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# Impact of Increasing Part-Time Work on Income Inequality



Hyeon-Kyeong Kim

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Income Inequality

Hyeon-Kyeong Kim, Associate Research Fellow

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Korea Institute for Health and Social Affairs  
Building D, 370 Sicheong-daero, Sejong city  
30147 KOREA

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I

Introduction





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# I

## Introduction <<

In recent years, Korea's labor market policy has increasingly favored part-time jobs as a solution to numerous chronic problems, including excessive working hours and the low labor force participation rate of women, which decreases significantly following marriage and pregnancy. For generations, Korean workers have regularly worked long hours, but the issue of excessive working hours is generating considerable controversy today for a number of reasons. First, Koreans have become concerned about the effect of long working hours on the quality of life. Second, the Asian financial crisis of 1998, the global economic crisis of 2008, and the protracted recessions in their aftermath have led to growing demand for the creation of more jobs or jobs sharing by reducing working hours. Third, despite having increased over the past few decades, the participation rate for women aged 15~64 in Korea still remained low by OECD standards at 57 percent in 2014, above only Turkey, Mexico, Italy, and Chile. Interestingly, although the participation rate is as high for Korean females as for males of the 15-29 age group, the women's labor force participation rate begins to fall rapidly afterward, rebounding only gradually at much higher ages. This indicates that marriage, pregnancy, and

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childcare are still major factors hindering Korean women's economic involvement.

Having set for itself the goal of increasing employment rate to 70 percent and of reducing the long working hours the Korean government has proposed increasing the number of part-time jobs. Despite worries that such a policy would only serve to increase low-quality jobs, the Korean government hopes that its flextime job promotion policy will encourage increasing debates on the quality of part-time jobs and help solve some of the chronic problems of the Korean labor market as well.

While it is certainly important to evaluate the Korean government's policy on part-time work in light of how well it satisfies the established goals, we should not neglect how the policy affects the economic and employment status of men, who are largely the heads of their households, as well as the distribution of household income by changing the number of employed members in each household. As the vast portion of household income inequality in Korea can be attributed to the earned income of household heads, their spouses, and other household members (Kang et al., 2014), changes in the labor market caused by the part-time work policy have the potential to exert a substantial influence on the distribution of income in Korea. This study provides a comparative analysis of Korea and Germany in terms of how the policy affects the labor market and income distribution, and compares its findings to those of

the analysis on the Netherlands presented in the study by Kang (2015) to draw policy implications.

Germany and the Netherlands are included in the comparative analysis because the proportions of part-time workers in their economically active populations hover well above the OECD average. Since the 1990s, the German and Dutch governments have been promoting part-time work as a way of increasing their employment rates (Figure 1). In addition, these two governments have also begun implementing institutional measures, such as a pro-rata principle and the right to request reductions in working hours. The quality of part-time jobs, wage rates and social insurance rates for part-time jobs, and extent of voluntary and involuntary part-time jobs in these countries thus carry significant implications for Korea.

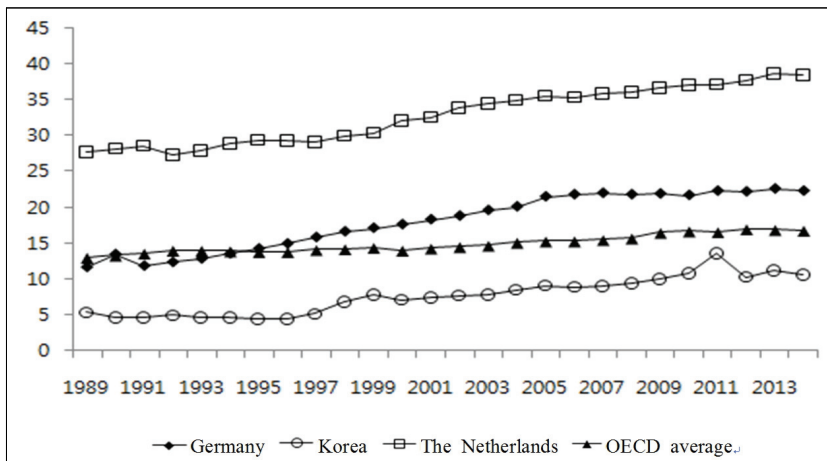
The comparative analysis should also shed light on the causes and factors of inequality in wages and household incomes in Korea. As earned income accounts for an overwhelming portion of household income in Korea, earned income inequality explains most of the household income inequality. It is therefore crucial to analyze labor market changes in order to identify the causes of change in household income inequality. The expansion of part-time jobs in Korea could alleviate inequality by supporting the economic activities of women from low-income households. However, it could also exasperate inequality by confining low-income households' employment oppor-

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tunities to only low-wage, part-time jobs. How changes in personal earned income, together with changes in the number of employed household members, affect household income inequality in Korea therefore warrants in-depth analysis and deeper understanding.

[Figure 1] Proportions of Part-Time Workers of the Employed Populations of Korea, Germany, and the Netherlands (Aged 15 or Above)

(Unit: percent)



- Notes: 1) In Korea, “part-time workers” include all workers who work less than full-time workers do at the same jobs and workplaces, i.e., workers whose average working hours amount to less than 36 hours per week.
- 2) In Germany, people who work 32 hours or more per week are regarded as full-time workers, and those working less than 32 hours are considered part-time workers. It should be noted that workers participating in the European Labor Force Survey (EU-LFS) gave answers regarding only their main jobs.
- 3) In the Netherlands, as in Iceland and Norway, full-time workers are those who work 35 hours or more per week. People who work less than that are considered part-time workers.

Source: OECD Statistics

The focus of this study is how a policy-driven factor like an increase in the availability of part-time work affects income distribution. One way to answer this question is by estimating how a certain policy change affects differently across different income quantiles (e.g., the  $\tau$ -th quantile). To this end, this study uses an unconditional quantile regression analysis.

Why is an unconditional quantile regression used rather than a conditional quantile regression?<sup>1)</sup> The latter can also be used to identify and estimate policy effects on different quantiles of income distribution. However, conditional quantile regression measures how each of the given conditional explanatory variables affects the dependent variable of each quantile, whereas unconditional quantile regression gauges how each of the explanatory variables affects the distribution of dependent variables that are not conditioned or decided by other variables. In other words, the estimation coefficient  $\beta$  derived in a conditional quantile regression—i.e., the conditional quantile partial effect (CQPE)—represents the effect on the  $\tau$ -th quantile of the dependent variable, contingent upon the given explanatory variable. For instance, one might use the CQPE to identify how increasing part-time work would affect income at each quantile of the income distribution within head's educational group. However, this study focuses not on how increasing part-time work affects income distribution within high school graduates

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1) The method used in Mun (2015).

or college graduates, but on how increasing part-time work affects income distribution in an absolute (or unconditional) sense (Dube, 2013). The subject matter of this study thus requires the use of an unconditional quantile regression and partial effect (UQPE) rather than conditional CQPE.

The UQPE, which measures the effect of an explanatory variable on poverty rate, is used in the regression analysis as follows.

Poor households are generally defined as households with an income below a certain level. With this definition in mind, we may posit the poverty of a household or an individual as a binary variable (that is, as having only one of two values—one or zero). We may then estimate how changes in a given explanatory variable—in our case, increased part-time work—would affect that binary variable using the following linear probability model:

$$I_{cit} = \alpha_c \times Part + X\Gamma_c + \mu_i + \theta_t + \epsilon_{cit} \text{ -----(1)}$$

$I$  is a binary variable representing whether a given household,  $i$ , is poor (i.e., earns income below  $c$ ) in year  $t$ .  $Part$  is a variable representing how part-time work affects the given household's composition and stands for the proportion of household members with part-time work.  $\alpha$  reflects how part-time work affects the probability of poverty. In order to

control for the influence of other factors that could have an effect on the poverty of household  $i$ , we include in our regression model the idiosyncratic characteristics of each household ( $X$ ), unobserved heterogeneity (either fixed or trending) of each household, and macro-level factors (year dummies or trend lines). The idiosyncratic characteristics include household heads' age, sex, education, employment status (or labor contract type), as well as the average number of years of schooling received by all household members, number of household members, number of minors, and number of household members with jobs.

By summing up the policy effects on the proportions of individuals at various income levels, we can understand and summarize the policy effect on the cumulative distributional function (CDF) of household income. If we could measure how a given policy affects the CDF at all possible values of the dependent variable  $y$ , we would be able to use the reciprocal of the policy effects on the CDF to trace and estimate the effect of the same policy on a given quantile  $Q$  (Dube, 2013). If we were to equate  $F_A$  with an actual CDF, and let  $F_B$  represent a counterfactual CDF, the difference between the two,  $F_B - F_A$ , would equal the policy effect on the proportion of households below each baseline, i.e., the effect ( $\alpha$ ) on the *Part* variable in the equation shown above. Using the reciprocals of the counterfactual and actual CDFs we obtained by estimating  $\alpha$ , we can finally gauge the

UQPE, i.e., the policy effect on the  $y$ -th quantile of our dependent variable ( $UQPE = Q_{B,\tau} - Q_{A,\tau} = F_B^{-1}(\tau) - F_A^{-1}(\tau)$ ).

