 (.268)
Kyungki	1= Seoul suburbs	.231 (.421)	.238* (.426)	.216 (.412)
Joongbu	1= Kangwon, Choongchung, & Cholla	.207 (.405)	.217* (.413)	.185 (.339)
Kyungsang	1= Kyungsang	.19 (.392)	.193 (.394)	.185 (.388)
Mining	1= Mining	.017 (.127)	.018 (.132)	.014 (.119)
Construction	1= Construction	.014 (.116)	.01 (.097)	.022* (.146)
Transportation	1= Transportation & Public Utilities	.051 (.221)	.066* (.249)	.021 (.115)
Wholesale	1= Wholesale and retail Trade	.079 (.27)	.096* (.295)	.046 (.209)
Finance	1= Finance insurance & Real estate	.092 (.289)	.053 (.225)	.167* (.373)
Services	1= Services	.183 (.387)	.207* (.405)	.136 (.342)
Public	1= Public services	.095 (.293)	.099* (.299)	.087 (.281)
30≤Ees<100	1= 30-99 employees	.269 (.443)	.365* (.255)	.08 (.272)
100≤Ees<300	1= 100-299 employees	.265 (.441)	.255 (.436)	.283* (.451)
300≤Ees<500	1= 300-499 employees	.104 (.306)	.071 (.257)	.17* (.376)
500≤Ees<1,000	1= 500-999 employees	.111 (.315)	.059 (.235)	.215* (.411)
1,000≤Ees	1= 1,000 or more employees	.11 (.313)	.042 (.201)	.243* (.429)
Year1996	1= year of 1996	.161 (.368)	.152 (.359)	.179* (.384)

Year1997	1= year of 1997	.188 (.391)	.17 (.376)	.223* (.416)
Year1998	1= year of 1998	.248 (.432)	.261* (.439)	.221 (.415)
Year1999	1= year of 1999	.238 (.426)	.254* (.436)	.207 (.405)
Samples (N)		8,479	5,625	2,854

Note: mean without parentheses and standard deviation in parentheses

Note: * means significant difference between the two sector at the 5% level

Note: The contents of table is limited to the period 1995-1999 because the period 1987-1993 lacks information on union density and national union affiliation and uses estimated probability of union to be existed instead of union dummy variable.

Descriptive Statistics

Table 7-1 presents descriptive statistics of all variables used for all, non-unionized, and unionized sectors for 1995-1999. Among 8,479 establishments used in analysis, the number of non-unionized and unionized establishments is 5,625 (66.3%) and 2,845 (33.7%), respectively. T-test results imply that unionized establishments provide more wages, voluntary benefits, total benefits than non-organized establishments. In addition, the share of total benefits in total compensation is significantly higher in unionized sector than in the non-unionized sector, while no significant difference is seen in the share of voluntary benefits in total compensation between the two sectors. Non-unionized establishments have shown a higher ratio of female employee in total regular employees and can be easily found in small-sized establishments hiring less than 100 employees and in every industry except construction and the finance industry.

3. Results and Implication

Union effect on the level of voluntary benefits

Table 7-2 presents the effects of unions on the level of voluntary benefits per employee, measured by logarithm of voluntary benefits per employee, and estimated by OLS and 2SLS for all samples for 1995-1999. Column 1 shows the results from the equation without logarithm of real wages per employee as one of the independent variables, that is, equation (7.1). Column 2 presents results from the equation, (7.2), using logarithm of wages per employee as one of independent variable, to control probable relationship between the level of voluntary benefits and wages, along with other variables in column 1. When running the regression equation excluding logarithm of wages per employee, the results in column 1 presents a modest size, 0.043 ($4.4\% = \exp(.043)-1$), of a positive union effect on the level of voluntary benefits. When controlling information on wages, the size of the union effect on benefits decreased to a much smaller size (-0.007) and the sign of effect changed to negative. The fact of a significant effect of wages on the voluntary benefits in column 2 and an increase of R^2 from 0.298 in column 1 to 0.355 in column 2 assures the role of wages in benefit equation and better performance of the benefit equation (7.2) than equation (7.1). This finding also supports the indirect effect of unions on benefits through affecting log wages (Belman and Heywood, 1991).

With respect to the region dummies, the level of voluntary benefits in suburb on Seoul and Kyungsang area is higher than in Seoul, while voluntary benefits in Busan and other areas are lower than in Seoul.⁵³ Differences in voluntary benefits across industries are also found. The level of voluntary benefits is lower in the manufacturing industry,

⁵³ Suburban Seoul suburb and Kyungsang areas are the most important industrial areas where the majority of manufacturing unions are located. Busan is the second largest city in Korea. Other areas including Choongchung and Cholla are where the share of manufacturing or industrial activities are not developed.

Table 7-2. Union Effects on the Level of Voluntary Benefits
for 1995-1999 for All Samples (weighted)

	OLS			2SLS		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6 (DV=% of benefit)
Year1996	.103*** (.001)	.036*** (.001)	.075*** (.001)	.416*** (.012)	-.070*** (.003)	-.825*** (.018)
Year1997	.140*** (.001)	.066*** (.001)	.099*** (.001)	.489*** (.013)	-.062*** (.003)	-.736*** (.018)
Year1998	-.007*** (.001)	-.215*** (.001)	-.205*** (.001)	.974*** (.037)	-.618*** (.006)	-5.074*** (.039)
Year1999	.078*** (.001)	-.236*** (.001)	-.238*** (.001)	1.559*** (.056)	-.837*** (.009)	-6.398*** (.057)
Busan	-.007** (.002)	.002 (.002)	.059*** (.002)	-.048*** (.005)	.040*** (.003)	-.432*** (.019)
Kyungki	.147*** (.001)	.144*** (.001)	.117*** (.001)	.162*** (.002)	.086*** (.001)	.019* (.008)
Joongbu	.136*** (.002)	.172*** (.002)	.216*** (.002)	-.031*** (.007)	.257*** (.002)	1.590*** (.014)
Kyungsang	.272*** (.001)	.218*** (.001)	.209*** (.001)	.526*** (.010)	.064*** (.002)	-.278*** (.016)
Mining	.736*** (.006)	.293*** (.006)	.222*** (.008)	2.827*** (.077)	-.510*** (.001)	-3.552*** (.077)
Construction	.442*** (.001)	.443*** (.002)	.214*** (.002)	.439*** (.003)	.141*** (.001)	1.278*** (.016)
Transportation	-.366*** (.003)	-.403*** (.003)	.051*** (.003)	-.191*** (.008)	.029*** (.003)	.064* (.028)
Wholesale	.040*** (.002)	-.013*** (.002)	.056*** (.002)	.288*** (.010)	-.089*** (.003)	-.962*** (.019)
Finance	.173*** (.002)	.224*** (.001)	.221*** (.002)	-.069*** (.010)	.375*** (.003)	3.399*** (.020)
Services	-.307*** (.002)	-.497*** (.002)	-.407*** (.003)	.580*** (.034)	-.823*** (.007)	-4.798*** (.043)
Public	-.491*** (.003)	-.813*** (.003)	-.767*** (.003)	1.027*** (.057)	-1.309*** (.009)	-6.942*** (.055)
30≤Ees<100	.018* (.008)	-.042*** (.008)	1.813*** (.041)	.302*** (.023)	4.344*** (.116)	22.382*** (.705)
100≤Ees<300	.005 (.008)	-.146*** (.008)	1.655*** (.040)	.716*** (.033)	3.967*** (.115)	19.517*** (.696)
300≤Ees<500	.198*** (.008)	-.020* (.008)	1.819*** (.040)	1.225*** (.043)	4.025*** (.115)	19.526*** (.693)
500≤Ees<1,000	.233*** (.008)	-.021** (.008)	1.747*** (.040)	1.434*** (.049)	3.912*** (.115)	18.935*** (.692)
1,000≤Ees	.380*** (.008)	.008 (.008)	1.754*** (.040)	2.134*** (.069)	3.710*** (.114)	16.979*** (.687)
Fpercent	-.008*** (.000)	-.001*** (.000)	-.001*** (.000)	-.044*** (.001)	.012*** (.000)	.111*** (.001)
Edu	.119*** (.001)	.049*** (.001)	.065*** (.001)	.452*** (.013)	-.082*** (.002)	-.487*** (.015)

We can assume that the relationship between the voluntary benefits and regions is related to the role of unions.

