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Decomposing the Growth of Part-time Work in South Korea, 2010-2024†

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This paper examines the factors contributing to the growth of part-time work in South Korea from 2010 to 2024, during which the fraction of part-time workers doubled. A decomposition analysis suggests that changes in the workforce composition account for approximately 30 percent of this growth, primarily driven by workforce aging. However, the explanatory power drops to around 10 percent when excluding workers likely to participate in a government program providing part-time jobs for older workers. This limited explanatory power is attributed to substantial within-group increases and a declining fraction of young workers, partially offsetting the expansion of older workers. These findings suggest that further research is needed to investigate factors beyond compositional changes to explain the recent growth of part-time work in South Korea.

Key Words: Part-time Work, Decomposition, Senior Employment Program
JEL Code: J11, J21, J22, J14

I. Introduction

Although South Korea is known for its long working hours, the distribution of working hours has changed substantially in recent years. A more studied shift is the decline in long working hours, partly driven by policy efforts such as the implementation of the 52-hour workweek (Kang and Park, 2023; Carcillo *et al*., 2024).

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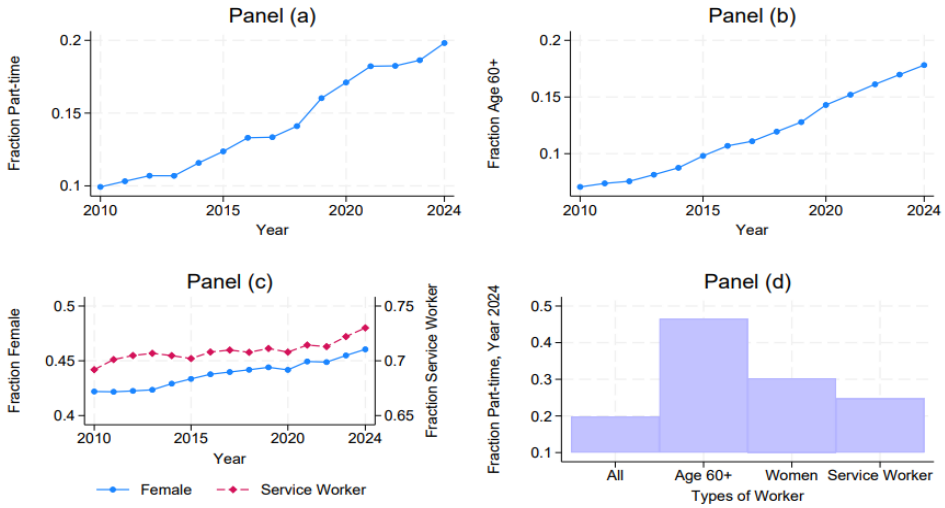

FIGURE 1. FRACTION OF PART-TIME WORKERS BY YEAR AND TYPE

Notes: Economically Active Population Survey by Employment Type. Panel (a) shows the fraction of part-time workers—defined as those who usually work less than 36 hours per week—among the workforce aged 16-84, excluding self-employed workers. Panel (b) shows the fraction of older workers aged 60 or more. Panel (c) shows the fraction of female (blue), and service sector employees (red dotted). Panel (d) shows the fraction of part-time workers by worker type, using data from 2024.

In contrast, the substantial growth of part-time work has received relatively little academic attention. As shown in Figure 1 Panel (a), the fraction of part-time workers —defined as those who usually work less than 36 hours per week—doubled between 2010 and 2024. However, the causes and consequences of this increase remain largely underexplored.

Over the same period, the composition of the South Korean workforce also changed substantially. For example, the fraction of workers aged 60 or older increased from 7.1 percent to 17.8 percent, as illustrated in Panel (b) of Figure 1. Labor force participation among women, especially married women, has also risen (Kim, J., 2023), and the service sector has expanded, resulting in modest upward trends of the fraction of those workers (Panel (c) of Figure 1). These groups are more likely to work part-time, as illustrated in Panel (d) of Figure 1.

A natural question arising from Figure 1 is how much of the growth in part-time work can be explained by observable shifts in workforce characteristics, such as age, gender, and industry. If a large portion of the increase is driven by these compositional changes—which are likely to persist—then the growth of part-time work may continue. In contrast, if such changes explain only a small portion, alternative explanations should be explored, including shifts in worker preferences, institutional changes, or labor market policies.

