

Preliminary Draft

Do Unions Inhibit Labor Flexibility? Lessons from Korea

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Abstract

This paper examines whether and to what extent unions inhibit labor flexibility in the Korean manufacturing. Korea provides an ideal setting to study the effects of unions on labor flexibility with the abrupt incidence of unleashing active unionism in 1987. We provide evidence that the short-run employment adjustment (one to six months) and hours adjustment (one-month) of manufacturing regular workers decrease in the post-1987 period compared to the pre-1987 period. However, negative union effects on employment adjustment are limited to male, production, and regular workers, and Korean employers respond through increased employment of daily workers (workers with employment contract shorter than one month) and aged workers (55 or older) and also through the higher flexibility of female workers. Furthermore, significant part of the decrease in employment flexibility (for instance, 35 percent of the decrease in 1-month output elasticity of employment) is attributed to the labor market changes toward tighter labor market with the reduced young workers that make separation more procyclical.

Key Words: Labor Flexibility, Labor Adjustment, Labor Unions

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1. Introduction

Labor market flexibility has been one of the buzzwords concerning labor in the global economy. Many policy makers and researchers in South Korea have also been increasingly concerned over the detrimental effects of labor market rigidity. Economic crisis in 1997 made calls for labor market flexibility even louder. Casual observations tell that the Korean labor market, once very flexible, has become rigid after the emergence of the unions that are no longer under government repressions in Korea. Stronger assertions that unions inhibit labor flexibility are often based on visible cases like violent confrontations over mass lay-offs between *chaebol* firms and their counterpart enterprise unions. However, the linkage between unions and labor flexibility in Korea is yet to be verified empirically.¹

Researches on the relations between social protection and economic flexibility in developed countries have been well documented (Blank and Freeman, 1994). However, in developing countries, more researches on the role of labor unions are in order to examine relations between social protection and economic flexibility. In addition to their more traditional roles of protecting workers through collective bargaining, labor unions could help enforce the necessary labor market regulations given that massive noncompliance of labor market regulations is the norm in developing countries (Harrison and Leamer, 1995). And labor unions could also help build up proper labor institutions when other labor institutions for employment protection have not been well developed in developing countries

In Korea, labor laws with provisions of substantial employment protection had been far from being enforced until the emergence of active unions in 1987. Also, Korean unions have exercised considerable influences over two major labor reforms that might affect labor flexibility through massive strikes in 1998 and active participation in tripartite committee in 1999. These active roles of unions in legislation and enforcement of employment protection laws lead us to focus on labor unions than any other labor institutions in studying the effects of labor institutions on labor flexibility in Korea.

Hamermesh (1993) pointed out that most previous studies on the effects of policies designed to enhance job security suffer from either the minuscule size of most employment protection policies in U.S. or the small size of changes relative to the whole social protection system in European countries. Hamermesh (1992) also called attention to the potential problem of studies that cover only short post-period of policy changes because the initial effect depends on the timing of the introduction of the policy.

With its abrupt incidence as well as the sizable changes and relatively long post-period experiences in unleashing active unionism in 1987, Korea provides the ideal setting to study the effects of unions on the labor flexibility. Korea witnessed a drastic shift of government policy on unions after the 6.29 Declaration in 1987. Strong repressions and controls of military regimes over labor unions for more than two decades were put an end in conjunction with the political transition from military regime to democratic one in South Korea. Since 1987, labor unions have

¹ Only a few empirical researches have been conducted on the labor market flexibility in Korea. Among them, Yoon (1994) and Rhee (1994) analyzed the wage flexibility. Kim and Sung (1995) and Kim (1994) made an international comparison with Korea.

become an important player not only in collective bargaining and actions with and against employers but also in broader social arena including legislations of labor laws.

This paper examines whether and to what extent unions inhibit labor flexibility in Korea. We focus on the dynamics of employment, hours, accession rates, and separation rates in the Korean manufacturing sector². We first look at how the overall elasticities of employment, accessions, separations, average hours, and total hours with respect to changes in output have changed between pre-1987 period and post-1987 period in the aggregate manufacturing sector. We then turn to study how the pre-post changes in output elasticities diverge between heavily and less unionized sectors, given that Korean labor unions have represented disproportionately in favor of regular, male, production workers, and workers in big establishments in the manufacturing.

Like Abraham and Houseman (1989), our estimations of output elasticities of employment and hours are based on the more flexible functional form than the typical Koyck specifications of dynamic labor demand. In addition, we attempt to decompose change in employment into accession and separation, and separately estimate output elasticities of accession and separation. Also, we use monthly labor data from both establishment survey (with more than 10 regular employees in the manufacturing) and household survey.

We first present evidence that labor flexibility in terms of short-run (one to six month) elasticities of employment and also one-month elasticity of average work hours have reduced after unions emerged in 1987. Nonetheless, we also stressed that the significant part of the decrease in labor flexibility (for instance, 35 percent of the decrease in 1-month output elasticity of employment) is attributed to the labor market changes toward tighter labor market with the reduced young workers that make separation more procyclical. And we also found that long-run labor flexibility has increased in the sense that employment responds more substantially in the long-run (one year).

We then look into how output elasticities of employment differ among diverse groups of workers in the mining and manufacturing using the household survey data. We found that Korean enterprise unions failed to inhibit employment flexibility of workers except for male regular workers, and that employers were able to respond to the reduced employment flexibility of male regular workers through increased employment of daily workers and aged workers and also through the relatively high flexibility of female workers.

Furthermore, we study how the pre-post changes in labor elasticities of regular workers diverge between heavily and less unionized sectors using the establishment survey data. We found that narrowed gaps in the employment and hours elasticities between production and nonproduction workers could reflect both union effects and labor market effects. We also suggest that small and medium sized establishments have suffered from the lower elasticities of net changes (employment) mainly due to higher elasticities of gross changes (separation) that were in turn caused by changes toward the tighter labor market with the reduced young workers.

The remainder of the paper is organized as follows. Section 2 briefly overview the changes in labor institutions and labor market in Korea in light with labor flexibility, and Section

² Although we focus on the manufacturing sector, one data set (EAPS; Economically Active Population Survey) in our paper is on the mining and manufacturing. And it is often not distinguishable between two sectors. In that case, we use the data on mining and manufacturing because employment of mining sector is only 72 thousand, 1.4 percent of that of manufacturing sector in 1990.

3 discusses the estimating framework and the data, and Section 4 reports our empirical results followed by the concluding remarks in Section 5.

2. Developments in Labor Institutions and Market in Korea

2.1. Labor Institutions

The legal framework (labor laws) and industrial relations (unions) interact with each other in protecting workers and in affecting labor flexibility. The legal system (Labor Standard Law) with provisions of substantial employment protection has existed for more than four decades in Korea. Employers may not dismiss workers without just cause verifiable in court, and adverse demand shock was not always regarded as one of the causes in court. Employers in a firm regularly hiring no less than five workers were mandated to give a 30-day advance notice and pay a severance pay³ when laying workers off. However, such employment protection was not effectively enforced before 1987 because neither government nor unions had counteracted the non-complying employers. When the government turned the blind eyes on the noncompliance of labor laws by employers, unions were not able to help enforce the law because unions themselves were repressed under the military regime.

In 1987, the June 29 Declaration on democratization brought to workers right to organize and collectively bargain. It is fair to say that Labor Standard Law became actually in effect with the emergence of active unionism after 1987. Along with the liberalization of unions in 1987, one important amendment to Labor standard Law was made to require that working hours should not exceed 8 hours a day and 44 hours a week unless workers negotiated with the employer for overtime hours under the limit of 12 hours a week. According to the amended law, if an employee were to work 40 hours in one week and 48 hours next week, the employer has to negotiate workers and compensate for overtime payment of 4 hours. This amendment should have led to high costs of hours adjustment on the part of Korean employers because of a 50 percent premium of “usual wage”⁴ for overtime wage according to the Labor Standard law.

Several important labor institutions have followed to be set up after 1987. Minimum wages were introduced and initially applied to enterprises with over 10 workers in 1987 and were extended to include all industries in 1990. And employment insurance system was introduced in 1995, which turned out to be timely because of the subsequent economic crisis in 1998. Also, Equal Employment Act aiming at equal employment opportunities between genders was legislated in 1988. Employment Promotion Act for the Elderly for those 55 years of age and older was legislated in 1992. Employment Promotion Act for the Handicapped was legislated in 1992. However, unlike the Labor Standard Law, the potential effects of these labor institutions on labor flexibility are not considered as significant. Minimum wage has been set so low to bind the meaningful number of workers, employment insurance system does not entail the institutional designs that could potentially increase hiring and layoff costs of employers, Equal Employment Act and Employment Promotion Act for the Elderly do not contain any important

³ The mandatory severance pay should amount to the last year’s “average wage” multiplied by the years of tenure of workers.

⁴ There have been hot debates on whether the overtime premium is too high in Korea. Employers argue that 50 percent premium is too high, but unions insist that the 50 percent premium should be applied to the “average wage”, not “usual wage” which is only a fraction of the average wage.

clause that could have any binding effects, Employment Promotion Act for the Handicapped was targeted at the small group of workers.⁵

Despite the development of various institutions to protect regular workers, the bill to legalize the temporary work agency⁶ was turned down in the National Assembly for the fear of threatening of job security of regular workers. The failure to set up the proper labor institution for temporary workers had left about 150 thousand workers employed by more than almost 500 temporary work agencies (Nam, 1993) out of the reach of legal protections. In addition, all private employment service agencies were under the strict control of the Ministry of Labor, which run its own public employment service agencies. Private employment services had to secure initial authorization and annual re-approvals from the Ministry of Labor. There are also price ceilings on the service fees, and some jobs including CEOs are even excluded from the list of occupations allowed for employment services. The strict control and regulation over the private employment services had been blamed for the very low rate (under 5 percent) of those who find new jobs through employment service agencies regardless of public or private.