Unconditional quantile regression analysis is necessary to determine the UQPE. Firpo, Fortin, and Lemieux (2009)'s unconditional quantile regression analysis assumes partial linearity of the CDF, and bears significant similarities to the standard linear regression analysis as a result. The only difference is that the unconditional quantile regression analysis replaces the dependent variable  $y$  with a recentered influence function (RIF).

$$RIF(y, Q_\tau) = \beta_\tau \times Part + X\Gamma_\tau + \mu_i + \theta_t + \epsilon_\tau \text{ -----(2)}$$

The RIF is a type of influence function (IF) that indicates the effect of individual observed variables on certain statistics obtained from the distribution of the dependent variable, such as means and quantiles.  $E(IF)$  always equals zero, while  $E(RIF)$  is always dependent on  $q_\tau$ , i.e., the (unconditional) RIF that is the  $\tau$ -th quantile (Kim and Min, 2013). If we estimate  $\widehat{RIF}$  as the dependent variable using Equation (2), the coefficient ( $\beta_\tau$ ) measures the marginal effect, i.e., the unconditional UQPE, of the explanatory variables for  $q_\tau$ .

In order to identify how income distribution changes between two points in time, and what factors are involved (particularly how the increasing availability of part-time work factors in), we decompose the factors of the estimated UQPE.



# II

## Literature Review



# II

## Literature Review <<

The established literature on part-time work can be divided largely into three types: studies that explore the implications for women's economic activities<sup>2</sup>); studies that analyze the quality of part-time jobs (Lee, 2013, etc.); and studies that explore the implications for wage inequality or income distribution (Seong, 2014b; Mun, 2015).

A number of studies have examined the quality of part-time jobs for women, the status of women with part-time jobs in the labor market, and whether part-time work achieves the policy goals of increasing the employment rate of the population and expanding job opportunities for women who have had to leave the workforce due to marriage and childcare responsibilities. The main topic of this study, however, is not increasing the availability of part-time work to raise the employment rate in response to the growing demand for jobs, but the characteristics inherent to part-time work that leads to changes in women's labor supply behavior.

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2) Jang, Shin, and Park (2014) argues that the majority of the debates on part-time jobs is confined to the economic activities of women only, because of the gender bias in relation to the issue of work-family balance. The authors point out that the current discourse touts part-time work as a policy measure that could help women achieve a better work-family balance.

Choi (2012) points out that, in the past, part-time jobs for American women increased due to the demand of employers, but the persistent disadvantages—including low wages and lack of choice concerning working hours—have reduced the demand for part-time work among women, thereby causing part-time work to decline in the United States. The OECD (2010) also confirms that part-time work is on the rise only in countries that have eliminated the disparities between full-time and part-time jobs and begun to provide greater protection for part-time workers (quoted in Choi, 2012). Choi (2012) thus concludes that it is impossible to raise the overall employment rate in the long run by increasing the availability of part-time work that does not satisfy the demand of workers.

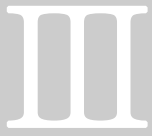
Other Korean studies analyze the correlation between work type and women's employment patterns. Kim (2003), for instance, finds that women who held full-time jobs before leaving the workforce due to childbirth are three to four times more likely to return to the workforce than women who had held part-time jobs. Using the Korean Labor Panel Study data, Kim (2015) finds that the higher the hourly wage a women earns in a given year, the less likely she is to quit her job in the following year. The author concludes that we can prevent women from leaving their careers by raising wage levels for women in full-time and part-time employment. These studies stress that improving the quality of part-time jobs leads greater numbers

of women to return to the workforce, thereby increasing the economic activities of the population overall.

The study by Jang, Shin, and Park (2014) is particularly germane to this study, as it also explores the implications of part-time work for income distribution. The authors discover that, even in the Netherlands and Germany, where part-time workers enjoy higher employment status than in Korea, the rapid increase in the number of households with 1.5 income earners coincided with an increase in the proportion of low-income households among the 1.5-income-earner households. The authors conclude that women's massive entry into low-wage part-time jobs has not led to any improvement in their household income status. Forster (2015) sought to demonstrate, empirically, the correlation between type of employment and income distribution by analyzing the distribution of part-time and non-regular workers by household income quantile. The study revealed that the lower the individual income quantile, the greater the proportion of non-regular workers in that quantile. Almost half of all individuals in the first quantile were non-regular workers, which similarly occupied an overwhelming share of the first income quantile of households. In other words, increasing the number of part-time and non-regular jobs leads to decreases in personal and household income, especially in the first income quantile, which constitutes the lower class. Inspired by Jang, Shin, and

Park (2014) and Forster (2015), this study empirically examines the correlation between increases in part-time work and changes in the distribution of household income, using quantile regression to achieve a more refined analysis.

This study thus bears much similarity to Mun (2015), which uses the Korean Labor Panel Study data and conditional quantile regression to determine how the working hours of women with part-time jobs affected household income over two time periods, from 2002 to 2007 and from 2008 to 2012. Mun's study is meaningful in that it is the first to analyze how women's part-time jobs affect household income, rather than personal income, thereby influencing household income inequality. Unlike Mun (2015), however, this study uses unconditional quantile regression, deeming it a better method for gauging the influence of part-time jobs, held by women and men alike, on household income distribution.



## Results

1. Korea
2. Germany





## 1. Korea

### 1) Trends and characteristics of part-time work

In 2013, the Korean government unveiled its roadmap for raising the employment rate to 70 percent, and began to promote increasing the quality of flextime jobs as a core means of achieving that goal. The roadmap seeks to replace the current employment culture, which is centered on single male breadwinners who work long hours, with a new culture in which female spouses also earn income, thereby reducing the long working hours of men and helping all workers achieve better work-family balance. In order to raise the employment rate to 70 percent, the roadmap plans to create 2.38 million new jobs over a five-year period until 2017. Moreover, it proposes that 40 percent, or 930,000, of the new jobs be part-time jobs.

However, this policy is not the only, or even the main, factor behind the increasing availability of part-time work in Korea. Rather, the trend began early in the 2000s, when the types of employment contracts began to diversify. As non-regular employment became a major controversial issue in the 2000s, Korean policymakers began to enact diverse statutory measures

intended to regulate the indiscriminate hiring of non-regular workers by companies. These measures have led to a decrease in the proportion of temporary workers, but, in turn, increased indirect and part-time employment. In other words, the growing regulatory pressure on employers, who tend to seek cost-cutting measures and greater flexibility in terms of hiring, to reduce temporary employment led them to resort to indirect and part-time employment instead.

Part-time jobs in Korea are, in fact, a form of non-regular employment that put workers in quite a precarious position. Statistics Korea's survey on the types of employment, which is an addition to its Economically Active Population Survey (EAPS), shows that the proportion of women with part-time jobs has been rising steadily since 2005, reaching 17.7 percent in 2014. In addition, the proportion of young people under 30 with part-time jobs increased two-fold, from 7.4 percent to 15.5 percent, between 2003 and 2014. The proportion of people over 60 with part-time jobs similarly doubled, from 14.6 percent to 33.5 percent, over the same period. While increases in part-time workers are observed among people at all education levels, the trend is most prominent in the group with a middle school education or below, where the proportion rose from 10.3 percent to 24.2 percent from 2003 and 2014. In other words, the increase in part-time work has had a greater influence on the disadvantaged and underprivileged.

These trends are evident in the indicators of the quality of part-time work as well. According to Statistics Korea's additional EAPS surveys, the wages of part-time workers as a proportion of the wages of full-time workers dropped significantly, from 83.9 percent to 59.1 percent, from 2004 to 2013. Moreover, the proportion of part-time workers who earn less than minimum wage rose consistently from 17.2 percent to 36.4 percent (Oh and Lee, 2014), and the proportion of minimum-wage-earning part-time workers among women increased as well, from 47.4 percent to 62.5 percent (Seong, 2014a) over the same period. In the meantime, the proportion of part-time workers with social insurance coverage constituted only a quarter of all wage earners. These poor conditions are the main reason the majority (63.4 percent in 2014) of part-time workers choose their jobs out of urgent financial necessity rather than according to their preference.

## **2) Data and statistics for analysis**

In order to identify the trend of part-time work in Korea, and how it affects income inequality in the country, we need to take a look at the Korean Labor and Income Panel Study (KLIPS), which has been collecting statistics on personal and household income since 1998. In particular, this study focuses on the most recent income data, analyzed in the 16th KLIPS, pertaining to

the years 2013 and 2007, when the recent rise in the proportion of part-time workers in the labor market first began to occur. This study also confines its analysis to working-age households whose heads are less than 65 years old.

We base the division of quantiles, needed to obtain the  $\widehat{RIF}$  in Equation (2) and thereby identify the effect of part-time work on income inequality, on equivalised household real labor income. Equivalised household real labor income is obtained by applying the consumer price index (2010 = 100) to the sum of labor and business income earned by household members, and dividing the households using the OECD method (i.e., dividing the income by the square root of the number of household members).