Expe	-.056*** (.000)	-.035*** (.000)	-.030*** (.000)	-.155*** (.004)	-.008*** (.000)	.118*** (.003)
Tenure	.090*** (.000)	.047*** (.000)	.061*** (.000)	.293*** (.008)	.009*** (.001)	-.042*** (.006)
Lwage		1.008*** (.002)	1.104*** (.003)	-4.751*** (.179)	2.952*** (.026)	15.211*** (.171)
Union	.043*** (.001)	-.007*** (.001)		.278*** (.009)		
Density			.003*** (.000)		.004*** (.000)	.031*** (.001)
SQdensity			1.6e-06* (7.33e-07)		-.000*** (8.68e-07)	-.000*** (5.67e-06)
KCTU			-.286*** (.001)		-.446*** (.002)	-2.74*** (.015)
constant	5.550*** (.017)	-.542*** (.022)	-3.512*** (.049)	34.271*** (1.079)	-16.954*** (.221)	-114.89*** (1.408)
R ²	0.298	0.355	0.338	-	0.146	-
N	8,479	8,479	2,845	8,479	2,845	2,845

Note: All equations are weighted by number of employees. Logarithm of wages in model 4, model 5, and model 6 is predicted values, resulting from first stage equation, instead of observed values. Robust standard errors are in parentheses. The dependent variable in Model 6 is the percentage of voluntary benefits in wages plus voluntary benefits, multiplied by 100. *, **, and *** means significant at the 5%, 1%, and 0.1% level, respectively.

omitted industry in the equation, than in mining, construction, wholesale & retail, service, and public services industries. However, it is shown that establishments in the manufacturing industry provide more generous benefits than in the transportation & public utilities industry and finance industry.

The 2SLS results also reports the positive effect of size of establishments on voluntary benefits. The level of benefits increases as establishment size increases. For example, the level of voluntary benefits in the largest firms hiring 1,000 or more employees is expected to be extremely higher by over 7 times, $7.45 = \exp(2.134) - 1$, than the benefit level in the smallest firms hiring 29 or less employees. When changing mid-size establishments hiring 300-500 employees as the reference group, the coefficients for

establishments (100-299), establishments (500-999), and establishments (1,000 or more) are -.509, .209, and .909, respectively. It implies that establishments hiring 1,000 or more employees offer larger voluntary benefits by one and half times, $1.482 = \exp (.909)-1$, than establishments hired 300-499 employees, while establishments having 100-299 employees provide much less generous benefits by 66.4% than establishments hiring 300-499 employees. It is certain that size of establishment heavily affects the level of voluntary benefits in Korea.

Regarding personal characteristics, the percentage of female workers is negatively associated with voluntary benefits. Previous studies in the U.S. argue that, while males prefer wages, females have greater interest in non-wage benefits (Ashenfelter and Johnson, 1972; Feuille et al, 1981). However, this is not the case in Korea. As lower wages, less attachment to the establishment is due to shorter tenure of females than males, and other factors appears to urge female workers to prefer benefits to wages. As expected, education and tenure are positively associated with the level of benefits from results in OLS (column 2) and 2SLS (column 4). However, experience is negatively related to benefits against expectation.

Finally, the size of the union effect on voluntary benefits, estimated by 2SLS⁵⁴, jumps to .278 (32% = $\exp (.278)-1$) from -.007 in column 2 of equation (8.2). These percentage indicate that unionized establishments provide much more voluntary benefits by 32% than unorganized establishments, other things being equal.

The results regarding first-stage for column 4 are shown in the column 1 of Table 8-3, meaning that the squared year of experience, assumed to affect observed wages, works as

⁵⁴ In the results of 2SLS, the R^2 is none in column 4. All results regarding first-stage for 2SLS will not be presented here due to space limitations.

expected. Also, it indicates that 2SLS is likely to be free from the identification problem. To ensure whether the specification error regarding 2SLS occurs, the Hausman test is conducted. The Hausman's specification error test is broadly used for testing the hypothesis of no misspecification in the model (Maddala, 1992). The results from the Hausman test implies no specification error at the 0.1% significant level.⁵⁵

Table 7-3 Wage-related equations for unionized samples for 1995-1999 (weighted)

	Model 1 [DV=lwage]	Model 2 [DV=log of (wages+voluntary benefits)]	Model 3 [DV=log of (wages+statutory+ voluntary benefits)]	Model 4 [DV=lwage]
Fpercent	-.007*** (8.56e-06)	-.007*** (8.85e-06)	-.007*** (8.75e-06)	-.006*** (8.34e-06)
Edu	.080*** (.000)	.093*** (.000)	.091*** (.000)	.067*** (.000)
Expe	-.011*** (.000)	-.011*** (.000)	-.010*** (.000)	-.008*** (.000)
Tenure	.028*** (.000)	.029*** (.000)	.029*** (.000)	.020*** (.000)
Density	-.001*** (.000)	-.001*** (.000)	-.001*** (.000)	-.001*** (.000)
SQdensity	.000*** (2.00e-07)	.000*** (2.09e-07)	.000*** (2.07e-07)	9.47e-06*** (1.92e-07)
KCTU	.087*** (.000)	.064*** (.000)	.068*** (.000)	.103*** (.000)
Log of benefit				.085*** (.000)
Constant	7.273*** (.043)	8.151*** (.021)	8.213*** (.021)	6.888*** (.042)
R ²	0.653	0.634	.0644	0.686
N	2,845	2,845	2,845	2,845

Note: All equations are weighted by number of employees. Five year dummies, five region dummies, eight industry dummies, six size dummies are included into all equations above along with independent variables reported. Robust standard errors are in parentheses. *, **, and *** means significant at the 5%, 1%, and 0.1% level, respectively.

⁵⁵ The details are not presented here. However, they are available upon request.

Effects of bargaining-related variables on the level of benefits

The result from column 5 in Table 7-2 indicates that unions affiliated with the militant union federation, the KCTU, have a much lower level of voluntary benefits by .446 ($56.2\% = \exp(-.446)-1$) than unions affiliated with the moderate, or rather docile, FKTU. The OLS results in column 3 report similar but a smaller (-.286 and 33.1%) effect size of the KCTU.

This is puzzling because it would be expected that the unions with stronger bargaining power to show a higher level of voluntary benefits. To unveil this puzzling result, first, I examined the percentage of voluntary benefits in wages plus the voluntary benefits between the unions under the two national union confederations. The weighted sample mean of the share of voluntary benefits is 7.93% for all unionized samples. The weighted sample mean of the percentage of voluntary benefits is 8.24% for the FKTU-affiliated unions and 7.57% for the KCTU-affiliated unions. The difference of 0.67% indicates that the share of voluntary benefits is higher in the FKTU-affiliated unions than in the KCTU-affiliated unions. Then to find the difference after controlling the influences of other variables including wages, I ran another two-stage regression with the percentage of voluntary benefits in wages plus voluntary benefits, multiplied by 100, as the dependent variable. Column 6 in Table 7-2 is the result. According to column 6, the difference in the share of voluntary benefits in wages plus the voluntary benefits between unions under the KCTU and unions under the FKTU jumped to 2.74% after controlling other independent variables. Recall that the sample mean of the share of voluntary benefit in wages plus voluntary benefits is 7.93% for all unionized samples. Therefore the result from column 6

implies that unions affiliated with the KCTU have a smaller share of voluntary benefits by 34.7% ($=2.74/7.93$) than what the unions under the FKTU indicate.

Then to know whether the unexpected difference in the level of benefits is related to the level of wages between the KCTU-affiliated unions and the FKTU-affiliated unions, I ran four types of wage equation for the unionized samples. Table 7-3 presents a reduced form of the results. Due to the difficulty in identifying appropriate instrumental variables, which affect the selection of a national union federation and do not affect wages, I estimated the equations by OLS. When dependent variable is logarithm of wages in column 1, the coefficient of *peakorg* is .087, suggesting that unions affiliated with the KCTU have more wages by 9.1% than unions affiliated with the FKTU. When the dependent variable becomes a logarithm of (wages+voluntary benefits) in column 2 or a logarithm of (wages+statutory+voluntary benefits) in column 3, the wage differential between KCTU- and FKTU-affiliated unions decreased to .064 in column 2 or .068 in column 3. The decreased size of the coefficient of *peakorg* is that benefits, favored by the unions under FKTU as seen in column 3 and 5 of Table 7-3, are included into the dependent variable. When adding a logarithm of voluntary benefits into the equation of column 1, the size of *peakorg* in column 4 changed from .087 in column 1 to .085 as expected. To assure whether the wage differential between the unions under the KCTU and FKTU is accurate, I ran other wage-related equations by adding squared experience, squared tenure, and working hours into the lists of independent variables. However, the size of the wage differential between the FKTU-affiliated and KCTU-affiliated unions did not decrease but rather increased to .103 ($10.8\%=\exp(.103)-1$).⁵⁶

⁵⁶ The results from the equation are not reported here.