This paper investigates the extent to which compositional changes in the workforce account for the growth in part-time work in South Korea. To address this question, I apply the decomposition method developed by DiNardo *et al*. (1996, hereafter DFL) to data from the Economically Active Population Survey by Employment Type (hereafter EAPS-ET) covering the years 2010 to 2024. The EAPS-ET is a nationally representative, CPS-like household survey that provides

information on usual weekly working hours and worker characteristics.

Using the DFL decomposition method, I find that compositional changes account for approximately 30 percent of the increase in part-time work. Among these, workforce aging is the only factor that plays a substantial role; changes in gender, marital status, and industry contribute little to the explanatory power. Further analysis suggests that the influence of workforce aging is primarily driven by the expansion of the government's Senior Employment Program, which offers low-wage, part-time public jobs to older workers. When workers likely to participate in this program are excluded, the combined explanatory power of all compositional factors falls to around 10 percent.

To understand the limited role of compositional changes, I provide two explanations. First, there has been substantial within-group growth in part-time work. The fractions of part-time workers increased for over 80 percent of age-gender-industry groups. Second, although the fraction of older workers has increased, this shift has been partially offset by a decline in the fraction of younger workers—another feature of workforce aging.

This study contributes to several strands of the literature. First, it extends the literature on the causes of the growth of part-time work in South Korea. While many studies have documented the growing trend in part-time work (e.g., Hwang and Park, 2014; Lee, 2020), few have empirically analyzed its causes. Some exceptions are found in the minimum wage literature (e.g., Cho and Ko, 2021; Kim *et al*., 2023), but little effort has been made to quantify the role of compositional changes in the workforce. To the best of my knowledge, this is the first study to apply a decomposition framework to the growth of part-time work in the South Korean context.

More broadly, this paper contributes to the literature on the determinants of the workweek and the corresponding changes in the South Korean labor market. Although it is widely recognized that the average workweek remains long but has shortened in recent years (Lee, 2020; Kim. M., 2023), most studies have focused on the decline in long working hours, including the connection with government policies that reduce the length of the workweek (Lee and Lee, 2016; Park and Park, 2019; Kang and Park, 2023; Carcillo *et al*., 2024). In contrast, the factors behind the growth of part-time work and the related impacts remain largely underexplored. This work fills the gap in the literature by quantifying the contribution of compositional changes.

The present study also contributes to a small but long-standing strand of the international literature on the determinants of part-time work, including studies from the United States (Leppel and Clain, 1988; Blank, 1989; Tilly, 1991; Buchmueller, 1999; Valletta *et al*., 2020) and Europe (Euwals and Hogerbrugge, 2006; Miežienė *et al*., 2021). Much-studied compositional factors, such as increases in women's labor force participation (Tilly, 1991; Euwals and Hogerbrugge, 2006) and shifts in industries (Leppel and Clain, 1988; Fallick, 1999), do not play a substantial role in the South Korean case. Furthermore, this paper finds that workforce aging, a widespread phenomenon in developed countries that is underexplored in the literature on part-time work, has complicated implications for such work. On the one hand, the expansion of older workers contributes to the growth of part-time work. However, the decline of young workers, another feature of workforce aging, slows the growth of part-time work. This finding suggests that future international research may also need to investigate the relationship between workforce aging and changes in the workweek.

The remainder of the paper is organized as follows. Section 2 describes the data.

Section 3 outlines the empirical strategy, based on the decomposition method developed by DFL. Section 4 presents the empirical findings and examines the role of the Senior Employment Program. Section 5 discusses the reasons behind the limited explanatory power of compositional changes. Section 6 concludes the paper.

II. Data

This paper employs observations from the Economically Active Population Survey by Employment Type (EAPS-ET) for the years 2010 to 2024. The Economically Active Population Survey (EAPS) is a nationally representative monthly survey providing information on labor market outcomes in South Korea. However, it provides information on only a limited number of variables. For example, regarding working hours, the EAPS collects information only on actual hours worked during the reference week. This measure is known to be highly volatile and subject to measurement error due to factors unrelated to labor market conditions, such as the presence of holidays in the reference week.

To address these limitations, this study relies on the Supplement by Employment Type, which is administered each August. The relationship between the main monthly survey and its Supplement is analogous to that between the CPS Basic Monthly Survey and the CPS Supplements in the United States. The Supplement provides more detailed information on labor market outcomes, including usual weekly working hours, and serves as the primary data source for the analysis in this paper.