Whereas employers started to show mounting discontents over regulations for employment protection, labor unions had called for the further liberalization of restrictive regulations over unions. The Korea Confederation of Trade Unions (KCTU), a second national level union, was an unrecognized entity by law as the Trade Union Act allowed only one national level union. The KCTU remained active and organized most of large companies, but their activity went little checked and the bargaining outcome between their branch unions and employers were implicitly recognized. The need for labor reforms had been raised throughout the 1990s. The major agenda was amendment of the Labor Standard Law to enhance labor market flexibility and at the same time amendment of the Trade Union Act to extend labor rights including the recognition of KCTU. And critical issue was how to strike the balance between the needs of workers for more labor rights and the calls of employers for more labor market flexibility.

The 1997 labor reform was carried out introducing redundancy layoff, but the reform was by no means complete or effective. In December 1996, the ruling New Korea Party amended labor laws in a predawn plenary session without the presence of opposition lawmakers. Labor unions strongly opposed to the introduction of redundancy layoff by undertaking nation-wide massive strikes. In March 1997, ruling and opposition parties passed revised labor bills in National Assembly. The resulting compromise was that redundancy layoff was given a two-year waiting period before it is fully placed in effect.

One important achievement of 1997 labor reform was the deregulation of restrictions on work hours adjustment. The so-called flexible work hours system was allowed with the maximum of 48 hours per week on a two week cycle under the condition that two week averages do not exceed 44 hours a week and 8 hours a day. If a representative of workers including unions agrees with an employer, flexible work hours can be extended to the maximum of 56 hours per week and 12 hours per day on a monthly cycle under the condition that monthly averages do not exceed 44 hours a week and 8 hours a day. Also overtime work is allowed to the maximum of 12 hours a week when endorsed by both labor and management. However, temporary work agency was again ruled out in the reform package as unions argue that regular

⁵ Employment Promotion Act for the Handicapped require a levy for all employers with more than 300 workers who fail to meet the 2 percent employment quota for the handicapped.

⁶ Temporary work agency is to hire workers and provide them on temporary contract to firms.

jobs will be excessively replaced to outsourced workers supplied by the agency.⁷ The reform still failed to address the long-standing issue that the Korea Confederation of Trade Unions was not recognized by law despite its active participation in industrial relations in Korea. However, it has also become clear that unions became important players in the legislations of labor laws given the lack of any effective political party representing workers.

The economic crisis led to another reform in 1998 as a piece of total economic restructuring programs, and an agreement was drawn on the reform bill in the Tripartite Commission of the government, employer representatives and union leaders. The Commission was called for and organized by the President Kim Dae Jung in early 1998, as a successful restructuring program for the economy was considered to require the national consensus on its scope and direction. The first-round discussion in the Commission yielded in February 1998 the needed consensus for enhanced labor market flexibility and corporate and financial sector reforms.

Redundancy layoff that was previously scheduled to enact in 1999 was immediately introduced with some modification on the procedure and conditions. One important step toward more flexible market is to allow lay-offs in the case of merge and acquisition.⁸ However, the procedural restrictions of layoff are somewhat strengthened under the new law. First, firms now must exhaust all means to avoid layoff before engaging in mass layoff. Second, a 60-day advance notice must be given to union leaders or worker representatives about the intent to layoff, and employers are bound to consult with them about the scope and range of layoff. Third, a 30-day advance notice must be given to workers to be laid-off. Fourth, firms must report in 30-day advance to the Ministry of Labor when they lay off more than a certain portion of their workforce in a month period.⁹ Further, when vacancies need to be filled within 2 years, firms must make full efforts to re-employ previously laid-off workers. When a worker is unfairly laid off, the worker can claim a review at National Labor Relations Commission, whose ruling on the issue is legally binding.

It is an important step forward to introduce redundancy layoff, but its effectiveness is yet to be confirmed. The conditions and restrictions an employer has to meet in a mass layoff case will be binding, especially when an employer wishes to replace the existing less productive workers with more productive newcomers. The clause mandating employers to exhaust all means to avoid a layoff does not allow hiring of new workers. Further, it is still to see whether the government will not intervene in a mass layoff case accompanied by a strong opposition from unions even if the case is legally justifiable. The incidence of Hyundai Motor Co. renders it questionable.

The case of Hyundai Motor Company is probably the most pronounced among such cases. Despite the tripartite agreement, the union opted to go on a forty-day (illegal) strike opposing employment adjustment rather than accepting it. Instead of enforcing the rules set in the law and the agreement, the government intervened in the confrontation as a mediator. The intervention was successful in the sense that it drew a mutual agreement on the scope and procedure of

⁷ Other changes the reform brought was the banning of the reimbursement of wages during work stoppages and the payment from employers to full-time union officials.

⁸ It has often been ruled in court as an illegal labor practice to shed workers of a merged or acquired firm.

⁹ For example, firms with 100-299 employees bear this duty when they lay off more than 10% of their workers in a month period.

employment adjustment at Hyundai Motor Co., but it was equally unsuccessful in the sense that it was viewed by many (including potential investors from abroad) as another case of the government's ineptitude in dealing with labor issues. The government defended that its intervention successfully prevented a violent confrontation that would have entailed insurmountable costs, but it still remains to be seen whether such short-term benefits outweigh the long-term costs. One may pay attention to the notable change in the government's approach after the incident; it started strictly and swiftly enforcing the new rules in strikes at smaller firms following the Hyundai Motor Co. case.

Another major step toward a flexible labor market was that the reform introduced temporary work agency (labor outsourcing) designed to induce lower labor costs and flexible response to changing market demands. Its effectiveness is, again, still to be confirmed because of the restrictions on the scope of tasks in which labor outsourcing is allowed. It is currently a positive system listing only a few occupations, mostly professional and technical jobs or low skilled jobs, excluding production workers in manufacturing. The largest job loss after crisis has occurred in manufacturing indicates that the need for lower labor costs is strongest in manufacturing

All in all, after 1987, unions have played key roles concerning the labor flexibility through diverse channels. Particularly concerning the legislations of labor laws, unions have tried to extend their influences as an important social partner through nation-wide massive strikes or vocal participants of the tripartite committee. Korean unions have also been able to affect the labor flexibility at the enterprise level through collective bargaining and actions after 1987. The structure of union organizations and collective bargaining in Korea has been decentralized in an extreme manner; like Japanese unions, Korean unions are also organized within enterprises and most of collective bargain occurs within enterprise. In the very decentralized bargaining setting, the outcomes of individual bargaining units have mostly reflected the market condition although such bargaining often accompanied lengthy strikes. Another important aspect of Korean enterprise unionism is that unions are highly concentrated among larger firms. Large firms and *chaebols* have avoided severe market competition and also enjoyed relatively fluent bank loans. The non-competitive rents and higher ability to pay attracted organization movement, and the outcome was dichotomized unionism.

In fact, the enterprise unionism has led to the unsuccessful implementation of the agreement reached in the Tripartite Commission because the agreement was made among national level unions, national level business federations, and the government, none of whom have a complete control over lower-level unions and firms. Under the decentralized bargaining system as the one in Korea, neither the upper-level unions nor the business federations could effectively reflect diverse interests of the members. Further, the history of oppression on unionism and industrial policies favoring large companies had hindered social partnership from blooming by itself. The government lacked the needed reputation as protector of public interests, and has had difficulty in efficiently mediating between workers and firms. The consequence was that some opted to reject the agreement reached at the upper-level.

Although there have been a few attempts to organize nation-wide or industry-level labor movement, little success has been made in that regard as member unions and their employers were subject to diverse market condition. Nevertheless, it is still an open question whether the industrial relations in Korea will remain as decentralized character or reshape into a more centralized one. Despite the relatively short history, Korean unions have exercised the diverse roles from massive strikes against the introduction of redundancy lay-offs to active participant to

tripartite commission. Our empirical framework would consider the union effects in a broader sense to include unions' influence on the amendment and implementation of labor laws as well as their impact through collective bargaining over employment and work hours

2.2. Labor Market

Although this paper focuses on the dynamics of labor adjustment, we also discuss the important aspects of long-run development of Korean labor market that could have also significant effects on labor flexibility.

Like labor institutions, labor market has shown momentous changes around late 1980s in Korea. In the late 1980s, manufacturing stopped playing the role of major job creator in Korea (Figure 1). Employment in the manufacturing had increased from 3.2 million to 4.8 million from 1982 to 1989, since then has stagnated and gradually declined before crisis when it has dropped to 4.2 million in 1999. In contrast, the tertiary sector has increased its share of employment throughout the 1980s and 1990s. Compared to pre-1987 period, post-1987 period shows lower growth and greater variability in the manufacturing production.¹⁰ Unions might not be a major contributor to this decline of manufacturing employment after late 1980s given that the heavily unionized financial sector has experienced most notable increase in employment in 1990s.

Figure 1: Employment, Unemployment and Production: 1982-1999

One notable long-run trend of the Korean labor market development is its continued progress toward tighter labor market before the economic crisis. Unemployment rate has shown a clear downward trend before the crisis. This long-run trend toward tighter labor market mirrors the fast economic development for the last four decades before the crisis. One could expect that the declining trend of manufacturing employment under the tighter labor market in post-1987 period could lead to the dynamic labor adjustments with different speeds and sizes compared to pre-1987 period with the rising manufacturing employment under the less tight labor market. However, there appears to be not enough established empirical methods or theories to provide a priori intuitions to this issue.