In sum, the KCTU-affiliated unions show a lower level of voluntary benefits by 33.1% (OLS) or 56.2% (2SLS) than the FKTU-affiliated unions, while the KCTU-affiliated unions benefit from the higher level of wages by 9.1% or 10.3% than the FKTU-affiliated unions. Even though they could increase the level of benefits by transferring wages to benefits if they wanted to, why do the KCTU-affiliated unions face fewer benefits than the FKTU-affiliated unions? Is that a simple reflection of wage-favored preference they have regarding wage-benefit mix? It appears that it is not case. I believe that no the benefit effect of the KCTU-affiliated unions is not the result of weak bargaining power but the result of militant bargaining power. Facing employers' resistance and so-called 'one-digit wage guideline' by the government in the 1990s, the KCTU-affiliated unions with stronger bargaining power have been more successful in increasing wages and, thus, the FKTU-affiliated unions have consented to transferring wages to benefits as the government recommended.

This seemingly puzzling finding, however, can be supported by small number studies, arguing that union and union bargaining power tilts compensation packages toward wages relative to non-wage benefits (Donsimoni and Shakotko, 1979; Feuille et al., 1981). Feuille and his colleagues (1981) found that union strength is likely to increase the share of wages rather than non-wage benefits regarding working conditions. They attributed the phenomenon to the "diminishing marginal utility of improvements in working conditions relative to that of wages (p. 47)."

These results regarding the differences in wages and benefits between the KCTU-affiliated unions and the FKTU-affiliated unions cannot be found through the Basic Survey of Wage Structure (BSWS), which was used in chapter 5 examining the union

wage effect in the distribution of wages, because the BSWs does not include information on *peakorg* (KCTU/FKTU) and union density. When controlling the level of wages as one of the independent variables as in column 3 and column 5 of Table 7-2, we could not find any systemic differences regarding wages between the KCTU and FKTU. Also it leads us to overlook the fact that the wages are higher for the KCTU by over 10% than the FKTU.

Provision of four major voluntary benefits

Is there any consistent difference in probability between the unionized and non-unionized establishments that employers provide for each of the sub-categories of voluntary benefits? If so, what are differences in the provision of sub-categories in voluntary benefits between unionized and non-unionized establishments? Among the twelve sub-categories as mentioned earlier in Table 2-3, I selected four important types of voluntary benefits, considering the relative share of each in the total voluntary benefits in 1999; meals, schooling, housing, and the intra-firm benefit fund.⁵⁷

Table 7-4 presents the results of logistic regression on the provision of each of the types of benefits among the four between the unionized and non-unionized sectors for 1995-1999. The dependent variable in each equation is whether establishments provide relevant types of benefits (1 if employer provides, 0 otherwise). In column 1 and 2, unions are shown not to affect the provision for meals and housing. However, column 3 and column 4 show that the union increases the probability of employers providing schooling and intra-firm benefit fund to their employees significantly. In order to see any impact of bargaining-related variables on the provision of benefits, I repeated the same

⁵⁷ A brief introduction on intra-firm benefit fund was given in the footnote of no. 12.

logistic regression for only the unionized sample. The results in column 5 of Table 7-4 present that unions affiliated with the KCTU are related to the increased probability of employers to provide a benefit of schooling expenditures at the 5% significance level. Also, the density and squared density become jointly significant at the 0.1% level ($chi^2 = 15.12$, $Prob > chi^2 = 0.0005$) in column 6 with intra-firm benefit fund as the dependent variable for the unionized samples. However, no effect of bargaining-related variables on meals and housing is seen between the FKTU-affiliated and the KCTU-affiliated unions.⁵⁸

What do the results from table 7-4 imply with regard to the impact of unions and bargaining-related variables on the provision of voluntary benefits? The two benefits, meals and housing, on which unions do not impact, are older and more basic benefits than other voluntary benefits. In fact, employer expenditures on meals and housing for employees had already developed in the 1950s and 1960s in Korea (An, 1989). However, employer expenditures on schooling began in the late 1970s or early 1980s and increased in the 1990s by the demands from employees. Also, for the first time, the intra-firm benefits fund came about in 1984 by the recommendation of the Ministry of Labor.

Thus, it might not be an exaggeration that, while voluntary benefits in non-union establishments focus on more basic benefits and remain old-style, union establishments pay more attention to diversified benefits beyond basic benefits. This result supports the role of unions assumed in industrial relations literature that trade unions will understand

⁵⁸ The results are not shown in Table 7-4, due to space limitation.

Table 7-4. Logistic multiple-regression for union effects on the provision of various voluntary benefits for 1995-1999.

	All Samples				Unionized Samples	
	<i>Meals</i>	<i>Housing</i>	<i>School</i>	<i>Benefit Fund</i>	<i>School</i>	<i>Benefit Fund</i>
Year1996	.996 (.120)	.984 (.084)	1.112 (.108)	.840 (.124)	1.291 (.247)	.998 (.186)
Year1997	.773* (.088)	.910 (.075)	.800* (.075)	.896 (.125)	.862 (.154)	.801 (.144)
Year1998	.900 (.102)	.838* (.070)	.439*** (.041)	.599*** (.093)	.530*** (.095)	.506*** (.104)
Year1999	1.031 (.121)	.755*** (.067)	.395*** (.038)	.673* (.108)	.544*** (.103)	.534** (.112)
Busan	1.396* (.190)	.953 (.104)	1.307* (.141)	.812 (.164)	1.381 (.299)	.512* (.151)
Kyungki	1.409*** (.143)	1.299*** (.099)	1.102 (.091)	.841 (.110)	1.061 (.173)	.795 (.138)
Joongbu	1.058 (.099)	1.434*** (.112)	1.091 (.097)	.842 (.118)	.786 (.125)	.749 (.140)
Kyungsang	1.289* (.135)	1.477*** (.118)	1.034 (.092)	.681** (.102)	.987 (.169)	.635* (.127)
Mining	.164*** (.037)	1.451 (.286)	.963 (.227)	.320 (.193)	.369** (.141)	.329 (.256)
Construction	.555* (.155)	.725 (.157)	.784 (.225)	3.851*** (.998)	.770 (.384)	4.296*** (1.435)
Transportation	.391*** (.070)	.432*** (.065)	.362*** (.055)	.650 (.213)	.402* (.169)	.778 (.404)
Wholesale	.441*** (.070)	.434*** (.050)	1.149 (.137)	1.310 (.269)	1.516 (.488)	2.107** (.610)
Finance	.455*** (.066)	.491*** (.056)	1.082 (.130)	1.541* (.286)	.624* (.130)	1.670* (.388)
Services	.228*** (.033)	.494*** (.055)	.867 (.108)	1.519* (.303)	.709 (.198)	2.340** (.672)
Public	.202*** (.029)	.257*** (.035)	.988 (.127)	1.024 (.236)	.881 (.223)	1.051 (.345)
30≤Ees<100	.827 (.097)	1.424*** (.146)	2.243*** (.233)	1.661 (.537)	3.670* (2.090)	4.575 (8.052)
100≤Ees<300	.702** (.084)	2.266*** (.234)	5.137*** (.553)	2.885*** (.887)	7.458*** (4.166)	5.158 (8.893)
300≤Ees<500	1.034 (.160)	3.196*** (.385)	10.927*** (1.441)	3.389*** (1.075)	17.288*** (9.804)	7.390 (12.718)
500≤Ees<1,000	.901 (.131)	3.879*** (.465)	14.972*** (2.070)	5.161*** (1.610)	21.752*** (12.312)	10.387 (17.887)
1,000≤Ees	1.302 (.206)	7.122*** (.892)	36.318*** (6.665)	6.515*** (2.034)	51.176*** (30.211)	11.508 (19.686)
Fpercent	.997 (.002)	1.001 (.001)	.991*** (.002)	.993* (.003)	.985*** (.003)	.989* (.005)
Edu	.724*** (.052)	.907 (.055)	1.410*** (.093)	.761* (.083)	1.300 (.181)	.798 (.119)
Expe	.938*** (.016)	.943*** (.013)	1.035* (.015)	.934* (.025)	1.032 (.034)	.946 (.034)
Tenure	.913*** (.016)	.992 (.016)	1.156*** (.022)	1.061* (.030)	1.110** (.043)	1.073 (.041)