Note that the annual income variables reflect the values observed in the previous year. The income variables for time  $t$ , in other words, include the annual income observed in the previous time period, or  $t-1$ . This study therefore infers the household income distribution at time  $t$  based on the income reported in the following period. In summary, this study uses the personal and household characteristics observed in 2007 and 2013, but uses the annual income reported in 2008 and 2014 in order to identify the income quantiles of households in 2007 and 2013.

The most important explanatory variable is the change in the proportion of part-time workers in households, i.e., change in household composition due to increases in part-time work

(e.g., households with one part-time worker, households with one full-time worker and one part-time worker, etc.). While the increase in part-time work has been associated chiefly with the increasing participation of women in the labor market and their growing influence on household income distribution, the main focus of this study is not determining women's status in the labor market, but finding out which income quantiles have the most part-time workers, irrespective of their sex, and how their part-time work changes income distribution in general.

Other explanatory variables that likely have an impact on household income are the characteristics of household heads, including their age and square thereof, sex, education (middle school graduate or below, high school graduate, vocational college graduate, or university graduate and above), and employment status (holding a full- or part-time job, self-employed or employing other people, unpaid employees for family businesses, etc.). Household characteristics, such as the average number of years of schooling received by all members, number of household members, number of children, and number of household members with jobs, are also taken into account. Table 1 lists the dependent and explanatory variables, and Table 2 summarizes the basic statistics pertaining to these variables, as of 2007 and 2013.

Overall, the statistics show that the proportion of households with female heads increased slightly, from 15.2 percent to 17.3

percent. The employment rate and ratio of wage earners to the total population increased as well, by four to eight percentage points with respect to both household heads and their spouses. This trend requires further explanation. The decrease in the number of working hours per week was more prominent among spouses of household heads. In addition, while the proportion of part-time work increased in the case of both household heads and their spouses, the share of wage-earning spouses increased more rapidly, from 12.2 percent to 14.9 percent. As the KLIPS data tend to underestimate the proportion of part-time jobs held by male household heads, caution is called for when interpreting these results.

〈Table 1〉 KLIPS Variables for Analysis

Variable	Definition
Annual household labor income	Sum of the wages and business income earned by all working household members (reported the previous year, in units of KRW 10,000)
Age of household head	Age of household head
Sex of household head	Sex of household head (male or female)
Employment status of household head	Temporary jobs, day jobs, full-time jobs, self-employed work, unpaid work in family businesses
Education of household head	Final schooling (middle school or below, high school, vocational college, university or above)
Average number of years of schooling	Average number of years of schooling received by all household members (six years for elementary school, nine for middle school, 12 for high school, and 16 for university graduates)
Number of household members	Number of household members
Number of children	Number of children aged 18 or under

Variable	Definition
Number of working household members	Number of household members with jobs
Number of working hours per week	- For members with regular jobs: sum of regular working hours per week and overtime working hours per week - For members without regular jobs: average number of working hours per week
Proportion of part-time workers	Ratio of part-time workers to total number of working household members (survey participants who reported working (1) part-time and odd jobs, (2) shorter hours than people with the same jobs or in the same fields of work, or (3) jobs that pay hourly wages.

<Table 2> Characteristics of Households in Korea in 2007 and 2013

	2007		2013	
Real household labor income (yearly, equalized, and in units of KRW 10,000)	2,221		2,329	
Number of household members	3.224		3.002	
Number of children (under 18)	1.695		1.639	
Number of working members	1.432		1.418	
Proportion of female household heads	0.152		0.173	
	Household head	Spouse	Household head	Spouse
Age (years)	46.0	44.2	45.8	44.8
Average number of years of schooling	12.3	11.6	13.1	12.6
Employment rate	0.839	0.501	0.878	0.565
Proportion of wage earners	0.675	0.619	0.730	0.703
Number of working hours per week	49.8	47.2	47.0	42.4
Proportion of part-time workers	0.023	0.122	0.035	0.149
Real monthly wage (in units of KRW 10,000)	265	262	153	165
N of observation (households)	3,948	2,938	4,419	3,052

Source: KLIPS

### 3) Changes in part-time work in household composition

We now need to examine how the changes in household labor income distribution and increases in part-time work in Korea from 2007 to 2013 are correlated to the changes in household composition by quantile over the same period.

Table 3 shows that household labor income inequality ameliorated, most prominently among households with an income below the median. The Gini coefficients, measured in two ways using the raw data for household income, decreased as well, by about 10 percent. Gini coefficient (1) does not include households with zero labor income and thus fails to reflect changes in the income inequality among all households resulting from the increase in the number of households with working members (earning more than zero labor income). Gini coefficient (2), on the other hand, includes households with zero labor income, and therefore traces the effect of changes in employment status of household members on household income inequality in general. The fact that both Gini coefficients showed similar levels of decrease indicates that which index is used for factor decomposition has little significance.

In addition, in analyzing the log labor income distribution as part of identifying the changes in household income inequality, this study sought to control for the possible increases in house-



hold income inequality associated with the increasing low-wage and part-time jobs by equating the household labor income of the bottom 10 percent of households in 2013 to zero, as done in 2007, so that the log labor income, when used as the dependent variable, would be automatically excluded from the analysis.

〈Table 3〉 Changes in Household Labor Income Distribution in Korea from 2007 to 2013

	90-10	90-50	50-10	Variance	Gini coefficient (1)	Gini coefficient (2)
2007	1.6576	0.7449	0.9127	0.4864	0.3392	0.3912
2013	1.4516	0.6735	0.7781	0.4053	0.3050	0.3532
Change ( $\Delta$ )	-0.2060	-0.0714	-0.1346	-0.0810	-0.0343	-0.0380

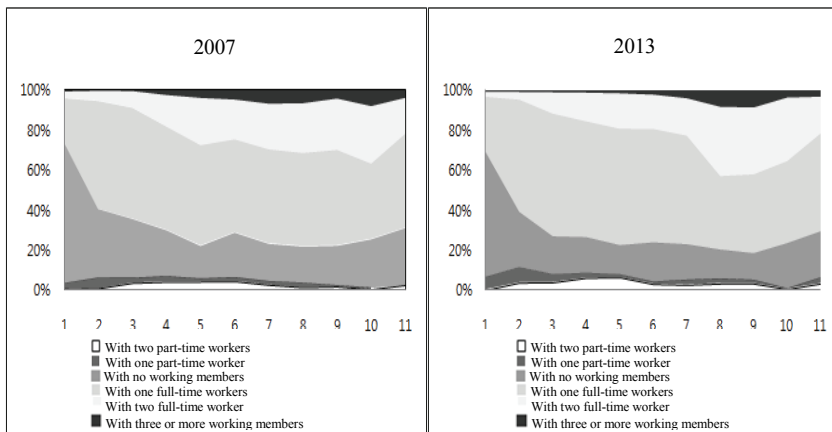
Note: The first four are log wage differentials and log variance, while the Gini coefficients were obtained from the raw household labor income data. Gini coefficient (1) does not include households with zero labor income, while Gini coefficient (2) does.

Source: KLIPS

Figure 2 shows household composition by quantile in each of the two years analyzed. If we compare households with one full-time worker, which make up the greatest proportion, and households with two full-time workers, we can see that the proportion of the latter increased toward 2013. Households comprised of only unemployed members make up such a great proportion below because the proportion includes households with self-employed workers as well.

The proportion of households with part-time workers increased in both the group of households with two part-time workers and the group of households with one full-time breadwinner and one part-time worker. The band representing households with part-time workers expanded noticeably below the median income level.

[Figure 2] Household Composition by Quantile in Korea



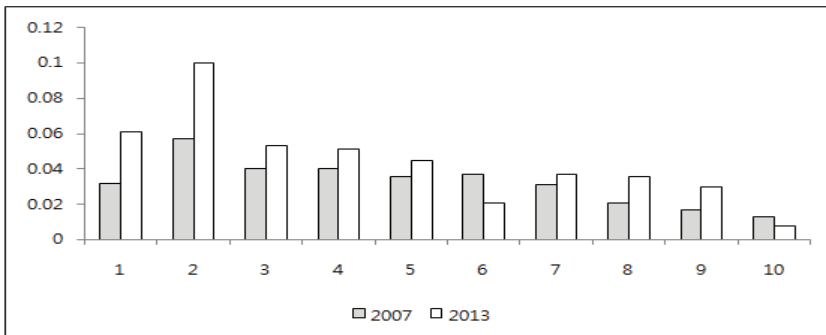
Source: KLIPS

Figure 3, which illustrates the proportion of part-time workers among all working members per household, shows similar results. The proportion of part-time workers in households grows smaller toward upper income quantiles in both years, and especially so in 2013. This reflects the abrupt increases in the shares of part-time workers in the first- and second-decile households.