According to Hamermesh (1993), there is fairly good evidence that employment demand adjust more slowly in response to increases in product demand when unemployment is low. However, he concludes that it is not clear from the literature whether this result stems from asymmetry in adjustment costs between hires and layoffs or merely from an inability to disentangle those differences from the effects of supply constraints. Burgess (1988), in his analysis on the employment adjustment in U.K manufacturing, pointed out that the tightness of the labor market has two offsetting effects on the dynamic adjustment of labor: low unemployment increases hiring costs and so slow down the adjustment, but also increases the quit rate with the opposite effect.

Figure 2: Accession and Separation Rates and Average Hours in the Manufacturing: 1978-1998

¹⁰ The average (0.011) of monthly growth rates in the pre-1987 period is about two times higher than that (0.006) of the post-1987 period. And the coefficient of variation (10.5) of monthly growth rates in the post-1987 period is about two times greater than that (5.1) of the pre-1987 period.

However, in the Korean labor market, we observe separation and accession rates have an obvious decreasing trend along with the declining trend of unemployment (Figure 2). Average separation rate in the period from 1978 to June 1987 was 5.2 percent whereas it was 3.5 percent in the period from July 1987 to 1999 (in the manufacturing). Given that quits are far larger in size than layoffs, the strong trend toward lower separation rates should reflect the same trend of quits. According to union voice theories (Freeman, 1980), unions could contribute to the decrease in separations. However, specific human capital theories (Mincer and Jovanovic, 1981) could also provide potential explanations for lower separations under tighter labor market.

We observe that, in Korea, the trend toward lower separations is related to the changes in the employment composition of age groups (Figure 3). The share of the youth labors (age 15 to 29)¹¹ in the manufacturing shows the steady decrease from 51.4 percent in 1982 to 22.4 percent in 1999. This trend is a sharp contrast to what had occurred in the labor market of Korean manufacturing sector before 1980s. Kim and Topel (1995) showed that the rapid expansion of manufacturing in the 1970s was achieved by an increasing number of young workers entering manufacturing. However, the labor pool that had provided young workers to Korean manufacturing appears to become being exhausted in 1980s. Kim and Lee (2000) pointed out that the decline in population growth, lowered migration from rural to urban areas, and a mass exit of relatively young (25-33 year old) workers from the manufacturing sector has all resulted in the decrease of the youth labors in the manufacturing.

Figure 3: Employment Composition by Age Group in the Mining and Manufacturing: 1982-1999

The drastic decrease in youths in the manufacturing should make firms rely more heavily on the prime aged (30-54 years old) workers. And hiring of firms depends more strongly on those who are not fresh out of school or rural area and on those who separated from other firms. Therefore, it could be in the interests of firms to reduce quits of their employees because firms no longer flexibly secure abundant workers from the outside pool of youth workers. Also “poaching” problems became social issues particularly in the late 1980s and the early 1990s when many small and medium sized manufacturing firms that suffered from severe labor shortages aggressively hires those who were working for other firms. We will take into account the potential effect of the tighter labor market with reduced young workers on the labor flexibility in the next section on the dynamics of labor adjustment.

The share of old workers above age 55 has also shown a steady increase from 3.9 percent in 1982 to 8.0 percent in 1999. Because most firms in Korea have mandatory retirement at age 55, the employment of old workers above age 55 could be based on more flexible employment contract with shorter period. It is also notable that average hours of work in the manufacturing show a drastic drop around 1987 (Figure 2). This could be due to the better enforcement of already existing Labor Standard Law with the watching eyes of labor unions and also due to the amendment of the law to more strongly restrict work hours in 1987.

One important question concerning labor flexibility is whether and to what extent the long-run labor market development shows the shift of employment toward more flexible part of

¹¹ Most male Koreans should complete the mandatory military service up to three years, which partly justifies the definition of youth labors up to age 30, not 25 like other countries.

the labor market. Many countries are reported to have experienced the increased use of part-time and temporary workers.

Korean Statistical Office define “regular workers” very broadly as employees whose contract period last for more than one month and consequently include even part-time and temporary workers who have contract period of more than one month.¹² Despite the broader definition of regular workers, the proportion of regular workers out of total employment (in the mining and manufacturing) has decreased from 77.9 percent in 1982 to 70.7 percent in 1999 (Figure 4).

Figure 4: Employment Composition by Gender and Status in the Mining and Manufacturing: 1982-1999

It should be noted that the decrease in the proportion of regular workers has concentrated on female regular workers, leaving the proportion of male regular workers almost intact. On the other hand, “daily workers” who are defined as workers employed daily or for a period of less than a month has increased 8.8 percent point from 3.0 percent in 1982 to 11.8 percent in 1999. And the economic crisis appears to accelerate the increase in daily workers in the Korean labor market. On the other hand, the proportion of self-employed and family workers has fluctuated between 15 percent and 20 percent.

Another interesting long-run trend of the manufacturing employment is the steady increase in the employment in the smaller establishments (Figure 5). The share of the employment of small establishment with 10 to 99 regular workers has increased from 24.3 percent to 45.1 percent whereas the share of big establishment with more than 500 regular workers have decreased from 45.3 percent to 29.5 percent during the period from 1978 to 1998. The shift of employment from large establishment toward small and medium sized ones is closely linked to labor unions the extent that the unionization rate is highly correlated with firm size. In the Korean manufacturing sector, the union organization rate is below 6 percent among firms with 10-99 employees, whereas it is higher than 37.5 percent among firms with 500 or more employees.¹³ You and Lee (1999) stressed that chaebol firms began, in a massive way, to resort to subcontracting with small firms in order to evade active unionism.

Figure 5: Composition of Regular Workers by Establishment Size and Broad Occupation (Production vs. Nonproduction) in the Manufacturing: 1978-1998

Even if we accept that the union avoidance was one of the major causes behind the employment shift and massive subcontracting to smaller establishments. It is still open question whether widening large wage gap between big and small firms (Kim and Lee, 1999) or/and the increasing need for labor flexibility, among others, motivated big firms to resort to

¹² Korean Statistical Office has recently introduced the concept of temporary workers for those whose contract last longer than one month but shorter than one year, and classified workers into three groups: regular, temporary and daily workers. However, time series data is available only based on the classifications of two types of workers: regular workers who are with contract longer than one month and daily workers who are with contract shorter than one month.

¹³ Union organization rate among firms with 10-29 employees is 0.9 percent whereas that among firms with 15,000 or more employees is 76 percent.

subcontracting and the consequent employment shift to smaller establishments. Whether the search for more labor flexibility was behind the employment shift will be discussed in the next section on the dynamics of labor adjustment.

Along with the steady employment decrease in the large establishments, the share of production workers out of the total manufacturing employment has also decreased significantly from 80.2 percent in 1978 to 62.1 percent in 1999 (Figure 5). This decline of production employment could also be related to labor unions to the extent that union memberships are confined to production workers excluding nonproduction workers in many manufacturing establishments.

The long-run labor market development particularly after the emergence of labor unions in 1987 reveals one important trend that could shed light on the interactions between unions and long-run labor market development. The long-run employment of heavily unionized sectors have all showed the decreasing tendency in their employment; manufacturing employment itself has declined, workers in the big establishments and production workers has also declined. On the other hand, the long-run employment of less unionized sectors have all shown the increasing tendency in their employment; daily workers, old workers above age 55, workers in the small establishments, and nonproduction workers have increased their employment.

This shift of employment from heavily unionized sector toward less unionized sector inevitably resulted in an apparent decline of union organization rates in Korea. Union members as percentage of nonagricultural regular workers have decreased from 23.3 percent in 1989 to 14.9 percent in 1999. Likewise, union members as percentage of all employees have also decreased from 18.6 percent in 1989 to 11.8 percent in 1999. The decline of union organization rate for females was more drastic. Female union members as percentage of nonagricultural female regular workers have decreased by more than half from 18.5 percent in 1989 to 8.4 percent in 1999. Female union members as percentage of all female employees have also decreased from 13.4 percent in 1989 to 6.2 percent in 1999. Whether union avoidance strategy of employers played an important role in the massive shift of employment toward less unionized sector or not would be interesting research topic but beyond the scope of this paper. However, we will examine whether heavily unionized sectors are associated with lower labor flexibility in the following sections that could shed light on the relations between labor flexibility and the long-run labor market development.

3. The Estimating Framework and Data

The empirical work in this paper attempts to examine how the patterns in the adjustment of employment, accession, separation, hours in response to short-run changes in the level of production after the emergence of active unionism in Korea. Given our focus on comparisons between two periods, our estimating equations should be sufficiently flexible to capture any differences in the pattern of adjustment that might exist between two periods.

We have chosen to estimate the output elasticities of employment, accession, separation, and hours using a distributed lag model in Abraham and Houseman (1989). We found that the distributed lag model suits better for our empirical purposes than the Koyck specification used in most of studies on employment adjustment does. The Koyck approach, despite its merits, requires the strong assumption that adjustment costs are quadratic so that adjustment to an exogenous shock declines geometrically over time, which is unlikely to be satisfied in practice. Our basic estimating equation is

$$\Delta \ln E_t = \mathbf{a} + \sum_{i=0}^{13} \mathbf{b}_i \Delta \ln P_{t+1-i} + \mathbf{q}t + \mathbf{m}_t, \quad (1)$$

where E represents employment, P represents production, t is a time trend, \mathbf{m} is the error term and \mathbf{a} , the \mathbf{b}_i 's, and the \mathbf{q} 's are parameters to be estimated. The \mathbf{b}_i 's in equation (1) are the elasticities of employment with respect to the changes in output. Our specification permits production to affect employment with a lag of up to 1 year. The \mathbf{b}_i 's capture the effects of the changes in output (including one period lead, current, and up to 1 year lagged production) on the employment adjustment. For example, the sum of \mathbf{b}_0 through \mathbf{b}_4 (i.e., the coefficients on the lead, the current, and the first three lagged production terms) represents the cumulative effect on employment over 3 months of a one-time change in production. Likewise the sum of \mathbf{b}_0 through \mathbf{b}_{13} represents the elasticities of employment with respect to changes in output over 12 months.