LWages	.510*** (.056)	1.786*** (.158)	4.461*** (.527)	3.634*** (.619)	2.499*** (.461)	3.594*** (1.065)
Density					1.009 (.009)	1.019 (.012)
Sqdensity					1.000 (.000)	1.000 (.000)
KCTU					.742* (.113)	.901 (.133)
Union	1.098 (.092)	.987 (.063)	2.027*** (.148)	1.688*** (.194)		
Log likelihood	-3058.846	-4729.906	-3950.721	-1780.215	-1145.133	-968.064
Chi-square	907.97***	982.63***	1841.58***	488.23***	357.44***	243.78***
N	8,479	8,479	8,479	8,479	2,845	2,845

Note: * significant at the 5% level, ** significant at the 1% level, and *** significant at the 0.1% level
Note: density and Sqdensity jointly significant at the 0.1% level ($\chi^2 = 15.12$, $\text{Prob} > \chi^2 = 0.0005$) in the equation with benefit fund as dependent variable for unionized samples

needs of employees better with regard to benefits and contribute to develop more diversified benefits throughout collective bargaining (Mabry, 1973; Freeman and Medoff, 1984). The ‘voice’ aspect of trade unions to monitor the preferences of union members appears to contribute to maximize the utility of employees by diversifying the types of voluntary benefits. As a consequence, trade unions have pioneered new kinds of benefits, such as dental insurance, in the United States (Antos, 1983; Freeman & Medoff, 1984). The same role done by trade unions regarding fringe benefits is found in Korea, also.

Discussion

When using the results from 2SLS, we found that trade unions for 1995-1999 in Korea increase the level of voluntary benefits by 32%, compared to an unorganized establishment, other things being equal. This result means that the exclusion of pensions

and health insurance from negotiation between employers and unions because statutory benefits do not affect the existence of union effects on benefits.

In addition, the size of union effect on voluntary benefits, 32%, is much larger than the size of union wage premium. Even though simple comparison is impossible because of different data, we have already seen in Table 4-3 in Chapter 4 dealing with union wage effect in the distribution of wage that the union wage effect, estimated by OLS, for 1995-1999 ranges from 1% ($= \exp (.01)-1$) in 1996 at the minimum to 7.7% ($= \exp (.074)-1$) in 1999 at the maximum. No study reports such a large union wage premium in Korea like the union benefit effect of 32% mentioned above. The size of the union benefit effect in Korea for 1995-1999 is higher somewhat than the size of the union benefit effect of 20%-30% in the U.S., estimated by Freeman and Medoff (1984), and lower than the size of 45.5% in Canada, found by Renaud (1998). This finding means that the union wage effect in Korea is likely to underestimate the whole union effect on total compensation as in the U.S. and Canada. A lesson from Korea for 1995-1999 is that the proportional assumption behind most studies on the union wage effect, assuming that unions would affect on fringe benefits proportionally as on wages appears to be false (Alpert, 1982)

Also, the existence of the union benefit effect of 32% in Korea suggests that compensating wage theory predicting no union benefit effect and a negative trade-off between wages and benefits is unlikely to be true. Of course, an accurate test of the compensating wage theory cannot be accomplished in this study (Smith and Ehrenberg, 1983; Olsen, 2002). Nonetheless, the result from this study seems to support the monopoly model of the union in industrial relations assuming that unions enhance benefits as well as wages by using bargaining power.

The results regarding bargaining-related variables such as the union organizing rate and characteristics of national union confederation present more complicated implications.

It was discovered that the two separate national union confederations, the FKTU and the KCTU, represent the different preferences of workers towards wages and benefits. That result indicates that the FKTU-affiliated unions show a relative lower level of wages and higher level of benefits, while the KCTU-affiliated unions enjoy a considerably higher level of wages but a lower level of benefits. With respect to the level of benefits, the difference between the FKTU and the KCTU is understandable, at least partially, because the rank-and-file union members and union leaders in the FKTU-affiliated unions place more emphasis on the importance of benefits, compared to those in the KCTU-affiliated unions (Kwon, 1997). In addition, the union leaders and officers value the importance of increasing benefits more than the rank-and-file union members do in the FKTU-affiliated unions, while union leaders place less emphasis on the value of benefits than rank-and-file union members do in the KCTU-affiliated unions (Kwon, 1997).

Regarding the higher level of wages in the KCTU-affiliated unions, compared to those in the FKTU-affiliated unions, I assume this fact might be the result of a different level of bargaining power between the two national camps resulting from a difference in democracy and/or militancy. In regard to democracy, the direct election for president of a union, less discretion from the union presidents, and the ratification ballots by the rank-and-file union membership are more easily found in the KCTU-affiliated unions than in the KCTU-affiliated unions (Kwon, 1997). Also, the KCTU-affiliated unions show a

higher level of bargaining duration, strike propensity, and participation in political activities than the FKTU-affiliated unions, regarding militancy. The fact of a higher level of total compensation for the KCTU-affiliated unions supports the argument that militancy in bargaining (Fiorito and Hendricks, 1987) and internal democracy within unions (Levine & Feuille, 1983) is positively related to better outcomes.⁵⁹

Regarding the mix of wages/benefits in between the KCTU- and FKTU-affiliated unions, it would be desirable if the phenomenon of a higher share of wages for the KCTU-affiliated unions and a higher share of benefits for the FKTU-affiliated unions reflects simply different preferences of the rank-and-file union members between the two kinds of unions. However, another possibility exists in that all union members prefer wages to benefits, regardless of the KCTU or FKTU, and also the lower level of democracy and militancy in the FKTU-affiliated unions prevent the unions and the unions' leaders from concentrating on wages, as the rank-and-file union members want to do. So far, it is not clear whether either possibility is true.

The compensating wage theory explains that workers having different preferences towards the wage-benefit mix sort themselves across firms offering different wage-benefit mix (Schiller and Weiss, 1980; Smith and Ehrenberg, 1983; Rosen, 1986; Olsen, 1994 & 2002). In this theory, the preferences of workers and employers' different strategy to attract newcomer result in different wage-benefit mix across firms. The monopoly model of unions and the results in this study imply that collective preferences of workers towards a wage-benefit mix may be a result of a combination of situations, the

⁵⁹ If it is true in reality that the level of total compensation is higher in the KCTU-affiliated unions than the FKTU-affiliated unions, the believed observation that the FKTU-affiliated unions is closer to the business unionism than the KCTU-affiliated unions might be false. As a result, the presumption based on the observation that the level of total compensation would be higher in the FKTU-affiliated unions than in the KCTU-affiliated unions also might be not true.

existence of a union, the variation of bargaining power within unions, and possibly other factors. We cannot conclude which causal direction between preferences and structures including situation is more plausible.

The dominant influence of establishment size on benefits is worth drawing our attention. Many in Korea are concerned about the dominant effect of firm size on wages (Song, 1991 & 1994). Our study shows that the effect of establishment size is much greater on benefits than on wages. As the differences in wages and benefits are increasing between a limited number of large firms and small- or medium-sized firms, in fact dual labor markets, which consist of core and peripheral market, are concerned. Therefore, this study appears to call for active efforts by the government, employers, and unions to narrow the gap in wages and benefits between the two sectors.

4. Conclusion

Where governments do not provide good social welfare systems for workers, the roles of corporate welfare system within firms increase. Fringe benefits offered by employers become one of the conditions under which workers show a high level of productivity (Davis, 1986). Also individual workers and union leaders want the shares and types of the benefits to be increased, for various reasons. The case of Korea is not an exception for the phenomenon. Overall this study examines the effects of union - and union-related variables – on the benefits in Korea for 1995-1999.

One of the main features of this study is that the effects of the trade unions on the level of benefits and the provision of individual benefits are examined together. Another

feature of this study is to use union organizing rate in the establishment and the individual union's affiliation with either two of the national union confederations (FKTU/KCTU) as the main independent variables. Most studies on union effect on benefits assume equal effects of unions on benefits. In reality, there appears to be significant differences in union bargaining power and preferences of union membership across unions.

Some limitations in this study need to be kept in mind. First, this study did not examine the period of 1987-1994 due to a lack of union-related information. Thus, it is not possible to say that the union benefit effect had existed for the entire period of 1987-1999. Also, we cannot express anything about the yearly or periodical changes in the union benefit effect for the entire period. Second, some incomplete or unmeasured variables are presented, which are likely to affect the union benefit effect. Because of the lack of information, the average of education, experience, and tenure in 169 three-digit industries from the Basic Survey on Wage Structure (BSWS) are used as proxies for the average year of education, experience, and tenure in establishments. Also, unmeasured are the composition of occupations in an establishment, the percentage of married workers, and the preferential tax treatment for voluntary benefits that may impact on the union benefit effect.