The sample is restricted to wage and salary workers aged 16 to 84. Individuals aged 85 or older are excluded due to an insufficient sample size for a decomposition analysis. Self-employed workers and unpaid family workers are also excluded. In addition, respondents who report zero usual working hours are excluded from the sample. Finally, workers in the mining sector, those employed by international organizations, and those in household employment are excluded owing to their small sample sizes. Following these restrictions, the final sample comprises 381,858 observations, or approximately 25,000 observations per year.

The primary variable of interest, part-time work, is constructed based on the respondents' usual working hours per week in their primary job. Specifically, a part-time worker is defined as one whose usual weekly working hours amount to less than 36, consistent with the official definition by Statistics Korea (KOSTAT). Explanatory variables include age, sex, marital status, and educational attainment, with the latter categorized into five levels. The analysis also controls for industry and occupation fixed effects using consistent industry codes. After excluding the three aforementioned small industries—mining, international organizations, and household employment—the dataset retains 16 major industry categories, as described in Appendix A. Summary statistics of the main variables are provided in the next section, along with a detailed description of the empirical strategy used in this paper.

III. Empirical Strategy

As shown in Figure 1, part-time work has become more common in the South Korean labor market over the past 15 years. Over the same period, the numbers of older workers, women, and employees in the service industry have also increased. It is therefore natural to ask how much of the increase in part-time work can be attributed to changes in the distribution of observable characteristics, such as age, sex, and industry. Specifically, if the composition of the workforce had remained the same as in 2010, what would the distribution of working hours have been in subsequent years, and how much of the growth of part-time work cannot be explained by these compositional shifts? Addressing these questions is crucial for understanding the underlying causes of the growth of part-time work.

To quantify the proportion of the change in a variable of interest attributable to changes in observable characteristics, labor economists have developed various decomposition methods, following the classic work of Oaxaca (1973) and Blinder (1973). This study employs the reweighting approach proposed by DiNardo *et al*. (1996), enabling the analysis of how changes affect the entire distribution, not just the mean.

The key idea of the DFL method is to isolate the effect of compositional changes by constructing counterfactual weights. These new weights reweight the distribution of covariates in a given year to match the distribution in a reference year. Whereas the classical Oaxaca-Blinder method is limited to mean differences, the DFL approach enables an analysis of the full outcome distribution. However, the method is subject to a path-dependence problem, as discussed by Fortin *et al*. (2011).

Formally, let $F(h,x\,|\,t)$ denote the joint distribution of working hours h and observable characteristics x at time t. Then, the probability distribution function $f_{\mathrm{x}}(h)$ can be expressed as follows:

$$f_x(h)=\int_{x\in\Omega_x} dF\left(h,x\,|\,t_{h,x}=t\right)=f\left(h;t_h=t,t_x=t\right)$$

Here, t_h and t_x represent the time of the outcome variable and the covariates, respectively. For example, $f\left(h;t_h=2024,t_x=2024\right)$ represents the actual distribution of working hours in 2024, while $\mathrm{f}\left(\mathrm{h};\mathrm{t_h}=2024,t_x=2010\right)$ denotes a hypothetical distribution of working hours in 2024 if the distribution of covariates is fixed to that of 2010. This strategy allows us to isolate the portion of the observed change in working hours that is attributable to changes in the composition of observable characteristics. This hypothetical density can be expressed as follows:

$$\begin{aligned} f\left(h;t_h=2024,t_x=2010\right)&=\int f\left(h\,|\,x,t_h=2024\right)dF\left(x\,|\,t_x=2010\right)\\ &\equiv\int f\left(h\,|\,x,t_h=2024\right)\psi_x dF\left(x\,|\,t_x=2024\right)\end{aligned}$$

The reweighting function, $\psi_x(x)$ is defined as $\psi_x(x)\equiv dF\left(x\,|\,t_x=2010\right)/dF(x\,|\,t_x=2024)$. By applying Bayes' rule,

$$\psi_x(x) = \frac{\Pr(t_x = 2010 \mid x)}{\Pr(t_x = 2024 \mid x)} \cdot \frac{\Pr(t_x = 2024)}{\Pr(t_x = 2010)}$$

$\Pr(t_x = 2010 \mid x)$ can be estimated by logit regression using observations from the years 2010 and 2024. For x variables, I use the set of age fixed effects (each age), sex, categorical variable of education, marital status, industry, occupation, and firm size fixed effects.