Figure 4 shows the changes in the number of working hours

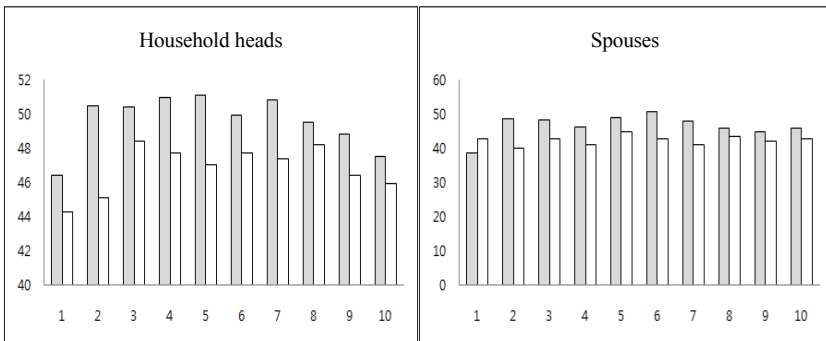
of household heads and their spouses. The darker bars for all quantiles represent the working hours in 2007, and the lighter ones represent the working hours in 2013. While both household heads and their spouses saw decreases in their working hours, the decrease is more prominent in the case of household heads in lower-middle income quantiles.

[Figure 3] Proportion of Part-time Workers among All Household Members in 2007 and 2013



Source: KLIPS

[Figure 4] Average Number of Working Hours by Quantile in 2007 and 2013



Source: KLIPS

The changes in household composition, proportion of part-time workers, and number of working hours per household member consistently indicate the increase in part-time jobs among low-quantile households. One may then infer that these changes have all contributed to the decrease in the income of low-income households and worsening income inequality.

These findings agree with those of the analysis of quarterly working hours in European states conducted by Salverda and Haas (2014). The number of working hours in the 10th decile is 2.7 times that in the first decile, as high-income households tend to work far more than low-income ones, not least because low-income households have trouble finding sufficient work.

#### **4) Impact on income inequality**

The results of the unconditional quantile regression analysis on the impact of the increasing share of part-time workers in households on income inequality are summarized in Table 4 and Figure 5. The results of the factor decomposition are listed in Table 5.

As Table 4 shows, the increasing proportion of part-time workers bears a negative correlation with income in all quantiles. In particular, the income losses were far greater and increased monotonously in lower quantiles, especially in the

first, compared to the higher quantiles (e.g., the fifth and ninth) in both 2007 and 2013. The analyses of distribution indices reached the same conclusion. The fact that the coefficients of the proportion of part-time workers carry statistically significant positive values affirms that the increases in the proportions of part-time workers are factors promoting an increase in income inequality.

The estimation coefficients of the proportions of part-time workers in different quantiles are evident in the portions of the curves that remain below zero in the bottom right corner and that rise toward the right, as well as how the dotted lines of the coefficients in 2013 rise more abruptly than the solid lines in 2007.

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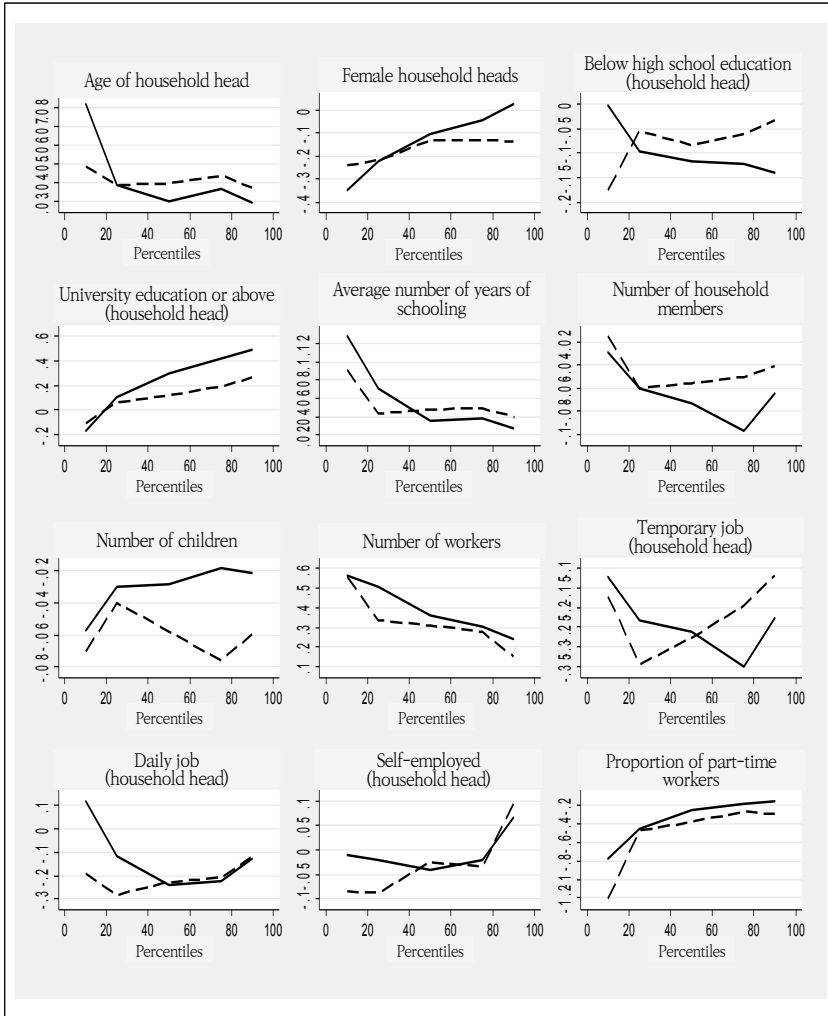
(Table 4) RIF Regression Analysis by Quantile

	2007	2013	2007	2013	2007	2013
	1st quantile		5th quantile		9th quantile	
Age of household head	0.082** (2.63)	0.049 (1.93)	0.030** (2.71)	0.040*** (3.60)	0.029* (2.18)	0.037** (2.94)
Age of household head squared	-0.001** (-3.26)	-0.001* (-2.53)	-0.000** (-2.96)	-0.000*** (-3.63)	-0.000 (-1.84)	-0.000** (-2.60)
Female household heads	-0.346*** (-3.36)	-0.239** (-3.19)	-0.104** (-3.00)	-0.132*** (-4.14)	0.026 (0.54)	-0.136*** (-3.71)
Education (Baseline = high school)						
Middle school or below	-0.002 (-0.02)	-0.174 (-1.82)	-0.117** (-3.13)	-0.089* (-2.13)	-0.138** (-3.22)	-0.032 (-0.73)
Vocational college	0.023 (0.25)	-0.003 (-0.04)	0.168*** (3.57)	-0.002 (-0.05)	0.050 (0.93)	0.050 (0.94)
University or above	-0.169 (-1.91)	-0.108 (-1.31)	0.300*** (7.86)	0.118** (2.96)	0.486*** (7.73)	0.265*** (4.56)
Average number of years of schooling	0.129*** (5.99)	0.092*** (4.96)	0.036*** (4.84)	0.048*** (6.07)	0.027* (2.39)	0.040*** (3.50)
Household composition						
Number of members	-0.029 (-0.73)	-0.015 (-0.46)	-0.077*** (-4.74)	-0.055*** (-3.56)	-0.064** (-3.04)	-0.041 (-1.90)
Number of children	-0.058 (-1.23)	-0.071 (-1.71)	-0.029 (-1.44)	-0.058** (-2.87)	-0.022 (-0.82)	-0.059* (-2.06)
Number of workers	0.562*** (11.99)	0.555*** (13.13)	0.359*** (20.89)	0.311*** (17.39)	0.240*** (8.07)	0.154*** (5.26)
Employment status of household head (Baseline = full-time job)						
Temporary job	-0.122 (-0.75)	-0.171 (-1.61)	-0.261*** (-4.15)	-0.277*** (-6.48)	-0.227*** (-4.61)	-0.117* (-2.53)
Day job	0.120 (1.18)	-0.191 (-1.59)	-0.241*** (-5.68)	-0.227*** (-5.65)	-0.125*** (-3.85)	-0.116** (-3.25)
Self-employed	-0.016 (-0.16)	-0.088 (-1.57)	-0.040 (-1.35)	-0.024 (-0.81)	0.067 (1.40)	0.096* (2.15)
Family business	-0.291 (-1.13)	-0.235 (-1.00)	-0.012 (-0.08)	0.017 (0.12)	-0.148 (-1.02)	-0.101 (-0.67)
<b>Proportion of part-time workers</b>	<b>-0.773** (-2.92)</b>	<b>-1.213*** (-6.05)</b>	<b>-0.247*** (-3.48)</b>	<b>-0.378*** (-6.25)</b>	<b>-0.147 (-1.90)</b>	<b>-0.292*** (-5.99)</b>
Constant	3.328*** (4.68)	4.558*** (7.81)	6.319*** (24.89)	6.061*** (23.55)	7.046*** (21.54)	6.847*** (22.43)
N	3,648	4,101	3,648	4,101	3,648	4,101
adj. R2	0.145	0.157	0.237	0.197	0.123	0.079

Note: The values in parentheses are t-values. The asterisks, \*, \*\*, and \*\*\*, signify statistical significance at the levels of five percent, one percent, and 0.1 percent, respectively.

Source: KLIPS

[Figure 5] Changes in Coefficients of Unconditional Quantile Regression Analysis



Note: Solid lines represent 2007, while dotted lines represent 2013.