Even though the union benefit effect in Korea for 1995-1999 is as high as 32%, estimated by 2SLS, it is unlikely to expect union benefit effect to decrease in the near future, due to the trend of an increasing share of benefits in total compensation, diversified preferences among workers reflecting an increase of education levels and economic development, and the recent increase of various private insurances including

health insurance, life insurance, and pensions (Choi, 1992; Bang, 2002). To employers, existing types of benefits are too basic and undifferentiated to retain their skilled workers and to attract new able workers. Employees' commitment and involvement to their organizations are unlikely to be secured through existing levels and content of benefits. In recent years, many insurance companies have developed and started to sell private pensions and various insurances including life insurance and health insurance. Though remaining small, the number of companies providing private pensions and insurances is increasing as a result of employees' demand, as seen in Table 2-3 earlier.

In addition to the tradeoffs between wages and benefits, other tradeoffs between wages (or total compensation) and other contract provisions are possible (Feuille et al., 1981). In fact, about a half of collective bargaining in Korea deals with contract provisions including working conditions, the scope of union activities, the composition of disciplinary committee, the procedures for layoffs or dismissal, etc., as well as wages and benefits. Because bargaining outcomes are not restricted to wages and benefits (Kochan and Block, 1977; Feuille et al., 1981; Fiorito and Hendricks, 1987), a study examining union effects on total compensation should take into account the potential tradeoffs between total compensation and other contract provisions in order to be more complete. For this reason, the results in this study should be read carefully and studied thoroughly.

CHAPTER EIGHT

CONCLUSION

The purpose of this study is to examine how the Korean trade unions have acted with regarding the economic function involving wages since 1987, when political democratization came about in June and the ensuing the Great Labor Offensive in July, August, and September brought free collective bargaining into the Korean industrial relations.

Considering many factors such as the long history of low wages combined with the export-driven strategy of economic development set by the government for the past 30 years, the nature of the enterprise union system, and the first steps in free collective bargaining, union activities aiming to enhance wages for their membership are expected to be the best way to examine how trade unions have affected the labor market and how unions have been viewed by their membership.

In order to examine the economic effects of trade unions since 1987, I divided the possible research areas into four parts: the union wage premium in the distribution of wages, the union effects on wage dispersion and wage equality, the union effects on the influences of human capital and personal characteristics, such as education, experience, tenure, and sex, over wages, and the union effects on benefits.

This concluding chapter consists of two parts, the one to summarize the major results from the four empirical previous chapters and the other to mention some important points

needed to predict Korean industrial relations in the near future. In the former, the strengths and limitations of this study will be mentioned, along with a summary. Also the possible theoretical contributions to the area of industrial relations and policy implications from this study for government, employers, and unions including workers will be explored. In the latter, the emerging public sector, a possibility of a merge between the FKTU and the KCTU, the scheduled organizational changes from the enterprise union towards the industrial union system, and the political parties created by the two national labor camps will be explored.

1. Summary of Four Empirical Chapters

Reviewing some studies on the union effects on wages, wage dispersion, four wage determinants, and fringe benefits in Korea revealed that the union effect on wages, wage inequality, total compensation in the U.S. is also found in Korea. Therefore, this discovery means that the theory and empirical work, which have been conducted in the U.S., can be applied to Korea without major changes.

In detail, unions enhance the level of earnings and compress the distribution of earnings in the organized sector.

First of all, union wage premiums, estimated by the OLS and QR, are found in the period of 1987-1999, even though the results are not free from the sample selection bias. The existence of union wage premiums in Korea for 1987-1999 implies that the political oppression of trade unions by the government, aimed at deleting union wage effects in the labor market, was not fulfilled. Furthermore, trade unions succeeded in offering

economic benefits to their rank-and-file membership for the period, also. The absolute size of union wage premiums are shown to be moderate in that they are below 7% in most years and quantiles, when compared with about 10-15% (Hirsch & Addison, 1986) or even 20-25% (Freeman & Medoff, 1981; Lewis, 1986) in the United States and 10-20% in Canada (Benjamin et al., 1998; Kuhn, 1998) in the 1990s. The moderate size of a union wage premium may result from many factors such as a short history of free collective bargaining and a need to secure viability of union itself rather than higher wages due to continued strong opposition.

Regarding the size of union wage effect, the OLS estimation method assumes that the union wage effect is the same across the distribution of wages and the traditional theory in industrial relations assumes larger union wage effect in the lower of wage distribution and less in the upper of wage distribution. Our results using the data from the BSWS for 1987-1999 indicate that the OLS estimation assuming constant size of union coefficient in the equation is not correct. Rather the size of union coefficient varies considerably, depending on the focus on the wage distribution. In addition, the traditional theory assuming larger size of union coefficient for the lower-wage workers turned out to be only partially true for 1987-1995 and false for the period 1996-1999. Thus, our comprehensive QR results examining every quantile in the wage distribution imply that the issue of which group among lower-wage, average-wage, and higher-wage workers, will be benefited from wage bargaining led by unions is time-variant. To understand the unexpected findings, this study considered four factors, changes in the ways to determine wage increase by unions, fixed amount of wage increase and fixed-rate of wage increase, a possibility that the voice of higher-wage earners becomes important in the 1990s due to

increased complaints resulting from the fixed amount of wage increase in the late 1980s, wage norm argument regarding which group of workers benefit from union wage premium first and which group will do next, and any changes in the union leadership. However, we do not find any critical factors explaining the results because discovering determinants of the phenomenon is beyond the boundary of this study. It appears that the influences of employers and government policy on the issue as well as the three potential factors must be considered from now on.

Thus, the voice of the unions contributes to reducing wage inequality in Korea.

Throughout the establishment-level data, which are constructed from the individual-level BSWS data, the chapter analyzing union wage equalizing effect shows that Korean trade unions narrowed the wage dispersion within establishments, resulting in the increase of wage equality. In detail, the size of the union effects decreasing wage dispersion is 8.8% in 1987. However, the size decreased to 1.1% (OLS) or 2.5% (2SLS) in 1994 and to 1.2% (OLS) or 2.5% (2SLS) in 1999. Despite the variations according to the year examined, it can be said that the existence of unions have had negative effects on wage dispersion in Korea for the past 15 years. It is also mentioned that the relatively smaller size of the union wage equalizing effect may be attributed to the prevailing norm of the wage equality in the society and/or the spillover effect of the unions decreasing wage inequality into the non-unionized sectors.

By employing never-used data from the ELCS by the MOL, this study also found that the positive union benefit effects had existed in the late-1990s, depending on the estimation by the 2SLS. In addition, the bargaining-related variables such as the rate of

union organization within establishments and union's affiliation with national union federations affected the level of benefits were discovered. While the union organization rate is found to increase the level of benefits, the effects are not monotonically increasing, showing an inverted-U shape pattern. Also, the results indicate that the two existing union confederations affect differently the preferences of the unions regarding the wage/benefit mix in the total compensation. Therefore, specifically saying, the individual unions, which are affiliated with the FKTU, a moderate and pro-government federation, showed a relatively higher level of benefits, while the KCTU, a militant federation, achieved a higher level of total compensation, but a lower level of benefits. It was already known that the union activities regarding wage policy were not uniform during the entire period of 1987-1999. In the period of 1987-1989, the union activities appears to focus on increasing the absolute size of wages, resulting in higher rates of wage increase and ignoring the importance of benefits or gender wage gap. From 1990, an increase in the portion of benefits in total compensation and a decrease in the wage gap between male and female workers is witnessed.

Evaluation of Union Activities

The results that the Korean trade unions enhance wages, wage equality, and voluntary benefits for their union membership relative to comparable workers in non-unionized establishment and reduce the return rates for education, experience, tenure, and sex on wages imply that the unions have acted as the rank-and-file union membership wants and have fulfilled to some degree what union membership expects unions to do for themselves. Thus, it is unlikely that most of rank-and-file union members, driven by

economic utilities, will secede from unions in the near future as long as the trade unions sustain in securing economic results through collective bargaining, such as more wages, more wage equality, and more benefits, and less effects of human capital on compensation. In addition, these economic accomplishments achieved by the trade unions for the past fifteen years are expected to affect workers in the non-organized firms either through a direct extension of the union base to the unorganized sector or through a threat effect increasing wages for workers in non-unionized firms by employers.