This DFL procedure captures the contribution of changes in the joint distribution of all observable characteristics to the growth of part-time work. To evaluate the marginal contribution of each covariate, I apply the sequential reweighting approach proposed by Fortin *et al*. (2011), which addresses the path-dependence problem. During reweighting procedures, the order in which covariates are introduced can affect the results, making it difficult to isolate the effect of a specific variable. The sequential method mitigates this issue by estimating the full reweighting function using all covariates and then re-estimating it while excluding one covariate at a time. The joint distribution of all other variables then remains fixed, while the excluded

TABLE 1—SUMMARY STATISTICS WITH ACTUAL AND DFL WEIGHTS FOR SELECTED YEARS

	2010	2015		2020		2024	
	Actual	Actual	DFL	Actual	DFL	Actual	DFL
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Age	40.554	42.289	40.467	44.270	39.991	45.436	39.219
	(12.116)	(13.028)	(12.144)	(13.841)	(12.176)	(14.364)	(12.173)
Age 16-29	0.214	0.189	0.216	0.175	0.229	0.161	0.253
Age 30-39	0.283	0.250	0.284	0.221	0.292	0.215	0.293
Age 40-49	0.269	0.261	0.268	0.241	0.258	0.223	0.253
Age 50-59	0.164	0.202	0.162	0.220	0.151	0.223	0.135
Age 60+	0.071	0.098	0.071	0.143	0.070	0.178	0.066
Less than HS	0.152	0.128	0.151	0.112	0.162	0.091	0.179
High School Graduate	0.330	0.320	0.329	0.298	0.327	0.285	0.328
Some College	0.215	0.213	0.215	0.211	0.212	0.211	0.203
B.A.	0.250	0.285	0.251	0.320	0.247	0.350	0.238
Above B.A.	0.053	0.054	0.054	0.059	0.053	0.063	0.052
Male	0.578	0.566	0.582	0.558	0.591	0.540	0.603
Married	0.651	0.629	0.654	0.603	0.653	0.582	0.644
Manufacturing	0.207	0.210	0.206	0.194	0.207	0.181	0.202
Service	0.692	0.702	0.692	0.708	0.682	0.730	0.681
Observations	26378	25454	25454	24900	24900	25555	25555

Notes: EAPS-ET. Columns with 'Actual' are weighted by actual weights, and columns with 'DFL' are weighted by DFL weights. To construct DFL weights, age (each year), education (five categorical variables), sex, marital status, occupation (9 occupations), industry (16 industries), and firm size (six categories) are used. Standard deviations are in parentheses, while those of indicator variables are omitted. In Table 1, service industries include 'Wholesale and Retail Trade', 'Transportation and Storage', Accommodation and Food Service Activities', 'Information and Communications', 'Financial and Insurance Activities', 'Real Estate, Business Facilities Management, and Professional and Scientific Activities', 'Public Administration and Defense; Compulsory Social Security', 'Education', 'Human Health and Social Work Activities', 'Arts, Sports, and Recreation Related Services', 'Membership Organizations, Repair, and Other Personal Services'. See Table A1 for details.

variable is allowed to change over time. The change in the resulting outcome distribution reveals the explanatory power of the excluded variable.

To evaluate the performance of the reweighting procedure, I compare the actual and reweighted distributions of observable characteristics included in the reweighting. With proper DFL weights, the reweighted distribution should closely resemble that of the reference year. Table 1 presents actual and DFL-weighted distributions for selected variables in four reference years: 2010, 2015, 2020, and 2024. Results for the full sample period and the complete set of covariates are reported in Appendix B.

Table 1 highlights several interesting changes in the South Korean labor market over the 15-year period studied here. First, it reflects the workforce aging: the average age of workers increased from 40.6 in 2010 to 45.4 in 2024, with the fraction of those under 30 declining from 21.4% to 16.1% and the fraction of those aged 60 or older rising from 7.1% to 17.8%. Second, educational attainment improved, with a 10 percentage-point increase in the proportion of workers holding a bachelor's degree and a slight increase in those with advanced degrees. Third, the workforce has become more female and less likely to be married. Finally, the proportion of workers in manufacturing declined, while employment in the service sector grew. Collectively, these changes highlight the significance of evaluating how such compositional shifts contribute to the observed increase in part-time work.