Source: KLIPS

The results of the decomposition of the factors of changes in income distribution between 2007 and 2013, particularly the impact of increases in part-time work, are summarized in Table 5.

The five inequality indices of household labor income indicate that household income inequality improved from 2007 to 2013. All of the percentile ratios, variance, and Gini coefficients attest to this reduction in inequality. The factor decomposition of the effects of this inequality reduction on the changes in the characteristics of households and the price effect reveals that the price effect accounts for the majority of the changes. In other words, notwithstanding the overall decrease in income inequality, the increases in the number of part-time jobs and in their wages (price effect) have contributed to the increasing income inequality in certain regards, particularly with respect to households with an income below the median. Put differently, increases in part-time jobs serve to lower the wages of low-income households, thereby exasperating the overall labor income distribution and inequality.



(Table 5) Results of Factor Decomposition

	90-10	90-50	50-10	Variance	Gini coefficient
2007	1.5256	0.6862	0.8394	0.4863	0.0498
2013	1.3493	0.6136	0.7356	0.4049	0.0443
Difference	-0.1763	-0.0726	-0.1037	-0.0814	-0.0055
Characteristic effects	0.0052	-0.0013	0.0066	-0.0029	-0.0004
Age	0.0032	-0.0006	0.0038	0.0036	0.0002
Female household heads	0.0046	0.0015	0.0030	0.0061	0.0003
Education	-0.0016	0.0057	-0.0073	-0.0124	-0.0010
Household composition	-0.0040	-0.0055	0.0015	-0.0001	-0.0001
Economic activity	-0.0035	-0.0035	-0.0001	-0.0066	-0.0001
<b>Proportion of part-time workers</b>	<b>0.0066</b>	<b>0.0009</b>	<b>0.0057</b>	<b>0.0064</b>	<b>0.0003</b>
Price effects	-0.1815	-0.0712	-0.1103	-0.0784	-0.0051
Age	0.8307	-0.0297	0.8603	0.7430	0.0244
Female household heads	-0.0302	-0.0163	-0.0139	-0.0185	-0.0009
Education	0.3597	-0.0016	0.3613	0.3294	0.0160
Household composition	-0.0389	-0.0057	-0.0332	-0.0178	-0.0004
Economic activity	-0.0783	-0.0473	-0.0310	-0.0734	-0.0006
<b>Proportion of part-time workers</b>	<b>0.0182</b>	<b>0.0012</b>	<b>0.0170</b>	<b>0.0037</b>	<b>0.0005</b>
Constant	-1.2428	0.0281	-1.2708	-1.0448	-0.0442

Note: "Economic activity" reflects the employment status of the household head and the number of working members per household.

After we control for the number of working members per household in tracing the impact of the increasing proportion of part-time workers on household income inequality, there is a possibility that we could end up neglecting the inequal-

ity-alleviating effect of the increasing income earned by low-income households with new working members. Therefore, instead of controlling for the number of working household members, this study assumed that increases in the ratio of part-time workers indicated the new employment of household members in performing the unconditional quantile regression analysis and factor decomposition. Here, the inequality-worsening impact of the increasing ratio of part-time workers is somewhat lessened, but still serves to worsen inequality via both characteristic and price effects. The increase in the number of part-time jobs may reflect an increase in employment opportunities in general, but also reflects a decrease in the opportunities for low-income households to find quality, well-paying jobs.

Contrary to the government's expectations, increasing part-time work has reduced the quality and stability employment and the wages of workers, particularly for the low-income classes. The middle- and upper-classes have few reasons to work long hours at low-paying, part-time jobs, which low-income households are forced to take, almost exclusively, merely in order to earn a living. The increasing proportion of low-income households with members working at part-time jobs has led to decreases in the number of working hours available for these households, resulting in drops in low-income households' labor income and greater income inequality.

## 2. Germany

### 1) Trends and characteristics of part-time work

Until the German reunification in 1990, there was little demand for part-time employment, as the unemployment rate remained quite low and labor unions wielded considerable collective bargaining power. The onset of the recession following reunification and the German government's effort to promote work-family balance in the 2000s have led to an increase in the number of part-time jobs in Germany (Yerkes and Visser, 2006; Kim and Lee, 2014). From 1990 to 2005, the proportion of part-time jobs grew at an annual average of 3.4 percent, exceeding 20 percent in the mid-2000s. As of 2014, 21.8 percent of working people aged 15 to 64 in Germany held part-time jobs (OECD, 2015).

OECD statistics show that the share of part-time workers, in both the male and female populations of Germany, rose consistently from 1991 to 2005. Specifically, the share of part-time workers increased from 2.2 to 7.3 percent in the male population, and from 25.2 to 38.3 percent in the female population. As of 2014, 37.5 percent of working women in Germany were part-time workers, more than four times the proportion of male workers. The increase in the proportion of part-time workers in Germany coincided with German wom-

en's increasing participation in the labor market, and, along with the increase in the number of full-time jobs, it has been leading the rise in Germany's employment rate since the mid-2000s.

Note that the Schroeder government introduced "mini-jobs" in 2003 as part of its labor market reforms, with the goal of helping unemployed and poor citizens increase their earned income by working low-paying jobs.<sup>3)</sup> The German Federal Employment Agency reports that the number of mini-job workers has increased significantly, from 5.98 million in 2003 to 7.33 million by March 2013 (Lee, 2014). These mini-jobs are characterized by wage levels rather than working hours. Considering, however, that most mini-job workers work less than 20 hours per week, there is considerable overlap between them and part-time workers (Lee, 2014).

Low wages and low social insurance participation rates characterize the poor working conditions of mini-jobs, which workers would not choose unless forced to by financial necessity. According to Bosch, Weinkopf and Kalina (2011), the number of mini-job workers grew considerably, coming to occupy one-third of all low-wage workers, while 70 percent of mini-job workers were paid an average of EUR 9.14 per hour,

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3) Mini-jobs allow employees to work flexible hours and exempt them from paying social insurance premiums and income taxes. Employers can also use mini-jobs to ensure the flexibility of their human resources, pay less in taxes, and secure lower-cost labor (Lee, 2014, p. 9).

only two-thirds of Germany's median hourly wage. Moreover, 50 percent of mini-job workers were paid less than EUR 7.00 per hour (Kalina and Weinkopf, 2013; quoted in Haipeter, 2013). Moreover, mini-job workers are ineligible for social insurance, as they do not meet the income and working-hour requirements. Although German law guarantees free transitions between full-time and part-time work (Hong, 2010), only a minuscule portion of part-time workers ever manages to secure full-time positions (European Commission, 2013; quoted in Kim and Lee, 2014).

Although the introduction of mini-jobs may have the potential to increase the income of low-income households in Germany, these jobs may affect the income distribution in different ways, depending on which income quantile has the most decrease in women's working hours. These distributional consequences raise the question of whether mini-jobs constitute quality part-time jobs, and also carry implications for Korea's policy on part-time work.

## **2) Data and statistics for analysis**

This study used data from the German Socio-Economic Panel Study (GSEOP)<sup>4</sup> spanning the years from 1984 to 2013. The data were panel-type, cross-national equivalent files (CNEFs)

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<sup>4</sup>) Using Version 30, produced in 2014.

amenable to international comparison.<sup>5)</sup>

OECD statistics show the rapid increase in the proportion of people with part-time jobs in Germany, from the early 1990s to the mid- to late-2000s. Figure 6 shows the changes in the proportion of part-time workers in Germany's working population over the last three decades. The GSEOP data confirm the rapid rise in the share of part-time workers observed by the OECD. If we further segment the data into regular and non-regular part-time jobs, as shown in Figure 7,<sup>6)</sup> we can see that the number of unemployed citizens and regular and non-regular part-time workers compensated for the abrupt decreases in the number of full-time jobs until the early 2000s. Since the mid-2000s, the numbers of people with full-time, regular part-time, and non-regular part-time jobs have all been increasing. While both types of part-time jobs have been on the rise in Germany, the increase in the number of non-regular part-time jobs has been particularly prominent, especially between the late 1990s and 2010. This study thus includes the years between 1999 and 2010, during which there were notable increases in non-regular part-time jobs in Germany, in its unconditional quantile regression analysis and factor decomposition. The scope of the data on Germany is limited to

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5) The data provided by the KLIPS are also CNEFs.