Implications to the nature of unions

With regard to the debate between John Dunlop (1950) and Arthur Ross (1956), it can be said that this study focuses exclusively on the economic side of unions, examining union wages- or compensation-related effects including wage, wage inequality, and benefits. Of course, wages or total compensations are not all of the economic facets of trade unions. In many cases, employment is another aspect of economic side of unions and becomes a trade-off relationship with wages. Also the study here pays little attention to the political side of unions such as preferences of leaders and other political activities of unions. Furthermore, an apparent limitation of this study is not to examine these aspects.

Despite the limitations, the results from this study show that the political aspects of unions are instilled into largely the economic side of unions (Kaufman, 2002). For example, the facts state that the union wage effects are conditional on the distribution of wages, which implies that union membership consists of different factions with different preferences. Also the fact that groups for which unions offer the largest wage effects

depends on the year concerned needs some help from political explanations toward unions. Thus, this study urges further thinking about the implications of the nature of trade unions.

It might be true that the process of how union maximizes membership's wage bills can be well explained by the economic perspective toward trade unions researched by Dunlop (1950) and the classic monopoly model of unions (Farber, 1986). However, the issues of how pools of wage bills, secured from the employers by unions, should be distributed to the union members is a realm of unions as political organizations, which consist of various groups of workers and union leaders having separate preferences and are operated by the median-voter model. In addition, another issue of how unions adjust the wage/benefit mix and which benefits should be increased does involve the conflicts and compromises among various actors such as union leaders, older workers, marginal workers, as well as employers and external environments regulating the workplace such as labor laws. At this point, this study shows how economic and political aspects of unions in nature are closely interconnected to each other.

This study reveals some obvious gaps in the theoretical explanations on the nature of unions described in the literature. First, a lack of clarity is evident in the median-voter model. The model regarding union effect on wages and wage dispersion predicts that the lesser paid workers will benefit the most from union wage bargaining and the preferences of the median voter will lean towards workers at the bottom of the wage distribution because the mean wage within the unionized firm exceeds the median. With regard to fringe benefits, however, the median-voter model is used because it expected that unions will favor older workers who have stronger preferences for larger benefits. In other

words, the median-voter model, regarding wages and wage dispersion, expects unions will benefit marginal workers at the bottom of the wage distribution, while the model regarding fringe benefits expects the union to follow the preferences of older workers, who are likely to be at the upper part of wage distribution. The median-voter model appears not to answer the question of how trade unions deal with the wage/benefit mix.

Limitations

From chapter 4 to chapter 7, this study pays minimal attention to the roles of government and employers, even though the two are the most important actors, along with trade unions, in industrial relations and the labor market. By limiting within the establishment level regarding the union wage-equalizing effect and the union benefit effect and focusing on the personal characteristics and organizational characteristics, the strategic aspects of government and employers are not captured. Especially, the role of government in Korea has been enormous in every aspect of industrial relations (Shin, 2002). To date, despite the role of government and employers, few variables are available for consideration in the many empirical models, as seen in this study. Based on a theoretical description and prediction, the year-dummy variables are frequently used to capture the roles of the government and employers. However, the year-dummy variables used may capture only the partial effects of the government and leave exact effects of the government on the labor market and outcomes of industrial relations. Therefore, this study did not attempt to examine empirically the role of government and employers, but the task should be performed in future study.

Another limitation of this study is that it did not consider potential tradeoff relationship between total compensation and other outcomes including employment, working conditions, and number of full-time union officers paid by employers, which are produced by trade unions. Focusing on the important roles of wages and fringe benefits, this study does not give much attention to the relationship between unions and employment. Many assume that wages and employment are two essential parts consisting of the economic utilities of union membership in general and both can be a substitute for each other. However, no appropriate data are available to allow for examination the union effects on both wages and employment in Korea. In addition, most unions and union leaders did not devote much attention to employment because there had not been any massive layoffs before the Korean financial crisis.

More important is that the trade-off between gains from total compensation and losses from employment are not always found. While trade unions seek to gains from both total compensation and employment, employers also try to keep their power to set the level of both compensation and employment (Block, 1995). Furthermore, Korea has been away from competitive market where the trade-off between compensation and employment is likely to be found. Rather, Korea has been a type of a less competitive market, due to authoritarian government over all aspects of employment relations, internal labor market resulting from enterprise union system, and monopsonistic employers in many industries. Therefore, this situation makes it difficult to expect the clear trade-off relationship between compensation and employment and an examination of union effect on only total compensation here might be tolerable. Overall, a more balanced study on union effects on both compensation and employment in Korea should be done in the near future. Finally,

before seeing more balanced studies, the results from this study should be considered with great caution.

Policy Implications

With respect to fringe benefits, the previous chapter shows the effects of unions (and union density and nature of national centers) on the benefits. Two ways for unions to secure the various types of benefits for their members exist: through nationally legislated social welfare programs and through individual collective bargaining with their employers within firms (Wallerstein, 1985; Goldfield, 1987). Due to the weakness of labor in national politics and the lack of resources in national union confederations owing to the enterprise union system, the Korean unions had to choose an alternative way to secure benefits through individual collective bargaining with their employers since 1987. The significant positive union effects on benefits are a result of the situation. However, a second way to achieve benefits through collective bargaining is less desirable than the first way through social legislation in national politics in many regards, for example, a limited number of workers are eligible for benefits due to the low union density, variations across unionized firms, and a close attachment of benefits to the specific firms and no applicability to the unemployed (Goldfield, 1987). For these reasons, we can expect that Korean unions will change the way to secure benefits for their members, when they can concentrate resources into national union confederations and arm with a close relationship with political parties. As collective bargaining in individual firms becomes stable, unions also are likely to move their concerns from individual bargaining

to national legislation in national politics. In the near future, the focus of conflicts regarding benefits will be relocated from the boundaries of firms to national politics.

2. Prospects in the Near Future for Korean Industrial Relations

For the past 15 years since 1987, a compromise secured by employers, unions, and government together is that free collective bargaining and the right to organize workers is guaranteed. As a result of the compromise this study becomes possible. However, it does not mean that the existing Korean industrial relations are sufficiently and stably rooted in the soil of the Korean economy and society. Rather the Korean industrial relations continue to suffer from the lack of more compromise over the major issues of industrial relations. Therefore the stability of American industrial relations resulting from the Wagner Act in 1935 cannot be found in Korea yet.

In the mid-1990s, a pessimistic perspective towards unionism arose, as unions faced the decrease in union density and strikes, government oppression, etc (Kim and Song, 1998; Kim, 1995). This current study indicates the existence of union wages and benefit premiums and the union wage-equalizing effect, which implies that to date the Korean trade unions appears to be doing what they are supposed to do as the rank-and-file union membership expect them to do. However, it is too soon to mention the decline of organized labor in Korea, considering what trade unions have achieved for their memberships, plus no further decline in union density, and the still viable bargaining power of trade unions.

However, the near future of Korean industrial relations will depend on some aspects such as the emergence of public sector unionism, organizational transformation by the union itself from the enterprise union system to an industrial union system, a possibility of a merger between the FKTU and KCTU, the existing two national union confederations, plus the political parties created by the two union confederations.

Public Sector as An Unopened Space

The importance of collective bargaining in the public sector has increased rapidly in the United States since the early 1960s. It is recognized that the factors supporting the emergence of collective bargaining in the public sector are the growth in government budgets, civil rights and other social movements, and the passage of laws favorable to collective bargaining in the public sector (Katz and Kochan, 1992; 359). Trade Unions in the public sector are said to allow their memberships to benefit from considerably less wage premiums (Moore and Raisian, 1987) and face constraints regarding strikes. Compared to the precipitating union density in the private sectors during the past four decades and, in spite of these limitations, the union density in the public sector in developed countries is still very high and stable and thus the number of union memberships in the public sector in the total union membership is increasing.

While public sector unions have made it possible for American unions to survive thus far, collective bargaining in the public sector in Korea has not yet developed. In 1998, the total number of teachers in Korea was 428,257 who were allowed to organize unions using the revised labor laws. Prior to that date, the Korean Trade Union for Teachers (KTUT), affiliated with the KCTU since 1989, remained unrecognized. Then from 1998,

another national union federation, the Federation of Korean Trade Unions (FKTU) started an organizing drive among teachers. Also the revised laws contained a plan to allow lower-level government workers including those in the local units to have the right to organize unions starting in 2002. The total numbers of government officers was 886, 582 in 1998 including 553,561 in the central government and 315,370 in local government (National Statistical Office, 2000).