Turning to the columns with DFL weights, the reweighted distributions show relatively little change over time. While the actual distributions change substantially, the DFL-weighted distributions remain broadly similar to their 2010 counterparts. This contrast indicates that the DFL weights effectively neutralize compositional shifts. Although the fractions of younger workers and those without a high school diploma are slightly overestimated, the discrepancies are modest. Overall, Table 1 shows that the DFL reweighting procedure performs well in replicating the covariate distribution of the reference year, lending credibility to the counterfactual analysis that follows.

IV. Empirical Results

A. *Baseline Results*

Figure 2 illustrates the main empirical findings. The blue line shows the fraction of part-time workers using actual weights, while the red line shows the fraction calculated with counterfactual, DFL weights. The red line represents the fraction of part-time workers in 2024 if the distribution of all observable characteristics—such as age, education, and industry—had remained the same as in 2010. The gap between the blue and red lines indicates the fraction of the overall change attributable to shifts in the joint distribution of worker characteristics.

The blue line in Figure 2 shows a substantial increase in the fraction of part-time workers in the South Korean labor market over the past 15 years. In 2010, the fraction of workers working less than 36 hours per week was 9.9%; by 2024, it had doubled to 19.8%. Although part-time workers are still considered 'irregular' workers under official classifications in South Korea, this type of job has become substantially more widespread in recent years.

Given the above, how much of the increase can be explained by changes in the workforce composition? Figure 2 shows that changes in the workforce composition explain only a limited fraction of the increase. The red line shows that even under the counterfactual scenario in which the joint distribution of observable characteristics remained identical to that in 2010, the fraction of part-time workers would have reached 16.5% by 2024. This suggests that, despite significant workforce aging over the past 15 years and shifts in other observable characteristics, only about one-third of the increase in the fraction of part-time workers can be attributed to compositional changes.

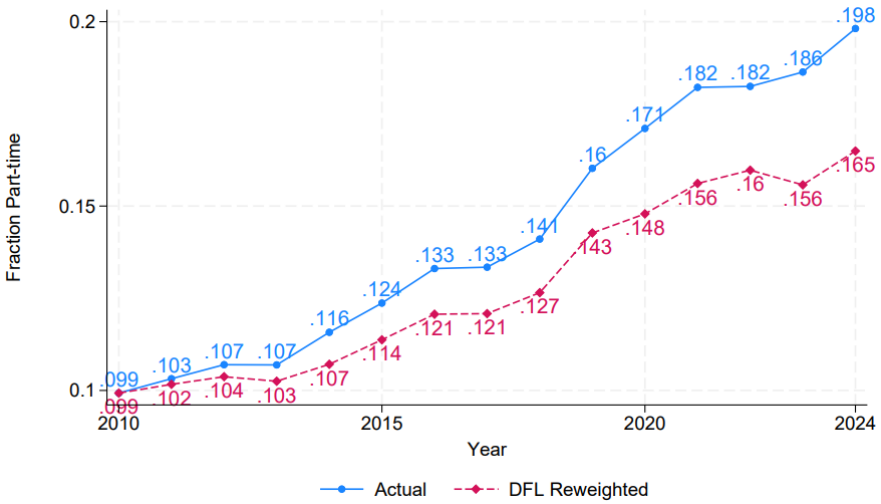

FIGURE 2. FRACTION OF PART-TIME WORKERS WITH ACTUAL AND DFL WEIGHTS

Notes: EAPS-ET. The blue line shows the actual fraction of part-time workers, defined as those who work less than 36 hours per week. The red dotted line shows the fraction of part-time workers as calculated by DFL weights.