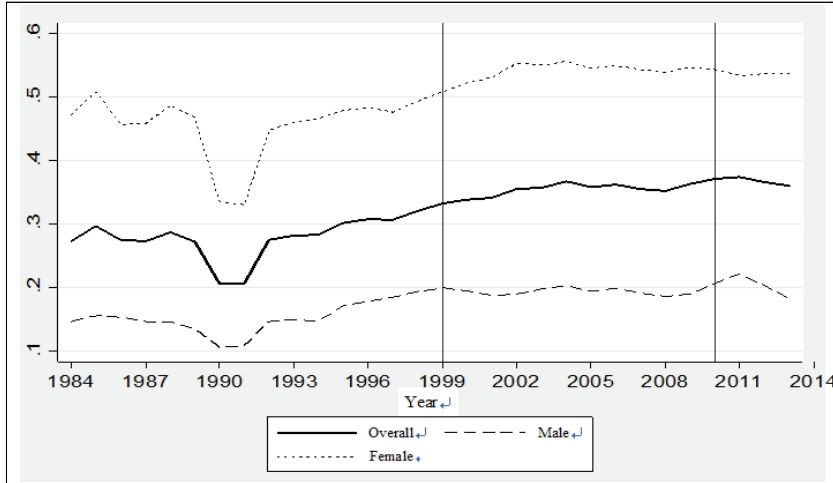
6) Of the diverse types of data included in the GSEOP, the employment status variable (EMPLST), one of the Person-Related Status and Generated Variables (PGEN), was combined with the CNEFs using personal IDs.

working-age households with heads aged 65 and over, as is the case for Korea.

While the majority of the variables included in the analysis overlap with those used in the analysis of Korea, the employment status of household heads has been replaced with an employment status variable dummy (including full-time, regular-hour, occupational training, non-regular-hour, and unemployed), and the education dummy is divided into only three levels (i.e., below high school, high-school graduate, and university graduate and above). The other variables included are: age (and squares thereof) of household heads; proportion of female household heads; educational attainment of household heads; average number of years of schooling of household members; number of household members; number of children under the age of 18; number of working household members; and part-time workers as percentage of all working household members.

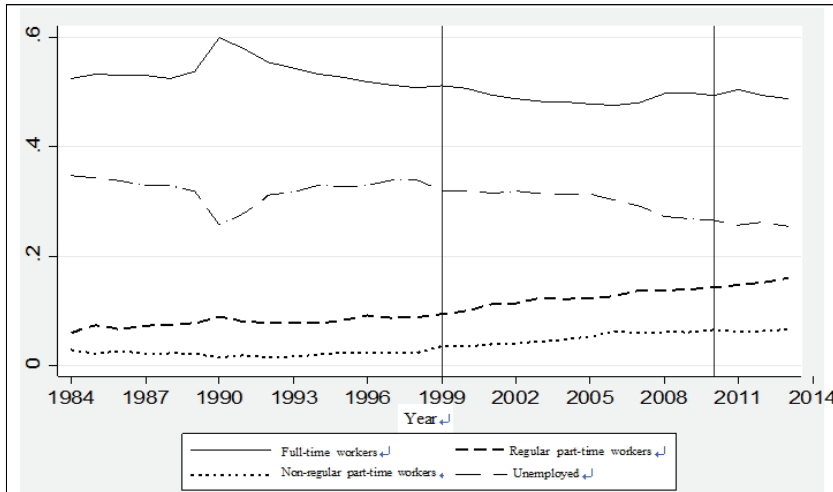
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[Figure 6] Proportion of Part-time Workers in Germany's Working Population (Aged 15 to 64)



Source: GSEOP, 1984-2013

[Figure 7] Proportions of Different Types of Workers in Germany's Working Population (Aged 15 to 64)



Source: GSEOP, 1984-2013



Note that the income- and full- and part-time-related variables shown in the GSEOP all relate to the previous year. In order to ensure time consistency between the income and employment status variables at time  $t$  (pertaining to the previous year, or  $t-1$ ) and age, education, and other such variables at  $t$  (pertaining to the current year, or  $t$ ), the personal and household characteristics measured at  $t-1$  were combined with those measured at  $t$ . Annual labor income, calculated using the consumer price index and equalised by the number of household members, was used for household income. See Table 6 for the definitions of the dependent and explanatory variables used in the analysis.

Table 7 shows the summary statistics for the major variables observed in 1999 and 2010. Looking at the table, it can be seen that the employment rate of household heads increased by 4.2 percentage points, while that of spouses took a dip. Similar patterns are noted with respect to the proportion of part-time workers in households. This seems to reflect the fact that the number of female household heads increased, with more and more female household heads finding part-time employment.

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〈Table 6〉 GSEOP Variables for Analysis

Variable	Definition
Annual household income (EUR)	Sum of the labor income earned by all household members (reported the previous year)
Personal labor income (EUR)	Personal labor income (reported the previous year; sum of all forms of wages, benefits, allowances, overtime work allowances, and profits shared between employer and employee)
Household head education	Final schooling (below high school, high school, university or above)
Number of years of schooling	Number of years of schooling received by each household member
Number of working hours per week	Per member (reported the previous year; sum of hours one has worked in full-time, part-time, and short-term jobs as well as in occupational training; i.e., average number of working hours per week for the previous year multiplied by 4.33)
Number of working hours per week	Average number of hours worked per week, including overtime (for self-employed persons as well), working times over 80 hours counted as “impossible” answers.
Employment status	Whether an individual is employed or not (as of the previous year; “being employed” means earning income by working at least 52 hours the previous year; “being unemployed” means not working that many hours)
Employment contract type	Individuals’ employment contract types (full-time, regular part-time, occupational training, non-regular part-time, unemployed)

〈Table 7〉 Household and Individual Characteristics in Germany in 1999 and 2010

	1999		2010	
Real household labor income (yearly, equalized, in EUR)	27,622		28,971	
Number of household members	2.429		2.300	
Number of children (under 18)	0.573		0.476	
Number of working members	1.301		1.240	
Proportion of female household heads	0.390		0.453	
	Household head	Spouse	Household head	Spouse
Age	43.1	42.7	45.2	45.4
Average number of years of schooling	11.8	10.0	12.5	9.0
Employment rate	0.779	0.612	0.821	0.596
Number of working hours per week	41.4	35.6	39.7	34.2
Proportion of part-time workers	0.261	0.429	0.316	0.418
Real monthly wage (in EUR)	27,721	17,491	27,834	20,762
N of observation (households)	5,305	3,997	6,163	4,235

Source: GSEOP

### 3) Part-time work and changes in household composition

Table 8 shows that household income inequality in Germany took a dramatic turn for the worse between 1999 and 2010, particularly in quantiles below the median income level. This evident decline seems to reflect the massive increase in the number of low-wage workers at the time.

In analyzing the impact of increasing part-time work on income inequality, log labor income is used. This excludes from the analysis households with zero labor income, and effectively

raises the employment rate. With a positive amount of income above zero, household labor income so analyzed shows no alleviation of income inequality. Between 1999 and 2010, however, Germany recorded a 1.5-percent drop in its unemployment rate; neglecting this could lead to the overestimation of the impact of increasing part-time work on inequality. In 1999, the bottom 11 percent of households had zero labor income. The increase in the number of low-wage workers in the intervening years reduces this share of zero-income households to nine percent by 2010. If the two percent of households with minimum labor income is included in the analysis of household income distribution, the resulting level of inequality for the year 2010 grows exponentially, and the impact of increasing part-time work on inequality is overestimated. In order to prevent this bias, the bottom two percent of households with the lowest level of positive labor income is excluded from the analysis of 2010.

The percentile ratios and variance in Table 8 are distribution indices based on log labor income. They show trends similar to those of Gini coefficient (2), which pertains to all households (including those with zero labor income).

(Table 8) Changes in Labor Income Distribution of German Households, from 1999 to 2010

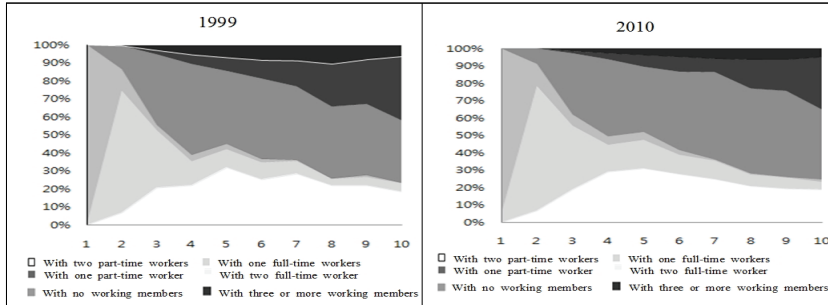
	90-10	90-50	50-10	Variance	Gini coefficient (1)	Gini coefficient (2)
1999	1.7917	0.6969	1.0948	0.6953	0.3368	0.4163
2010	2.0242	0.7164	1.3078	0.7290	0.3765	0.4347
Change ( $\Delta$ )	0.2325	0.0195	0.2130	0.0337	0.0398	0.0184

Note: The first four are log wage differentials and log variance, while the Gini coefficients were obtained from the raw household labor income data. Gini coefficient (1) does not include households with zero labor income, while Gini coefficient (2) does.

Source: GSEOP

Figure 8 shows distribution of part-time workers by quantile for 1999 and 2010. The proportion of households with one full-time worker increased noticeably in the upper income quantiles in 2010. The proportion of households with two full-time workers took a significant drop in the mid-level (fourth and fifth) deciles, while the proportions of households with one and two part-time workers increased. The proportion of households with one part-time worker grew dramatically in the first and second deciles.