Already two existing unions for civil servants, the National Trade Unions for Civil Servants (NTUCS) keep a close relationship with the KCTU and the Korean Federation of Trade Unions for Civil Servants (KFTUC), which is supported by the FKTU, and are said to have secured approximately 70,000 and 20,000 union memberships, respectively thus far (Bae, 2002).⁶⁰

Considering the union density of 12.6% and the total union membership of 1,401,940 in 1998 (Korea Labor Institute, 2000), it is apparent that the union organizing drives in the public sector will change the union density and the number of union membership substantially in the near future.⁶¹

Moreover, the emergence of unions in any seemingly-good occupation or industry may mean that the relative wages and working conditions for workers in the occupation or industry, compared to those for ordinary workers in an average industry, has been eroded. The emergence of white-collar unionism in the 1990 can be interpreted as a sign indicating that the severe division between while- and blue-collar regarding wages and

⁶⁰ Up to now, the two unions for civil employees have not attained legal status. Discussions for the legality of unions for civil employees are ongoing. Government tends to recognize the right to organize and a partial right to negotiate, declining the right to act collectively by union members, while the two unrecognized unions demand the full right to organize, to negotiate, and act collectively.

⁶¹ However, no realistic possibility exists that police (total number of 94,819 in 1998) can be organized by trade unions in the foreseeable future.

working conditions in the 1970s had been eroded since 1987. In a similar manner, the emergence of public sector unionism in Korea in the 21st century is a result of consistent erosion in the supremacy of the government since the political democratization in 1987. Also public sector unionism can be viewed as a phenomenon representing the disappearance of privileges for public employees regarding wages and other working conditions, relative to other workers in the private sectors. For these reasons, the emergence of public sector unionism will substantially affect the future industrial relations in Korea.

An Intended change from Enterprise Unionism to Industrial Unionism

In contrast to the case of the U.S. where unions have shown a highly decentralized bargaining structure in recent years (Katz and Kochan, 1992), a vehement interest of labor to move an organizational focus on from the enterprise unions to the national union federations and industrial unions (or federations) is increasing in Korea due to the accumulated weaknesses of the enterprise unions and the new bargaining area at the industrial and national level. Therefore, we may find the opposite direction of a shift in unions in the U.S. and Korea. In the 1990s, unionism felt the weaknesses of enterprise unionism, which produced a weakening of national and industrial union organizations, the inability of organizing new union members in the service sector, etc. The Korean Union Federation of Hospitals transformed the system of unions from enterprise to industrial unions in 1998 and bargained with the representatives of employers at the industry level. In the textile industry, bargaining at the industry level between the representatives of unions and employers covers some large companies, but not all.

Table 8-1. Progresses in Changing from Enterprise Unions to Industrial Unions within the FKTU and KCTU

	Federation of Korean Trade Unions (FKTU)	Korean Confederation of Trade Unions (KCTU)
Already-changed Industries	Bank and Financial (Mar. 2000) Taxi (April 2000) Railway Post Tobacco and Ginseng	Hospital (Feb. 1998) University Workers (Nov. 1998) Teachers (1989) Cargo Transportation (Feb. 1999) Construction (Dec. 1999) Metal (Sept. 2000) Press (Sept. 2000)
Industries scheduled to change soon	Chemical Metal Textile	Clerical and Financial Public Service Commercial Tourist Chemical-Textile

Source: Lee (2000)

To Korean unionists' point of view, a high union wage premium should not be in part attributed to the enterprise union system in itself. It is assumed that an institutional change from the enterprise union to the industrial union system will boost union density and bargaining power as well as curing the present weaknesses of the enterprise union system such as the difficulty in achieving solidarity beyond the boundary of enterprise, the lack of financial and personnel resources on the national level, and the difficulty of organizing new members in the unorganized sector. In addition, the form of the industrial union is expected to reduce wage dispersion between establishments, which enterprise unionism has widened (Koo, 1996). While the degree of decentralization of the bargaining structure has increased over the last few decades in the developed countries, an opposite phenomenon, an institutional change from enterprise unionism to industrial unionism intended by labor, is occurring in Korea. Even though employers appear to take

a hostile stand toward such a change, the change by labor will likely affect future industrial relations if realized.

As a result of the efforts to transform enterprise- to industry- or occupation-based union system by the two national union confederations over the past few years, considerable changes have been made. For example, industrial or occupational unions covered 41.1% (247,458) of 602,339 union memberships for the KCTU in June 2002 (Nodong Ilbo, Dec. 31, 2001; Bae, 2002). Also about 130,000 union members under the FKTU were reported to belong to the industrial or occupational unions (Bae, 2002). In the process of the transformation, conflicts over between new organized industrial unions and employers raised questions as to whether or not employers can agree with new forms of unions and to form a joint bargaining table (Bae, 2002).

Toward Unification between the FKTU and KCTU

The 1990s witnessed the continuous decrease of union membership for the FKTU and the continuous increase for the KCTU. When the National Congress of Trade Unions (NCTU), a predecessor of the KCTU, was formed in 1990, it had only approximately 160,000 union members, 8.6% of the total union members (Kim, 1995). The number of union members for the KCTU increased to 410,000 in 1995 and to 610,000, 41.4% of total union membership in Korea in 2000 (Nodong Ilbo, Nov. 1, 2001).⁶² With the rapid increase in union membership for the KCTU and the decline in union membership for the FKTU, conflicts and competitions between the two national union confederations became severe.

⁶² For 1993-1994, many enterprise unions withdrew from the FKTU and joined the KCTU because of dissatisfaction about the wage agreement between the FKTU and Korea Employers Federation (KEF) in (Kim, 1995; Choi, Y.K., 1999).

Facing intensified opposition by employers and anti-unionism of worldwide dimensions including the neo-liberalism expansion of capitalism since the 1980s, a merger between unions occurred in many developed countries. The merger of unions is said to be good for union membership in that mergers between unions increase operational efficiency and solidarity among workers across occupations and firms. In Korea, the two national unions themselves repeatedly raise the possibility of a merger between the FKTU and the KCTU.⁶³ Also observers raised and recommended the possibility (Kim, 2000). Following the track of a merger between the two national union confederations, the results from this study imply that the two confederations should be aware of the different preferences between the two toward wages and benefits.

Many observe that there have been noticeable differences in the internal governance structure, composition of union leaders, style of bargaining mobilization of and rank-and-file membership between the FKTU and the KCTU. In addition to the differences, a part of this study dealing with the union effect on fringe benefits reveals that the two national union confederations, the FKTU and the KCTU, have separate preferences toward the wage/benefit mix and each of the sub-categories of voluntary benefits. In addition, the results in chapter 4 imply indirectly the differences in the size of the union wage premium between the two confederations. Some say that a need exists to unite the two national union confederations and make a stronger union confederation in the near future. In fact, both union confederations have suggested a merger of the two unions. Regarding the merger of the two, this study implies that the two union confederations should consider the differences including the wage/benefit mix and the size of the union wage

⁶³ For example, in 2000, the President of the FKTU, Namsoon Lee, suggested forming a joint committee to discuss a merger between the FKTU and the KCTU (Nodong Ilbo, May 21, 2000).

premium as well as others before a merger. The different preferences held by union membership regarding wages and bargaining are unlikely to go away anytime soon and will continue to be a source of internal conflict.

A Political Experiment: Establishments of Political Parties by Labor

For the presidential election of December 2002, the Democratic Labor Party (DLP), which was created mainly by the KCTU in January 2000, selected Youngkil Kwon, a former president of the KCTU, as its presidential candidate. The DLP had already earned over 8% of voters in the previous election for local self-governance in June 2002, emerging the 3rd party.

The other national confederation of unions, the FKTU, formed a separate political party, the Democratic Society Party (DSP), in November 3, 2002, and announced their candidate to run for the presidential election of 2002. Namsoon Lee is now president of the FKTU and was selected as a presidential candidate for the DSP. To date, the FKTU has consistently taken the position to support presidential candidates for the ruling party, expecting favorable labor policies in exchange for its political support. However, the creation of the DSP by the FKTU means a departure from its traditional political position.