Like Abraham and Houseman (1989), We assume that \mathbf{b}_i 's have a third-order polynomial in i so that the \mathbf{b}_i 's can be written in terms of four underlying parameters as

$$\mathbf{b}_i = \mathbf{f}_0 + \mathbf{f}_1 i + \mathbf{f}_2 i^2 + \mathbf{f}_3 i^3, \quad (2)$$

where the \mathbf{f} 's are the parameters we actually estimate. We impose no endpoint constraints on the \mathbf{f} 's. The \mathbf{b}_i 's are computed from equation (2) using estimates of the \mathbf{f} 's. Our estimation of output elasticities of accession, separation, average hours and total hours are also based on the estimating equations with the same right hand sides as in equation (1) and (2). We estimate the difference equations rather than levels of the dependent variables and production terms because the estimated errors in the estimation of level equations turned out to be very close to random walk. We also assume that other factors affecting employment, such as productivity trends and changes in relative factor prices over the estimating period, are adequately captured by the constant term and the time trend. Including a constant plus a time trend in a difference equation is equivalent to including a time trend plus its square in levels equation.

We use two data sets on the Korean labor market: Monthly Labor Survey (MLS) by the Ministry of Labor and Economically Active Population Survey (EAPS) by the Statistical Office in Korea. As for the variables of production, we use the monthly industrial production index on manufacturing alone or manufacturing and mining by the Korean Statistical Office.¹⁴

MLS is establishment survey covering establishments with more than 10 "regular employees" and contains the monthly data on employment, accession, separation, and working times in the manufacturing sector from 1978:1. However, MLS has problems associated with the frequent changes of the sample and the resulting adjustments. The adjustments result in jumps between, before and after the corrections as seen in Figure 1. Therefore, instead of the data on the levels of employment, we used the data on the difference between the accession rate and separation rate, to represent the changes in the employment. Using the approximation that the

¹⁴ The monthly index with the new classification of the 6th Korean Standard Industry Classification Code was made available only after 1980:1. So we extended the index for the period from 1978:1 to 1979:12 using percentage changes derived from the old index.

change in $\ln(\text{employment})$ equals the difference between the accession rate and separation rate, we can rewrite equation (1) as

$$ACCR_t - SEPR_t = \mathbf{a} + \sum_{i=0}^{13} \mathbf{b}_i \Delta \ln P_{t+1-i} + \mathbf{qt} + \mathbf{m}_t, \quad (3)$$

where $ACCR_t$ represents the accession rate, $SEPR_t$ represents the separation rate, and the other terms are the same as equation (1).

The above equation (3) also allows us to be able to decompose change in employment into change in accession and change in separation. We separately estimate output elasticities of accession and separation with the same independent terms in equation (3). Likewise, we also estimate output elasticities of average hours and total hours with the same independent terms in equation (3). Average hours are defined as the sum of regular hours worked and overtime hours worked, and total hours are calculated as employment times average hours.

On the other hand, the households survey data (EAPS) is less prone to problems associated with the frequent changes of the sample and the resulting adjustments. But the EAPS does not include the data on accessions, separations, and hours and only contains the aggregate employment in manufacturing and mining available from 1982:7. However, EAPS covers the broader employment to include daily workers and self employed and family workers whereas MLS covers regular workers in the manufacturing establishment with more than 10 workers.

One potential identification problem might arise in our empirical framework because the tighter labor market with the reduced young workers in the post-1987 period might have reduced the employment adjustment. Even if we found the lower output elasticities of employment in the post-1987 period, it could be partly due to the tighter labor market conditions with the reduced young workers rather than to the unions. In particular, the tighter labor market with the reduced young workers might make turnovers of workers more procyclical. During booms quits rise rapidly, and in a recession quits are very few. When labor market is tighter and young labor force is reduced, employers have to hire increasingly those who quit from other companies. This will make quits more procyclical, and in turn make employment adjustment more difficult. We are able to identify these effects in our empirical framework because we can decompose employment changes into accession and separation.

Another empirical design that would enable us to resolve part of the identification problem is the comparison of heavily and less unionized sectors in the pre-post studies. When the output elasticities of employment, accession, and hours in heavily unionized sector become relatively more rigid compared to the less unionized sector in post-1987 period, we can contribute it to the unions under the condition that changes in labor market constraints due to the tighter labor market with the reduced young workers affect equally between heavily and less unionized sectors.

4. Empirical Results

Our empirical work focuses on the dynamics of labor adjustment in the Korean manufacturing sector. We first look at how the elasticities of employment, accessions, separations, average hours, and total hours of regular workers in the manufacturing sector with respect to changes in output have changed between pre-1987 period and post-1987 period using the establishment survey data (MLS). We also look into how output elasticities of employment

differ among diverse groups of workers in the mining and manufacturing using the household survey data (EAPS). We then come back to MLS and turn to study how the pre-post changes in output elasticities of employment, accessions, separations, average hours, and total hours of regular workers diverge between heavily and less unionized sectors: between production versus nonproduction workers and among workers by establishment size.

4.1. Labor Adjustment of Regular Workers in the Manufacturing

Using the establishment survey data (MLS), we provide estimates of 1-, 3-, 6-, and 12-month output elasticities of employment, accession, separation, average hours, and total hours for manufacturing regular workers in the pre-1987 period and the post-1987 period as well as the whole period (1978-1998) in table 1. The overall pattern of labor adjustment of two periods is strikingly different.

Table 1: Labor Adjustment of Regular Workers in the Manufacturing

The short-run (one to six months) output elasticities of employment decreased significantly in the post-1987 period. The 1-month elasticity of employment was 0.074 in the pre-1987 period but has fallen to the insignificant level in the post-1987 period. The 3-month elasticity of employment has decreased from 0.130 in the pre-1987 period to 0.026 in the post-1987 period. The drop of 6-month elasticity of employment was less drastic but still sizable from 0.219 to 0.151. However, despite the decrease in the short-run employment adjustment, employment adjusted more substantially to changes in output over one-year time horizon in the post-1987 period than it did in the pre-1987 period. One-year elasticity of employment has increased from 0.357 in the pre-1987 period to 0.372 in the post-1987 period.

Equally notable changes can be found in the estimates for the output elasticities of both accession and separation. There were sizable decreases in the short-run (one to six months) output elasticities of accession and considerable increases in the short-run (one to six months) output elasticities of separation. It should be noted that the increase in the short-run output elasticities of separation should be attributed to the changes toward the tighter labor market with reduced young workers rather than the emergence of unions in the post-1987 period. If unions were able to make layoffs more difficult for employers, it would lower the output elasticities of separation. Therefore, it is highly probable that the increase in the output elasticity of separation should be caused by the increased elasticity of quits (more procyclical quits) not by the increased elasticity of layoffs (easier layoffs).

The statistically significant short-run estimates of elasticities of employment, accession, and separation enable us to decompose the change in elasticities of employment into the difference of changes in elasticities of accession and changes in elasticities of separation. For instance, over the one-month time horizon, 0.074 points decrease in the elasticity of employment (from 0.074 to 0) is approximately equivalent to the difference of 0.052 points decrease in the elasticity of accession (from 0.085 to 0.033) and 0.026 points increase in the elasticity of separation (from 0.022 to 0.048). Therefore, it is fair to say that about is attributed to the labor market factors that make separation more procyclical.

The short-run (one month) output elasticity of average hours also decreased significantly from 0.472 in the pre-1987 period to 0.390 in the post-1987 period. The estimates of longer time horizons turn out to be statistically insignificant that lead us to confine our discussion on the short-term adjustment of work hours. It has been widely found in the literature that lower output

elasticity of employment is partially or fully compensated by higher output elasticity of work hours in cross country comparisons or pre-post comparisons (Hammermesh, 1993). However, in Korea, we found that elasticities of both employment and work hours are reduced in the post-1987 period. Consequently, the elasticity of total hours (average hours times employment) decreased from 0.544 in the pre-1987 period to 0.404 in the post-1987 period.

In brief, we presented evidence that labor flexibility in terms of short-run (one to six month) elasticity of employment and also one-month elasticity of average work hours have reduced after unions emerged in 1987. Nonetheless, we also stressed that the significant part of the decrease in labor flexibility is attributed to the labor market changes toward tighter labor market with the reduced young workers that make separation more procyclical. And we also found that long-run labor flexibility has increased in the sense that employment responds more substantially in the long-run (one year).

4.2. Employment Adjustment of Various Groups of Workers in the Mining and Manufacturing

Unlike the establishment survey data (MLS), the household survey data (EAPS) enables us to look into employment adjustment for the diverse groups of workforce other than regular workers. However, EAPS data has relatively short pre-1987 series from 1982 so that we had to compare the post-1987 period with the whole period rather than with the pre-1987 period. In addition, EAPS has only employment data in the mining and manufacturing.

It is interesting that the output elasticities of employment of regular workers from EAPS in Table 2 turn out to be much higher than results from MLS in Table 1. The 1-, 3-, 6-, and 12-month elasticity of employment of regular workers in the post-1987 period are 0.094, 0.144, 0.324, and 0.733. It could be mainly because regular workers¹⁵ in EAPS include workers in the establishments with 10 or fewer workers and also temporary workers whose contract period is between one month and one year. Those regular workers included in EAPS and not included in MLS are relatively marginal in the sense that their elasticities of employment are higher than the other regular workers.