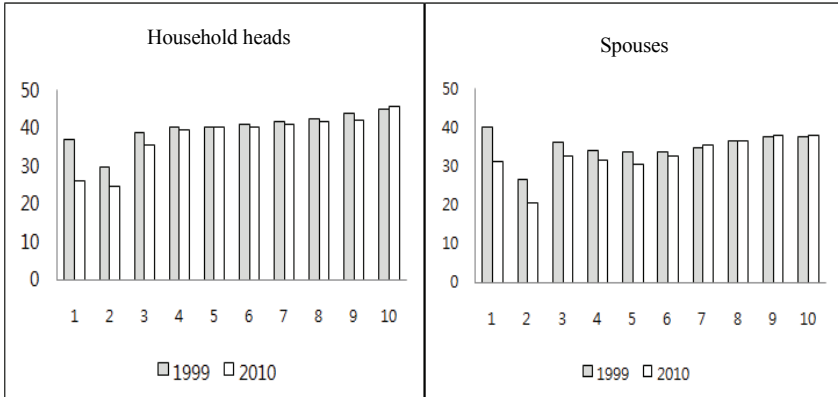
[Figure 8] Distribution of Part-time Workers, in 1999 and 2010



Source: GSEOP

Figure 9 shows the changes in the working hours of household heads and their spouses by quantile. Whereas no significant changes occurred in the upper-middle quantiles, the working hours of both household heads and their spouses showed abrupt decreases in the first and second deciles. This appears to reflect the large number of previously unemployed household members in these quantiles who entered the labor market by securing part-time jobs. This could further reduce the labor income of low-income households, by way of increases in the proportion of part-time jobs and reduced working hours.

[Figure 9] Average Working Hours by Quantile, in 1999 and 2010



Source: GSEOP

#### 4) Impact on income inequality

Table 9 summarizes the results of the unconditional quantile regression analysis that was conducted to identify the impact of increasing part-time jobs on income inequality in Germany. Here, increases in part-time work are negatively correlated to all income quantiles, but especially with respect to the lower quantiles. This is evident in the fact that all of the estimation coefficients of the proportions of part-time workers in Figure 10 are below zero, and the curves rise toward the upper right corners. The negative correlations to the lower quantiles become especially prominent in 2010, as the dotted lines change course more abruptly and remain below the solid lines. In other words, the inequality-aggravating impact of increasing part-time work continued to grow over time.

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〈Table 9〉 RIF Regression Analysis by Quantile

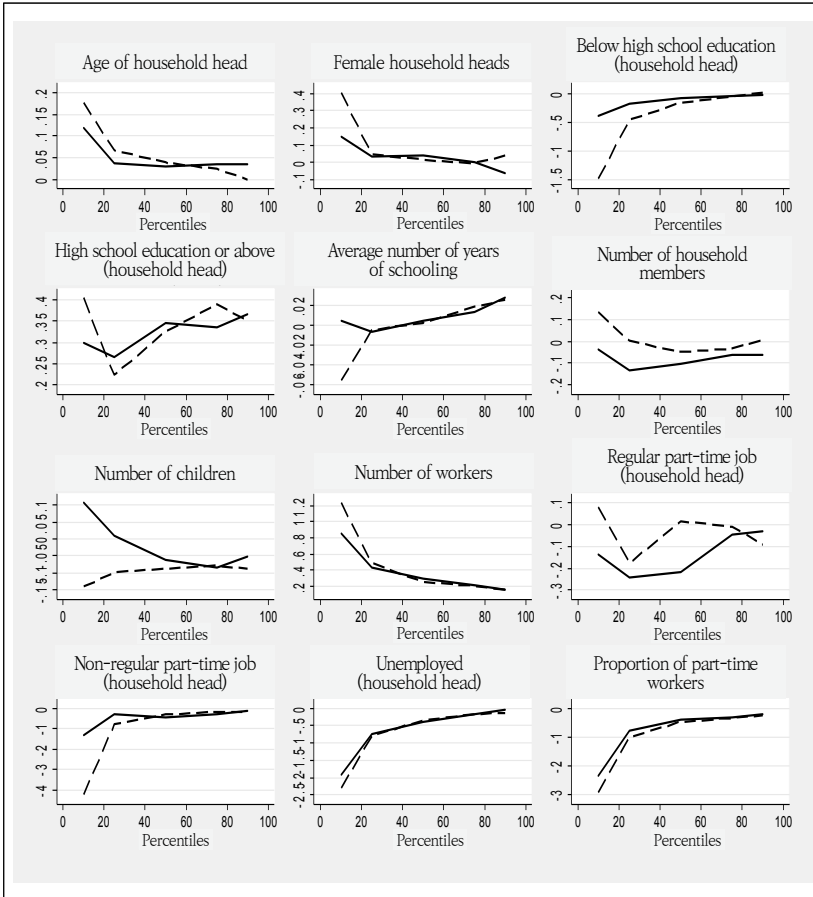
	1999	2010	1999	2010	1999	2010
	1st quantile		5th quantile		9th quantile	
Age of household head	0.118** (2.83)	0.092 (1.50)	0.029** (3.16)	0.039*** (3.93)	0.036*** (3.36)	-0.001 (-0.10)
Age of household head squared	-0.001** (-2.65)	-0.001 (-1.36)	-0.000** (-2.75)	-0.000*** (-3.57)	-0.000** (-3.05)	0.000 (0.68)
Female household heads	0.148 (1.24)	0.351* (2.21)	0.038 (1.36)	0.016 (0.53)	-0.064 (-1.69)	0.048 (1.17)
Education (Baseline = high school)						
Below high school	-0.383** (-2.73)	-1.504*** (-5.19)	-0.075* (-2.42)	-0.150*** (-3.50)	-0.018 (-0.61)	0.013 (0.23)
University or above	0.298** (2.86)	0.439** (3.03)	0.345*** (10.35)	0.313*** (9.52)	0.368*** (6.27)	0.341*** (6.80)
Average number of years of schooling	0.004 (0.26)	-0.057 (-2.41)	0.004 (0.88)	0.005 (1.06)	0.027*** (3.66)	0.024*** (3.36)
Household composition						
Number of members	-0.036 (-0.43)	0.089 (0.74)	-0.101*** (-4.92)	-0.052* (-2.28)	-0.062* (-2.43)	0.008 (0.30)
Number of children	0.106 (1.08)	-0.030 (-0.21)	-0.062* (-2.48)	-0.082* (-2.84)	-0.052 (-1.80)	-0.087* (-2.52)
Number of workers	0.861*** (9.23)	1.193*** (7.92)	0.289*** (13.46)	0.247*** (9.41)	0.156*** (5.75)	0.150*** (4.24)
Employment status of household head (Baseline = full-time job)						
Regular part-time job	-0.137 (-0.53)	0.183 (0.76)	-0.215*** (-3.76)	0.005 (0.09)	-0.032 (-0.58)	-0.098 (-1.58)
Occupational training	-1.433 (-1.57)	-1.066 (-0.79)	-0.395*** (-3.40)	-0.331*** (-5.05)	0.076 (0.51)	-0.037 (-0.67)
Non-regular part-time job	-1.303** (-2.62)	-3.840*** (-7.21)	-0.466*** (-5.58)	-0.298*** (-5.00)	-0.128** (-2.68)	-0.199*** (-4.18)
Unemployed	-1.922*** (-9.46)	-2.433*** (-7.13)	-0.384*** (-11.77)	-0.328*** (-7.74)	-0.049 (-1.57)	-0.145** (-3.12)
<b>Porportion of part-time workers</b>	<b>-2.328*** (-11.86)</b>	<b>-2.938*** (-11.24)</b>	<b>-0.409*** (-11.67)</b>	<b>-0.460*** (-11.87)</b>	<b>-0.220*** (-5.53)</b>	<b>-0.258*** (-5.40)</b>
Constant	6.350*** (7.44)	6.974*** (5.25)	9.534*** (47.85)	9.282*** (42.67)	9.854*** (44.25)	10.40*** (39.19)
N	4,681	5,484	4,681	5,484	4,681	5,484
adj. R2	0.307	0.315	0.318	0.258	0.123	0.092

Note: The values in parentheses are t-values. The asterisks, \*, \*\*, and \*\*\*, signify statistical significance at the levels of five percent, one percent, and 0.1 percent, respectively.

Source: GSEOP



[Figure 10] Changes in Coefficients of Unconditional Quantile Regression Analysis



Note: Solid lines represent 1999, while dotted lines represent 2010  
 Proportion of part-time workers  
 Source: GSEOP

Table 10 shows the results of the factor decomposition on changes in income inequality in Germany between 1999 and 2010. The fact that all changes in the indices are positive in-

icates that household income inequality deteriorated during this period. This is particularly evident in the case of the log wage differentials between 50th and 10th percentile. The factor decomposition revealed that the price effects accounted for most of the increase in inequality measured by all indices, except for the variance.

In particular, the proportion of part-time workers was the common and most decisive factor of increasing inequality, except for the log wage differentials between 90th and 50th. The decrease in income inequality in the upper and middle quantiles may be related to the marginal state of change in the inequality coefficients pertaining to those quantiles. The characteristic effects, however, produced contrary results. While the factor decomposition of inequality measured by the log wage differentials points to the inequality-aggravating effect of increasing part-time work, the case is the opposite with respect to the variance and Gini coefficients. While the Gini coefficients are close to zero, caution must still be taken in terms of their interpretation.