It appears that the creations of political parties by the two national confederations of unions have resulted from the experiences of the past fifteen years. To the KCTU, the strong need for political party representing the interests of labor has been felt in that it has no connection with any political parties including ruling and opposition parties. Visible oppressions by the government and its illegal status also prevent the KCTU from expressing its interests efficiently in national politics. As a result, the situations which

occurred where successful strikes and militancy led by the KCTU resulted in vague compromises done by the existing political parties, was clearly seen in the general strike in early 1997. To the FKTU, the traditional support towards the ruling parties became one of the reasons for them to be blamed for a government-controlled union, causing a decline in union membership and damage to its legitimacy. The gains in exchange for political support have been little, relative to the losses.

Obviously, the prospects for the two newly-born labor parties do not look bright for the near future, because so far the electorate tends to give their votes to either conservative or mid-liberal party. Furthermore, the past fifteen years spent doing collective bargaining within individual firms has stabilized industrial relationships in the workplace level, leaving national industrial relations untouched. Therefore, we can expect that the Korean trade unions will spend more resources on the national industrial relationships and the political aspects of the unions in the near future, as they recognized the lack of political power in fulfilling their interests in national politics.

APPENDIX

< **Appendix: Telephone Interview Protocol Regarding Labor Cost Survey** >

Hello? Is that **** Trade Union?

(If yes) How do you do? This is Jeonghyun Lee, I am a Ph.D. student in the School of Labor/Industrial Relations at Michigan State University. While preparing my doctoral dissertation, I am making a data-base for enterprise trade unions by collecting information on unions. May I talk to the secretary of your union or one of full-time union leaders, regarding the exact number of union membership and your union's affiliation with respect to national unions?

(If the wanted union leaders come on the phone)

Hello? (Job Title in the union?) How do you do? This is Jeonghyun Lee, I am a Ph.D. student in the School of Labor/Industrial Relations at Michigan State University. While preparing my doctoral dissertation, I am making a data-base for enterprise trade unions by collecting information on unions. For that job, I am referring the *Annual Directory of Trade Unions*, which is published by the Ministry of Labor in Korea. However, I have found some unclear points or seemingly mismatched facts regarding your unions. So I am calling you to make them clear. From my experiences working for trade unions, I know very well that you are very busy, please may I have ten or twenty minutes of your time?

(If yes) Thank you very much. What I would like to know is

1. Regarding Union/Non-union

According to the *Annual Directory of Trade Unions* by the Ministry of Labor, your union did not exist in the year of 19**. Is that true?

(If yes)

(If no) Is that so? The content in the Directory was not true.

2. Regarding the number of union membership

The *Directory* by the Ministry of Labor states that the number of your union membership exceeds the number of regular employees, who, that is, are not temporary workers, part-time workers, workers in the period of apprenticeship, in the end of 199*. I guess that the number provided by the *Directory* is not correct. Would you check the exact number of union membership in the end of 199*?

I know very well that it is not easy to check the fact, because the fact is from a few years ago and/or probably other union leaders were in charge at that time. Other unions have provided me the correct number by looking up records for check-off of union dues, which were made by enterprise-side. If available, would you check them for me? Otherwise, other official records that were prepared by your union are also good enough.

(If not available) If so, would you mind checking the fact through newsletters or meeting minutes in your union?

(If all records mentioned above are not available) Could you or your colleagues in your office remember the approximate number of union membership in the year of 199*?

(If the number of union members from him/her still exceeds the number of regular workers) If all records were not available, would you find the exact number of regular workers in your enterprise in the end of 199*? There is a possibility that the inaccurate number of regular workers at that time is the cause of the problem, even though the number of union members in the *Directory* was correct. If you do not have relevant records for the fact, could you call anyone in your personnel or similar department in your enterprise and obtain the true number for me? If needed, I can wait or call you back at your convenience.

(If the number wanted is obtained) Thank you very much.

(If failed to get the number) I know you have done all you can do. I truly appreciate your time. I will handle the problem, some other way.

3. Regarding the affiliation of your union to national union confederations

According to the *Directory* by the Ministry of Labor, your union was belonged to the Federation of the Korean Trade Unions (or the Korean Confederation of Trade Unions) in the year of 199*. Is that true? When using the term, "affiliation," the criterion is whether your union pays a part of union dues to the national confederation and/or your union leaders participated in the formal conferences held by the national confederation.

Also the *Directory* says that your union had joined the FKTU (or KCTU) in the 199* and later changed the affiliation to the KCTU (or FKTU) in the 199*. Is that true?

4. Regarding other plants or headquarter in other area

I would like to know if your enterprise where your union is located has headquarters or plants in other areas. If so, does your union cover workers in the headquarters or plants or do separate unions cover them?

5. Regarding miscellaneous questions

Please let me know if you know of any different enterprises with same name as yours.

6. Closing greeting

Thank you very much for your invaluable help. Thanks to you, I can supplement the inaccuracies found in the Annual Directory of Trade Unions published by the Ministry of Labor. Again thank you. Good bye.

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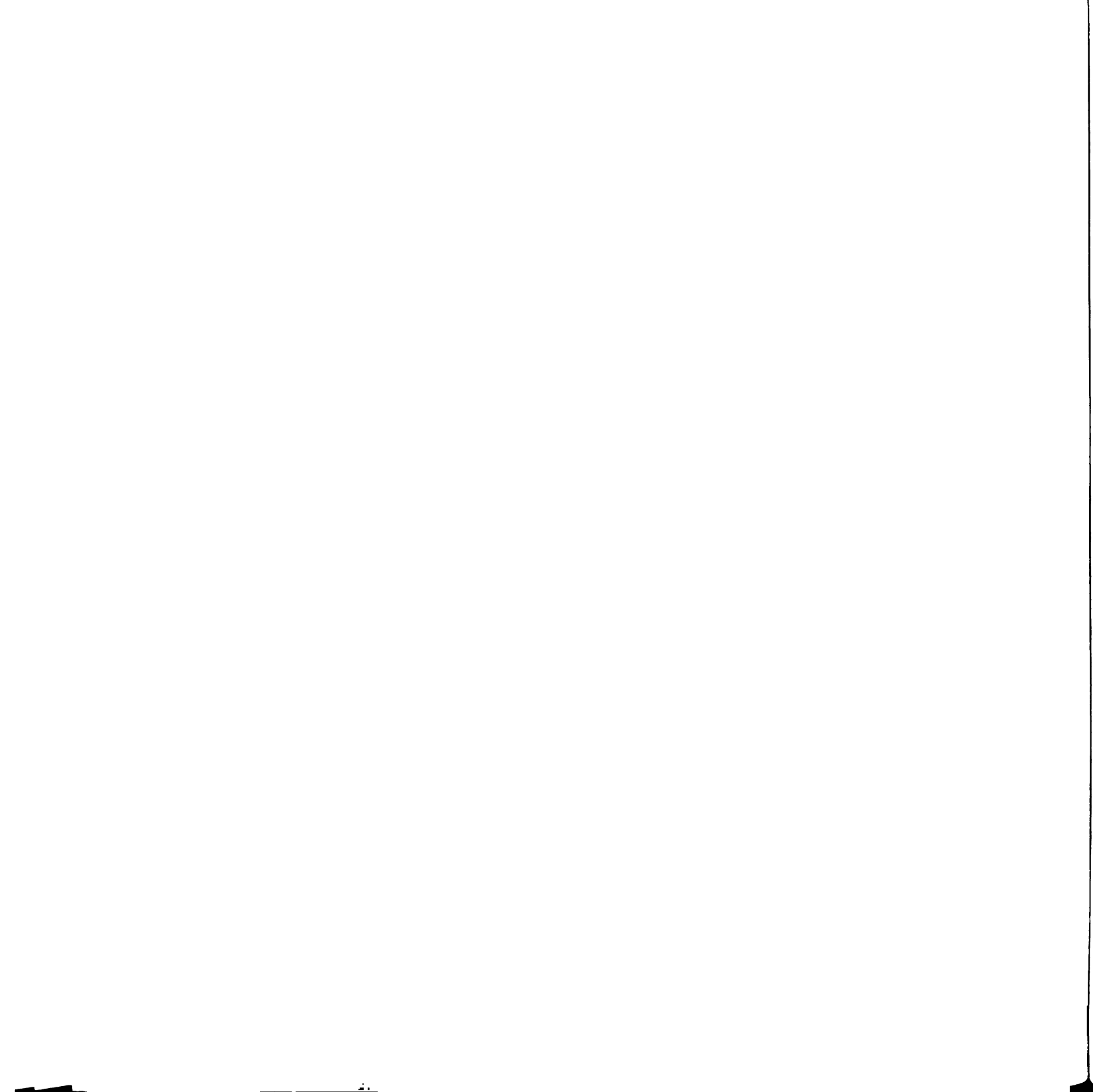
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