Table 2: Employment Adjustment of Various Groups of Workers in the Mining and Manufacturing

Even within regular workers, there are significant differences in the elasticities of employment between female and male regular workers. For instance, 12-month elasticity of employment of female regular workers is 0.956 compared to 0.632 of male regular workers. Also, the gender gap in 1- and 3-month elasticities of regular employment are widened in the post-1987 period as the reductions of the elasticities are more pronounced for male regular workers than female workers. Moreover, we observe much wider and widening gender gaps in the elasticities of all employment that include daily workers and self-employed and family workers as well as regular workers. In particular, 1-month elasticity of female employment is increased to 0.211 in the post-1987 period compared to 0.184 in the whole period, whereas that

¹⁵ Regular workers in MLS are defined according to the Ministry of Labor in Korea, which is stricter than the definition in EAPS by Korean Statistical Office. They are basically workers whose contract period last for more than one year (not more than one month like in the definition by Korean Statistical Office), although they include temporary and daily workers who worked for more than 45 days for the past 3 months.

of male is reduced to 0.038 in the post-1987 period compared to 0.104 in the whole period. These results indicate that the disproportionately more burdens of employment adjustment fall on the shoulders of female workers, regardless of whether she is regular worker or not.

In addition, diverse groups of workers other than regular workers show faster and more substantial employment adjustment than regular workers. In particular 1-month employment elasticity of daily workers are still very high (0.235) in the post-1987 period although it was reduced from 0.403 in the pre-1987 period, whereas self-employed plus family workers show high 12-month elasticity of 0.874 in the post-1987 period. Also, workers with 55 or older maintained the elasticities of employment at such high levels that are almost two times as high as those of workers with the age between 30 and 54. Increasing number of daily workers and the aged workers with 55 or older in the manufacturing sector, which was noted in the previous section, should add more employment flexibility in the post-1987 period.

In Korea, most labor unions represent only regular workers, and consequently most of daily or temporary workers, self-employed and family workers, and aged workers after mandatory retirement are not tied to labor unions. Moreover, unions are representing only 6.2 percent of female employees compared to 15.5 percent male employees in 1999.

Therefore, the maintained or widened differences of employment elasticity between male regular workers and the other groups of workforce in the post-1987 period could reflect the fact that unions are successful in protecting their member workers from the employment adjustment. On the other hand, employers could be able to increase daily workers¹⁶ and aged workers who are more flexible in terms of employment adjustment than regular workers and also take the advantage of relatively high employment flexibility of female and temporary workers.

Our finding that the negative effects of unions on the employment adjustment are mostly limited to male regular workers cast two important and interrelated implications on Korean unionism and employment relations. On the one hand, Korean enterprise unions failed to inhibit employment flexibility of workers except for male regular workers. On the other hand, employers were able to respond to the reduced employment flexibility of male regular workers through increased employment of daily workers and aged workers and also through the relatively high flexibility of female and temporary workers.

Our results of the limited union effects on labor flexibility appear to be consistent with the previous empirical findings on other advanced countries as shown in Blank and Freeman (1994), who conclude that employers, workers, and governments have diverse ways to adjust to a changing economy and changing conditions in one direction often leads them to find other ways to respond.

4.3. Labor Adjustment of Different Groups of Regular Workers in the Manufacturing

Using the establishment survey data (MLS), we contrast the labor adjustment of regular workers between heavily and less unionized manufacturing sector. Given the unambiguously high unionization rates for production workers and workers in big establishments, we will first look into labor adjustment of production and nonproduction regular workers, and then turn to compare labor adjustment by establishment size.

Table 3 shows that the post-1987 period has filled up the gaps in employment and hours adjustment between production and non-production workers in the manufacturing sector.

¹⁶ Unlike daily workers, we cannot obtain the official data whether temporary workers are increased or not.

Production employment used to respond more quickly and more substantially than non-production employment in the pre-1987 period. However, the gap in employment adjustment between production and non-production workers has been narrowed down in the post-1987 period. The significant difference in 1-month elasticity of employment between production and non-production workers in the pre-1987 period has disappeared in the post-1987 period. Moreover, the relative size of employment elasticity for production and nonproduction workers has been reversed and become smaller for production workers in the post-1987 period. The 12-month employment elasticity gap between production and nonproduction workers has also significantly been reduced. Also, the 1-month hours elasticity gap between production and nonproduction workers has been significantly reduced as the 1-month hours elasticity of production workers has reduced while that of nonproduction workers has even increased.

Table 3: Production versus Nonproduction Worker Adjustment in the Manufacturing

The narrowed gaps in the employment and hours elasticities between production and nonproduction workers could reflect the activities of Korean unions after 1987, which emphasize the equality of important conditions of employment particularly between production and nonproduction workers. We can contribute the narrowed gap to the unions under the condition that changes in labor market constraints affect equally between production and nonproduction workers. However, the condition might not be case. The Ministry of Labor in Korea has been conducting surveys on labor shortage of establishments with ten or more workers. Labor shortage rate¹⁷ for production workers were 5.6 percent in 1992 and 8.0 percent in 1993, but only 1.7 percent for non-production workers in 1992 and 1993. Therefore, we cannot rule out that severe labor shortages for production workers might contribute to the decrease in the short-run employment adjustment in production workers compared to nonproduction workers. We do observe the increase in the short-run elasticities of separations for production workers. However, at the same time, we also identify the increase in the elasticities of separation for nonproduction workers. Worse, mostly insignificant estimates of elasticities of accession and separation make us unable to decompose the employment change to accession and separation and consequently fail to identify the union effects from labor market effects.

Finally, we turn to the Table 4 that provides empirical results on labor adjustment by establishment size.¹⁸ As already been emphasized, Korean unions are heavily concentrated on big establishments. Kim and Lee (1998) calculated that approximately 50 percent of sectoral variations (by industry) could be explained by differences in firm size across industries. As a

¹⁷ The labor shortage rate in the survey is calculated as the number of employees that employers reports to be in need of recruitment divided by the number of current employees. Shortage rate can differ from the true job vacancies because the shortage rate is based on the survey on the intention of employers to recruit employees, which is not necessarily based on the actual capabilities (ability to pay) of employers.

¹⁸ The production variables on the right hand side of the estimating equations measure percentage changes in production for the entire manufacturing industry, not for the individual sectors with different establishment size. Therefore, the difference in employment elasticities by establishment sizes may also reflect the difference in the adjustment of production by establishment size in response to the changes in the entire production as well as the difference in the employment adjustment to changes in the production of the individual sector.

result, the effect of unions on major employment conditions tends to be concentrated in large firms.¹⁹

Surprisingly, elasticities of employment over all time horizons come out significantly higher in the big establishments with 500 or more workers compared to workers in smaller establishments in the post-1987 period, and the gap has widened compared to pre-1987 period. How can one explain that heavily unionized big establishments show faster and more substantial employment adjustments than the less unionized small establishments? Our findings on much higher elasticities of separation in small establishment provide sensible explanations. Small establishments appear to be more strongly affected by the market changes toward tighter labor market with the reduced young workers. Employers in smaller establishments have more difficulties in adjusting employment because separation becomes more procyclical.

Table 4: Labor Adjustment by Establishment Size in the Manufacturing

Small firms have been the main employers of unskilled labor migrating from the rural areas and have also been hit the hardest by the mass exit of young workers from the manufacturing sector. As been noted in the previous section, the long-run employment shift of labor market and mass subcontracting from large establishments to smaller establishments could have also aggravated the labor shortages of small and medium sized establishments. During 1988-1992, the labor shortage rate for establishments with 10-29 employees was exceptionally high, exceeding 10 percent, whereas the rate for large establishments was kept only below 4 percent during the same period. “poaching” problems became social issues particularly in the late 1980s and the early 1990s when many small and medium sized manufacturing firms that suffered from severe labor shortages aggressively hires those who were working for other firms. Time and again, Association of Small and Medium Sized Enterprises in Korea had asked the government for the legislation that could ban the poaching among private enterprises.

Table 4 clearly shows that the elasticities of separation for small establishments are much higher than those of larger establishments in the post-1987 period. This will make employment adjustments of smaller establishments much more difficult despite the fact that the elasticities of accession are much higher in smaller establishments. It follows that the lower elasticities of net changes (employment) in smaller establishments mask their much higher elasticities of gross changes (accession and separation) in response to output changes.

On the other hand, we find that the 1- and 3-month elasticities of accession were lowered in the large establishments relative to smaller establishments in the post-1987 period. For instance, the 1-month elasticity of accession in the establishments with 500 or more workers have been drastically reduced from 0.077 to 0.007 whereas that in the establishments with 10-99 workers have been decreased modestly from 0.135 to 0.088. This provides rather strong evidence that unions inhibit labor flexibility of workers in large establishments by reducing responsiveness of hiring to output changes because we know that tighter labor market constraint affect more strongly on smaller establishments.

We also find that the gaps in 1-month elasticities of average hours by establishment size have been reduced significantly. The 1-month elasticity of average hours in the establishment with 10-99 workers has decreased from 0.768 to 0.500 whereas that in the establishment with

¹⁹ Kim and Lee (1997) showed that the effect of unions on wages centered on large firms and the substantial wage differential remained between large and small firms.

500 or more workers has not changed much from 0.311 to 0.300. We could also attribute this narrowing down of gaps to changes of labor market constraints that affect more strongly on smaller establishments.

We cannot assert that unions help reduce the elasticities of gross changes (separation) in large establishments because the wide differences in the elasticities of separation among workers with different establishment sizes had already existed in the pre-1987 period. However, it is fair to say that unions in Korea were organized where the elasticities of separation were relatively low and have helped maintain relatively low elasticities of separation after unionization. And it is important to note that small and medium sized establishments have suffered from the lower elasticities of net changes (employment) that are mainly attributed to higher elasticities of gross changes (separation).