(Table 10) Factor Decomposition Results

	90-10	90-50	50-10	Variance	Gini coefficient
1999	1.5816	0.6106	0.9710	0.6953	0.0421
2010	1.7845	0.6359	1.1486	0.7231	0.0445
Difference	0.2029	0.0253	0.1775	0.0279	0.0023
Characteristic effects	0.0299	0.0038	0.0260	0.0223	0.0007
Age	-0.0658	-0.0125	-0.0534	-0.0093	-0.0003
Female household heads	-0.0091	-0.0046	-0.0045	0.0040	0.0000
Education	-0.0121	0.0016	-0.0137	-0.0078	-0.0004
Household composition	0.0189	-0.0048	0.0236	0.0050	0.0001
Number of workers	0.0139	0.0001	0.0138	0.0425	0.0014
<b>Proportion of part-time workers</b>	<b>0.0842</b>	<b>0.0240</b>	<b>0.0602</b>	<b>-0.0122</b>	<b>-0.0001</b>
Price effects	0.1730	0.0215	0.1515	0.0056	0.0016
Age	0.0333	-0.5909	0.6241	0.6819	0.0090
Female household heads	-0.0093	0.0554	-0.0648	-0.0887	-0.0020
Education	0.5744	-0.0441	0.6185	0.3073	0.0088
Household composition	-0.0015	0.0465	-0.0480	-0.1494	-0.0040
Number of workers	-0.3485	0.0256	-0.3741	0.1179	0.0009
<b>Proportion of part-time workers</b>	<b>0.1486</b>	<b>-0.1004</b>	<b>0.2490</b>	<b>0.0319</b>	<b>0.0008</b>
Constant	-0.2240	0.6293	-0.8533	-0.8954	-0.0119

It is difficult to derive a decisive conclusion regarding the correlation between increasing part-time work and income inequality in Germany based on this analysis. The Gini coefficients seem to show that income inequality in Germany has grown less, but by a minuscule margin. Given the fact that the changes in the log wage differentials between 50th and 10th appear to account for much of the overall increase in inequal-

ity, low-income quantiles below the median income level appear to be experiencing worsening inequality due to the increase in part-time work.

Germany provides better legal and policy protection for part-time workers than Korea, by ensuring that part-time workers who wish to work longer hours are given priority when filling vacant positions and giving workers the option to reduce their working hours. Nevertheless, part-time work in Germany serves to worsen income inequality below the median income level, as it does in Korea, most likely because the mini-jobs that have multiplied dramatically in recent years fail to provide the same quality associated with conventional part-time work in Germany. With the German government having introduced a minimum wage in 2015, it remains to be seen how the new minimum wage policy will affect income distribution in the country in conjunction with the increasing number of mini-jobs.

# IV

## Policy Implications



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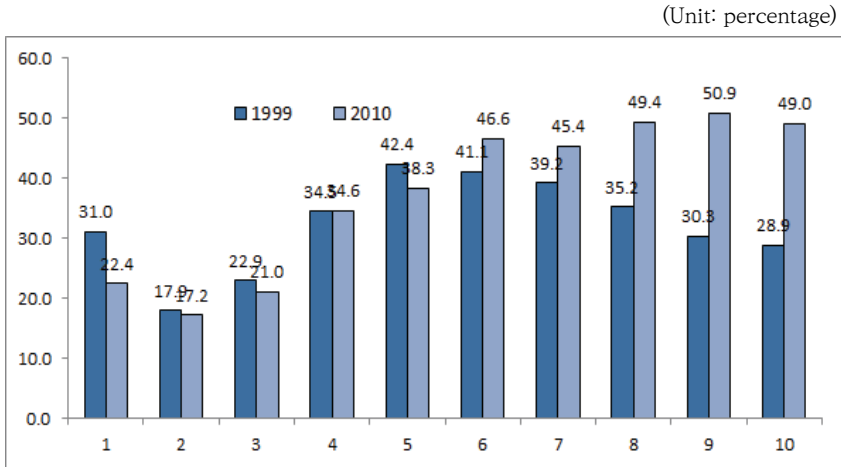
# IV

## Policy Implications <<

The impact of increasing part-time work on household income distribution and inequality in Korea and Germany, as identified by this study, contrasts with the findings of Kang (2015). Kang uses the mean log deviations among groups to analyze the Socio-Economic Panel Survey of 1999 and the Survey on Income and Living Conditions (EU-SILC) of 2010, both concerning the Netherlands. Figure 11 shows that, unlike in Korea, part-time workers are distributed widely across the middle and upper income quantiles in the Netherlands. Table 11 suggests that the increase in income inequality in the Netherlands in 1999 and 2010 is attributable mainly to households with full-time workers (94.8 percent), and that part-time work indeed served to alleviate overall inequality (Kang, 2015).

58 Impact of Increasing Part-Time Work on Income Inequality

[Figure 11] Changes in Proportions of Households with Part-Time Workers by Quantile



Source: Kang (2015)

<Table 11> Factor Decomposition on Household Labor Income Inequality, 1999 to 2010

	In-group inequality	Inter-group inequality	Change in proportion	Absolute contribution	Relative contribution (%)
Households, including part-time workers	-0.0103	-0.0441	0.0555	0.0010	5.2
Households with full-time workers only	0.0158	0.0298	-0.0271	0.0185	94.8
Total	0.0055	-0.0144	0.0284	0.0195	
	28.2	-73.8	145.6		

Source: Kang (2015)



If we were to compare the quality of part-time work in Korea, Germany, and the Netherlands by placing the countries on a spectrum, Korea and the Netherlands would be located at opposite ends of the spectrum, with Germany's traditional part-time work located closer to the Dutch end, and the mini-jobs that have multiplied over the last decade standing closer to the Korean end. The introduction of flexible and low-wage jobs, such as mini-jobs, with significantly reduced social insurance and tax burdens, does appear to have increased the demand for labor among employers (Kim and Lee, 2014). The Dutch government, on the contrary, has increased people's willingness to hold part-time jobs by providing legal and policy measures that serve to minimize the disparity between full- and part-time jobs. Korea's policy measures concerning part-time work and the quality of part-time jobs appear more similar to those of the mini-jobs in Germany and non-regular part-time jobs in Japan (Lee, 2011).

In order to prevent the increasing availability of part-time work from aggravating income inequality, it is crucial to provide workers with part-time jobs that they would actually want to take in order to achieve better work-life balance. Such part-time jobs will be those that pay the same wage rates as full-time jobs (with lower wages for fewer hours worked), provide social insurance and fringe benefits, and enable workers to convert to full-time positions at their discretion. Such jobs will

attract not only lower-income households, but also middle- and even upper-income households.

The current state of the Korean law and labor market is not so amenable to increasing such decent part-time jobs. The right to adjust working hours is exercised only in a handful of cases, and the policy guidelines on providing direct and indirect benefits in proportion to working hours lack binding power. Most crucially, part-time workers in Korea lack labor unions or collective bargaining systems that would enable them fight for and win their rights. Lee (2011) points out that workers in countries such as the Netherlands and Sweden that enjoy flexible working hours and strong policy protection, in fact, are backed by powerful trade unions and collective bargaining systems that bring the laws and institutions into the framework of collective bargaining. In Korea, there are almost no similar institutional resources capable of assisting in the realization of similar policies and protection.

Job insecurity is prevalent in many countries worldwide today, including Korea, and part-time work is only one of the forms in which it manifests. The proliferation of non-regular jobs in Korea in the wake of the Asian financial crisis in the late 1990s has led the country to have one of the highest proportions (21.7 percent) of temporary workers among its wage-earning population, after only Chile, Poland, and Spain, among OECD member states (OECD, 2015). The precarious na-

ture of part-time work is evident in the fact that over 70 percent of part-time workers in Korea work at a given job for less than one year. Even if the Korean legislature and government were to introduce and improve legal measures for increasing flextime work, the vast majority of part-time workers would see little improvement in their situation so long as employers have multiple other forms of non-regular employment to which they could resort. In other words, policy measures for part-time work can be successful only if they also improve the security of other non-regular jobs.

The prevalence of low-wage jobs coupled with the increase in part-time work will further fuel the growth of income inequality in Korea. As of 2014, Korea had the second-highest ratio of low-wage earners to total working population among OECD countries, second only to the United States (OECD, 2015). Following its introduction of mini-jobs, the German government sought to solve the low-wage problem by introducing a statutory minimum wage in January 2015. Kim and Lee (2014) stress the need to introduce and enhance such labor and welfare policy measures in line with increasing part-time work.

There is a growing public discourse on how to make part-time work a decent form of employment for people wishing to achieve a better work-family balance.. There have also been increasing debates on expanding the coverage of unemployment insurance to include partial unemployment bene-

fits and strengthening the right of workers to request reduced working hours. The low wages and insecurity of part-time jobs in Korea, furthermore, call for public welfare policies catering to the poor, the majority of whom are forced to work such jobs, to be increased and strengthened as well.

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