In short, the effect of changes in the labor market constraints and the effect of the emergence of unions closely interact with each other to affect the labor flexibility in diverse sectors of economy. Narrowed gaps in the employment and hours elasticities between production and nonproduction workers could reflect both union effects and labor market effects. Obviously, small and medium sized establishments have suffered from the lower elasticities of net changes (employment) mainly due to higher elasticities of gross changes (separation) that were in turn caused by changes toward the tighter labor market with the reduced young workers. At the same time, the reduced responsiveness of hiring in large establishments tells that unions inhibit labor flexibility in large establishments.

5. Concluding Remarks

This paper examines whether and to what extent unions inhibit labor flexibility in the Korean manufacturing. Although Korea provides the ideal setting to study the effects of unions on the labor flexibility by its abrupt incidence of unleashing active unionism in 1987, we also had to identify union effects from the effects of changes toward tighter labor market with the reduced young workers. Our major empirical findings are summarized as follows.

First, employment adjustment of regular workers of the manufacturing sector in the short-run (one to six months) has decreased in the post-1987 period compared to the pre-1987 period, although it has rather increased over the one-year horizon. Moreover, one-month elasticity of average work hours has also reduced in the post-1987 period.

Second, union effects to inhibit employment flexibility are limited to male, production, and regular workers, and that employers were able to respond to the reduced employment flexibility of these workers through increased employment of daily workers and aged workers and also through the relatively high flexibility of female workers.

Third, significant part of the decrease in labor flexibility (for instance, 35 percent of the decrease in 1-month output elasticity of employment) is attributed to the labor market changes toward tighter labor market with the reduced young workers that make separation more procyclical. In particular, small and medium sized establishments that are uncovered by unions have suffered from lower elasticities of net changes (employment) mainly due to higher elasticities of gross changes (separation) that were in turn caused by changes toward the tighter labor market with the reduced young workers.

In view of the above summary, we conclude this paper by considering briefly how our evidence bears on the international comparisons on labor flexibility. Abraham and Houseman (1989), based on the similar empirical framework with ours, contrast that most of adjustment is

borne by production workers in U.S. whereas female workers bear a disproportionate share of adjustment in Japan. Our findings tell that the gaps in the employment adjustment between production and nonproduction workers have narrowed down significantly whereas the wide gaps between male and female has been maintained or worsened in Korea. In addition, direct comparisons of our results with Abraham and Houseman (1989) show that employment elasticities of production workers from 1978 to 1987 in Korea looks very similar to those from 1970 to 1977 in Japan.

These simple comparisons lead us to the conjecture that the pattern of labor flexibility in Korea might develop toward Japanese model rather than U.S. model. To the extent that Korean unions are enterprise unions like Japan and that there are a lot of similarities in labor market regulations between two countries, Korea might follow the similar trajectory of development in the patterns of labor flexibility. However, we are not certain whether the functional flexibility that is claimed to be key aspect of labor flexibility in Japan (Kato, 2000) is being developed in Korea.

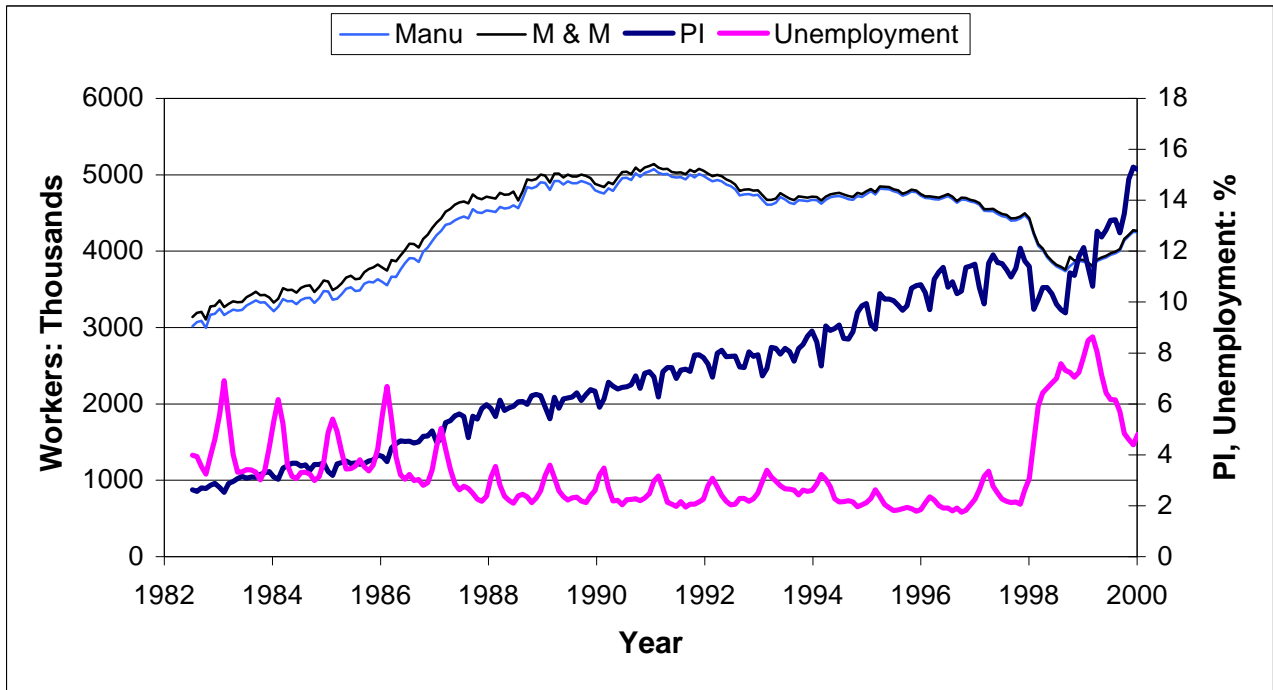
In line with the above international perspectives, one interesting contribution of this paper could be the finding that the pattern of disproportionate burdens of labor flexibility among different groups of workers in one country could be strongly related to both the roles of labor unions and their interactions with labor market development of the country.

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Figure 1. Employment, Unemployment and Production: 1982-1999

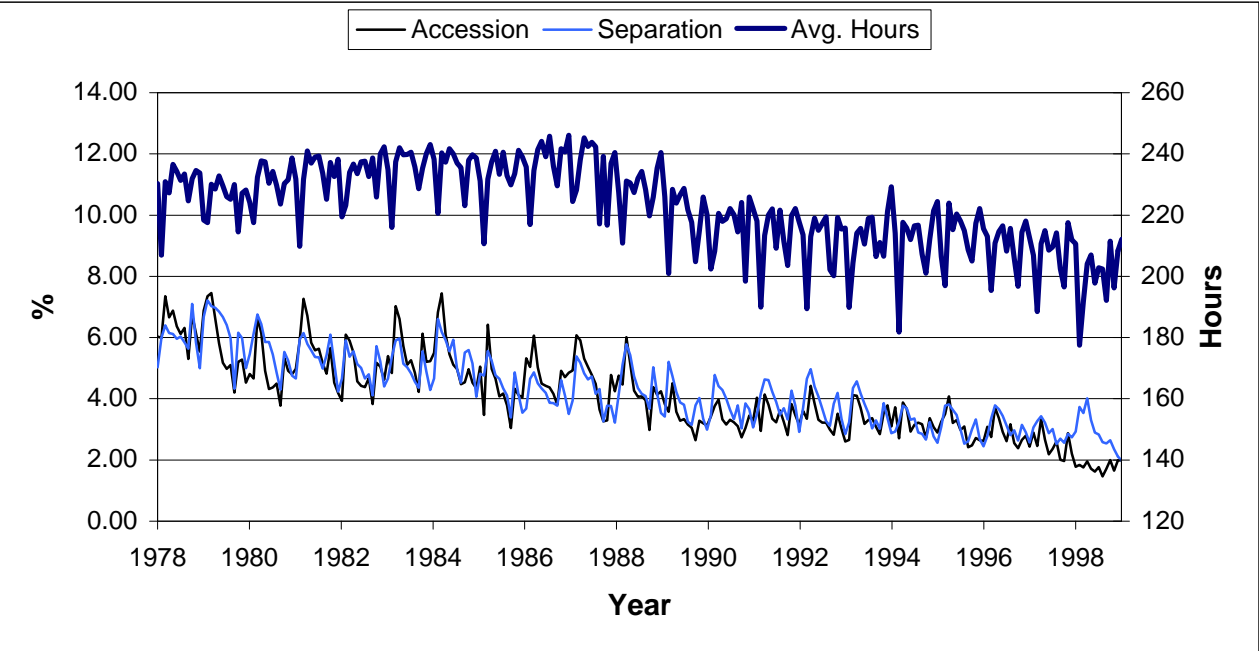


Note:

1. Manu: all employees in the manufacturing.
2. M & M: all employees in the mining and manufacturing.
3. PI: production index of the manufacturing (1995=10).

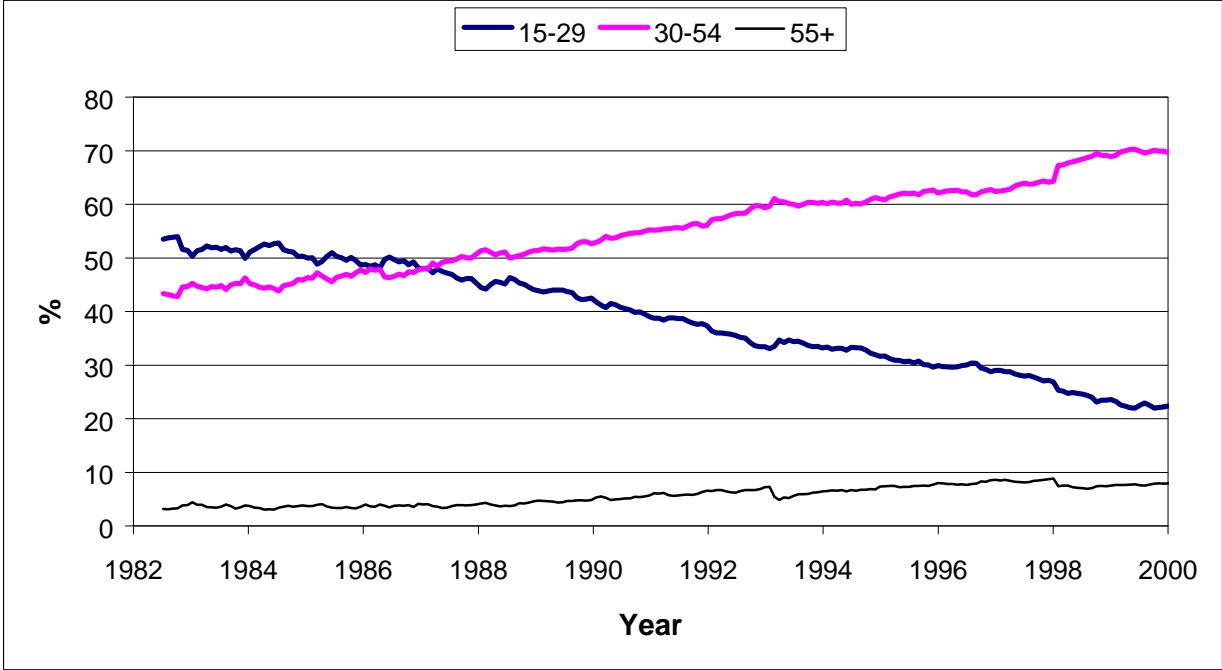
Data Source: *Economically Active Population Survey*, Korean Statistical Office.

Figure 2. Accession and Separation Rates and Average Hours in the Manufacturing: 1978-1998



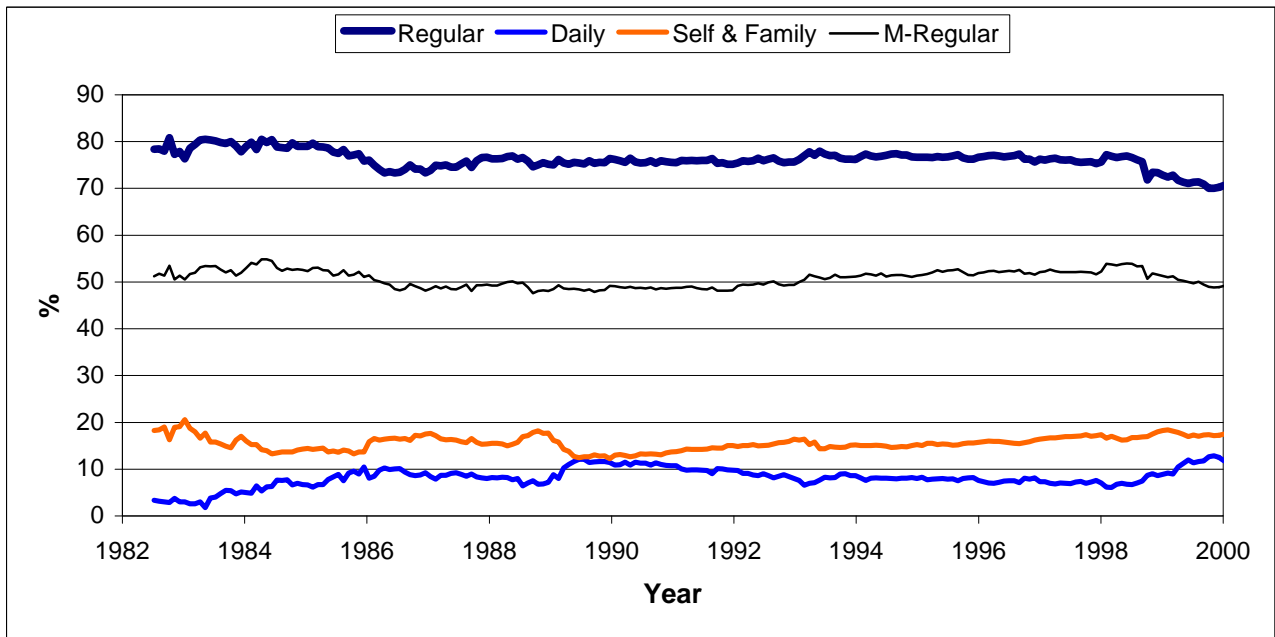
Data Source: *Monthly Labor Survey*, Ministry of Labor in Korea.

Figure3. Employment Composition by Age Groups in the Mining and Manufacturing: 1982-1999



Data Source: *Economically Active Population Survey*, Korean Statistical Office.

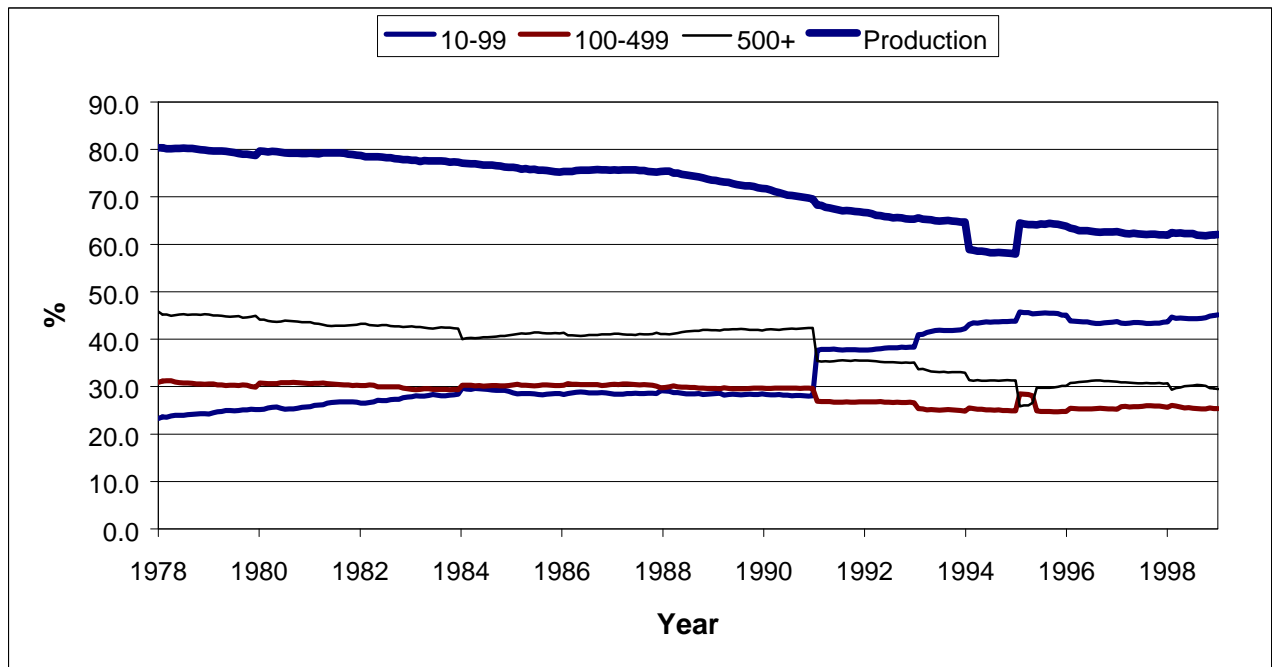
Figure 4. Employment Composition by Gender and Status in the Manufacturing: 1982-1999



Note: M-Regular: male regular workers.

Data Source: *Economically Active Population Survey*, Korean Statistical Office.

Figure 5. Composition of Regular Workers by Establishment Size and Broad Occupation (Production vs. Nonproduction) in the Manufacturing: 1978-1998



Data Source: *Monthly Labor Survey*, Ministry of Labor in Korea.

Table 1. Labor Adjustment of Regular Workers in the Manufacturing

	1 Month	3 Months	6 Months	12 Months
Employment				
1978:1 – 1998:12	0.047 (0.017)	0.101 (0.026)	0.226 (0.039)	0.422 (0.056)
1978:1 – 1987:6	0.074 (0.027)	0.130 (0.040)	0.219 (0.061)	0.357 (0.089)
1987:7 – 1998:12	-0.000 (0.019)	0.026 (0.032)	0.151 (0.049)	0.372 (0.071)
Accession				
1978:1 – 1998:12	0.069 (0.021)	0.095 (0.032)	0.091 (0.049)	0.022 (0.069)
1978:1 – 1987:6	0.085 (0.038)	0.132 (0.057)	0.128 (0.086)	0.010 (0.125)
1987:7 – 1998:12	0.033 (0.024)	0.032 (0.039)	0.027 (0.061)	0.029 (0.087)
Separation				
1978:1 – 1998:12	0.045 (0.016)	0.095 (0.026)	0.107 (0.039)	0.068 (0.055)
1978:1 – 1987:6	0.022 (0.028)	0.072 (0.042)	0.077 (0.065)	0.056 (0.093)
1987:7 – 1998:12	0.048 (0.021)	0.105 (0.035)	0.131 (0.055)	0.099 (0.078)
Average Hours				
1978:1 – 1998:12	0.416 (0.149)	0.042 (0.233)	-0.277 (0.353)	0.320 (0.502)
1978:1 – 1987:6	0.472 (0.169)	0.197 (0.251)	-0.038 (0.384)	0.206 (0.554)
1987:7 – 1998:12	0.390 (0.251)	-0.108 (0.417)	-0.408 (0.649)	0.490 (0.933)
Total Hours				
1978:1 – 1998:12	0.463 (0.154)	0.144 (0.242)	0.003 (0.366)	0.747 (0.521)
1978:1 – 1987:6	0.544 (0.181)	0.318 (0.270)	0.159 (0.412)	0.519 (0.594)
1987:7 – 1998:12	0.404 (0.255)	-0.050 (0.425)	-0.198 (0.660)	0.952 (0.950)

Note: The numbers in parentheses are standard errors.

Data Source: *Monthly Labor Survey*, Ministry of Labor in Korea.

Table 2. Employment Adjustment of Various Groups of Workers in the Mining and Manufacturing

	1982:7 – 1999:12				1987:7 – 1999:12			
	1 Month	3 Months	6 Months	12 Months	1 Month	3 Months	6 Months	12 Months
Regular Workers	0.133 (0.032)	0.201 (0.051)	0.381 (0.076)	0.749 (0.103)	0.094 (0.030)	0.144 (0.049)	0.324 (0.075)	0.733 (0.101)
<By Gender>								
Male	0.138 (0.035)	0.206 (0.056)	0.361 (0.083)	0.628 (0.112)	0.083 (0.031)	0.126 (0.050)	0.292 (0.076)	0.632 (0.103)
Female	0.120 (0.057)	0.189 (0.091)	0.422 (0.135)	1.001 (0.182)	0.116 (0.056)	0.179 (0.093)	0.393 (0.141)	0.956 (0.190)
Nonregular Employment	0.147 (0.048)	0.130 (0.076)	0.242 (0.114)	0.731 (0.154)	0.108 (0.049)	0.090 (0.081)	0.219 (0.122)	0.748 (0.165)
Daily Workers	0.403 (0.265)	-0.054 (0.424)	-0.316 (0.632)	0.657 (0.853)	0.235 (0.258)	-0.123 (0.426)	-0.293 (0.646)	0.532 (0.871)
Self-Employed & Family Workers	-0.008 (0.109)	0.017 (0.175)	0.210 (0.260)	0.791 (0.352)	0.012 (0.107)	-0.015 (0.176)	0.135 (0.267)	0.874 (0.360)
All Employment	0.137 (0.038)	0.157 (0.061)	0.298 (0.090)	0.732 (0.122)	0.106 (0.039)	0.115 (0.065)	0.262 (0.098)	0.738 (0.133)
<By Gender>								
Male	0.104 (0.034)	0.133 (0.054)	0.252 (0.080)	0.562 (0.109)	0.038 (0.031)	0.049 (0.050)	0.192 (0.076)	0.585 (0.103)
Female	0.184 (0.075)	0.185 (0.120)	0.362 (0.179)	1.010 (0.242)	0.211 (0.083)	0.215 (0.137)	0.366 (0.208)	0.992 (0.280)
<By Age Group: Manufacturing only>								
15 – 29	0.091 (0.055)	0.105 (0.088)	0.301 (0.131)	0.903 (0.178)	0.069 (0.060)	0.059 (0.098)	0.260 (0.148)	0.900 (0.200)
30 – 54	0.157 (0.045)	0.207 (0.071)	0.341 (0.106)	0.682 (0.145)	0.107 (0.043)	0.131 (0.071)	0.244 (0.108)	0.644 (0.146)
55 or older	0.175 (0.176)	0.250 (0.279)	0.672 (0.416)	1.204 (0.567)	0.210 (0.185)	0.192 (0.305)	0.607 (0.462)	1.590 (0.624)

Note: The numbers in parentheses are standard errors.

All employment by age group is manufacturing workers only.

Data Source: *Economically Active Population Survey*, Korean Statistical Office.

Table 3. Production versus Nonproduction Workers Adjustment in the Manufacturing

	1978:1 – 1987:6				1987:7 – 1998:12			
	1 Month	3 Months	6 Months	12 Months	1 Month	3 Months	6 Months	12 Months
Employment								
Production	0.081 (0.031)	0.134 (0.046)	0.223 (0.070)	0.380 (0.101)	-0.003 (0.023)	0.012 (0.038)	0.134 (0.059)	0.376 (0.085)
Nonproduction	0.053 (0.019)	0.120 (0.029)	0.209 (0.044)	0.286 (0.064)	0.004 (0.018)	0.048 (0.030)	0.172 (0.047)	0.347 (0.067)
Accession								
Production	0.105 (0.046)	0.165 (0.069)	0.162 (0.105)	0.051 (0.152)	0.049 (0.029)	0.054 (0.049)	0.046 (0.076)	0.062 (0.109)
Nonproduction	0.018 (0.030)	0.018 (0.045)	0.010 (0.069)	-0.133 (0.100)	0.005 (0.020)	-0.008 (0.033)	-0.009 (0.051)	-0.035 (0.073)
Separation								
Production	0.028 (0.034)	0.091 (0.051)	0.100 (0.078)	0.094 (0.112)	0.051 (0.025)	0.120 (0.042)	0.150 (0.065)	0.125 (0.094)
Nonproduction	0.007 (0.025)	0.009 (0.037)	-0.003 (0.057)	-0.079 (0.082)	0.044 (0.017)	0.077 (0.028)	0.095 (0.044)	0.050 (0.063)
Average Hours								
Production	0.517 (0.176)	0.220 (0.262)	-0.040 (0.399)	0.158 (0.577)	0.409 (0.252)	-0.110 (0.419)	-0.434 (0.652)	0.498 (0.937)
Nonproduction	0.319 (0.147)	0.125 (0.220)	-0.024 (0.335)	0.387 (0.484)	0.343 (0.253)	-0.089 (0.421)	-0.339 (0.655)	0.456 (0.942)
Total Hours								
Production	0.595 (0.191)	0.344 (0.285)	0.162 (0.435)	0.495 (0.628)	0.420 (0.259)	-0.068 (0.431)	-0.244 (0.670)	0.959 (0.964)
Nonproduction	0.368 (0.150)	0.235 (0.223)	0.161 (0.341)	0.626 (0.492)	0.359 (0.254)	-0.012 (0.423)	-0.115 (0.658)	0.883 (0.947)

Note: The numbers in parentheses are standard errors.

Data Source: *Monthly Labor Survey*, Ministry of Labor in Korea

Table 4. Labor Adjustment by Establishment Size in the Manufacturing

	1978:1 – 1987:6				1987:7 – 1998:12			
	1 Month	3 Months	6 Months	12 Months	1 Month	3 Months	6 Months	12 Months
Employment								
10 - 99	0.072 (0.045)	0.117 (0.067)	0.187 (0.102)	0.425 (0.147)	-0.011 (0.034)	-0.008 (0.056)	0.090 (0.088)	0.309 (0.126)
100 - 499	0.081 (0.039)	0.136 (0.058)	0.222 (0.089)	0.332 (0.128)	-0.015 (0.027)	-0.025 (0.044)	0.087 (0.069)	0.382 (0.099)
500 or more	0.087 (0.028)	0.146 (0.042)	0.252 (0.064)	0.396 (0.093)	0.021 (0.022)	0.075 (0.037)	0.235 (0.057)	0.450 (0.082)
Accession								
10 - 99	0.135 (0.064)	0.202 (0.096)	0.177 (0.147)	0.000 (0.212)	0.088 (0.048)	0.095 (0.080)	0.074 (0.125)	0.082 (0.180)
100 - 499	0.122 (0.057)	0.185 (0.085)	0.182 (0.130)	0.059 (0.188)	0.056 (0.033)	0.062 (0.055)	0.049 (0.086)	0.063 (0.123)
500 or more	0.077 (0.039)	0.132 (0.059)	0.140 (0.089)	0.076 (0.129)	0.007 (0.019)	0.006 (0.032)	0.014 (0.050)	0.048 (0.072)
Separation								
10 - 99	0.062 (0.047)	0.116 (0.070)	0.114 (0.106)	0.128 (0.154)	0.086 (0.034)	0.156 (0.057)	0.177 (0.088)	0.200 (0.127)
100 - 499	0.047 (0.039)	0.116 (0.058)	0.123 (0.089)	0.121 (0.129)	0.040 (0.029)	0.188 (0.049)	0.156 (0.076)	0.122 (0.109)
500 or more	-0.003 (0.033)	0.062 (0.049)	0.081 (0.075)	0.060 (0.109)	0.023 (0.025)	0.082 (0.041)	0.110 (0.064)	0.034 (0.092)
Ave. Hours								
10 - 99	0.768 (0.217)	0.420 (0.324)	0.137 (0.495)	0.108 (0.714)	0.500 (0.275)	-0.067 (0.458)	-0.436 (0.713)	0.345 (1.025)
100 - 499	0.583 (0.186)	0.251 (0.278)	-0.032 (0.424)	0.127 (0.612)	0.448 (0.270)	-0.094 (0.449)	-0.446 (0.698)	0.459 (1.004)
500 or more	0.311 (0.162)	0.066 (0.241)	-0.163 (0.368)	0.202 (0.532)	0.300 (0.230)	-0.136 (0.382)	-0.386 (0.594)	0.671 (0.854)
Total Hours								
10 - 99	0.835 (0.239)	0.520 (0.356)	0.282 (0.544)	0.449 (0.785)	0.504 (0.288)	-0.042 (0.479)	-0.282 (0.745)	0.751 (1.072)
100 - 499	0.661 (0.206)	0.377 (0.307)	0.168 (0.468)	0.415 (0.676)	0.448 (0.279)	-0.085 (0.463)	-0.297 (0.721)	0.935 (1.037)
500 or more	0.397 (0.175)	0.207 (0.260)	0.078 (0.397)	0.576 (0.573)	0.330 (0.232)	-0.040 (0.386)	-0.113 (0.600)	1.178 (0.863)

Note: The numbers in parentheses are standard errors.

Data Source: *Monthly Labor Survey*, Ministry of Labor in Korea.