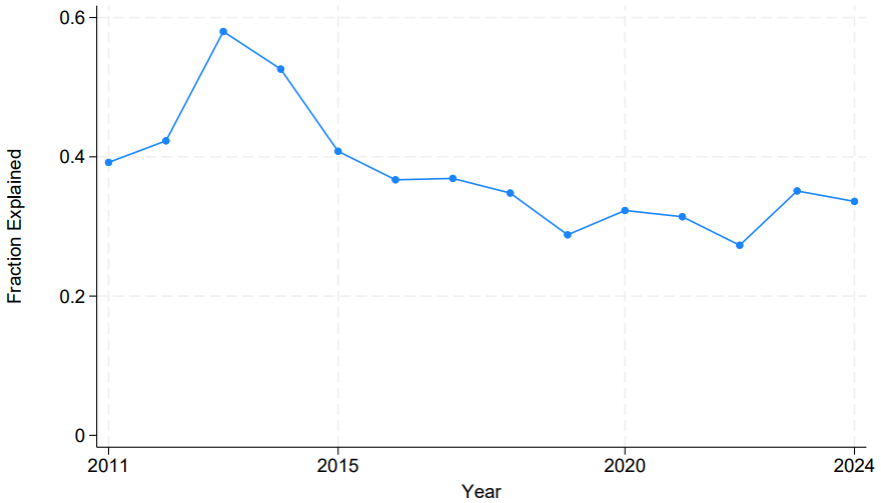

FIGURE 3. THE FRACTION EXPLAINED, 2010-2024

Notes: EAPS-ET. Each bar represents the explained fraction, as measured by the proportion of the gap between the blue and red lines in Figure 2 for each year, compared to the increase from the reference year, 2010.

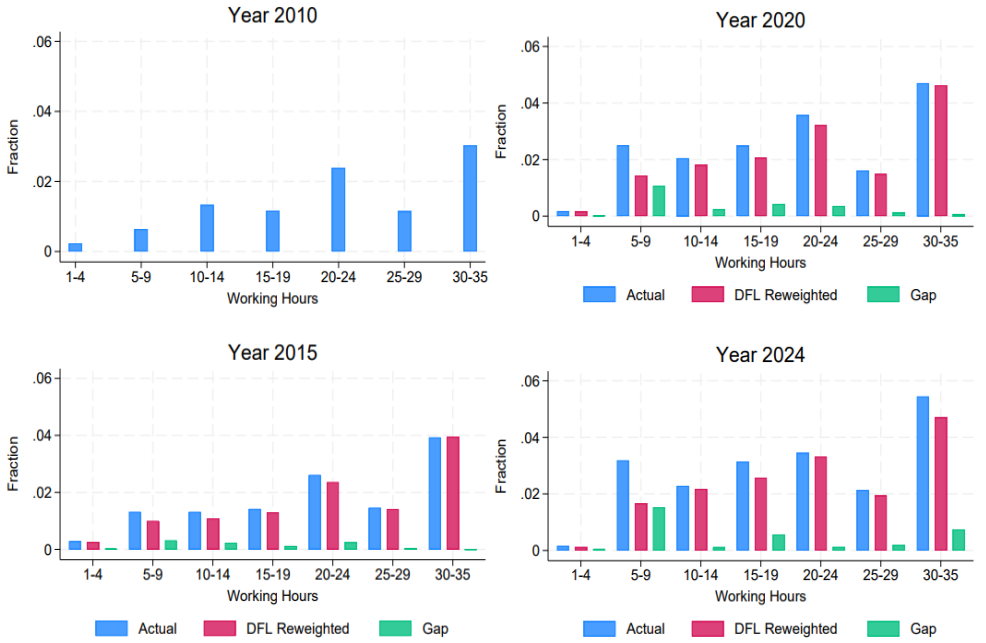

FIGURE 4. DETAILED ACTUAL AND COUNTERFACTUAL DISTRIBUTION OF WORKING HOURS

Notes: EAPS-ET. The blue bars show the actual fraction of workers working specific hours. The red bars show the fraction of workers working specific hours, as calculated by DFL weights.

Figure 3 presents the explained fraction among changes, defined as $Exp_t = \frac{Actual_t - DFL_t}{Actual_t - Actual_{2010}}$. $Actual_t$ represents the fraction of part-time workers in year t using actual survey weights, and DFL_t denotes the fraction using DFL weights. As shown in Figure 3, the explained fraction attributable to compositional changes remains relatively stable at around 30 percent throughout most of the period, except for the early years. These results reinforce the finding that only about one-third of the overall increase in the fraction of part-time workers can be attributed to compositional changes in the workforce.

Given the substantial heterogeneity in working hours among part-time workers, it is worthwhile to examine whether the explanatory power of compositional changes varies across different hour ranges. Figure 4 presents a more granular analysis for selected years, where part-time work is decomposed into narrower bins. Each bin spans approximately five hours, with thresholds adjusted to be consistent with the official definition of part-time work.

In Figure 4, the blue bars show the fraction of workers in each hour bin with actual weights, and the red bars denote the fraction with DFL weights. The green bars show the gaps between the two, referred to here as the 'explained' increase. In the later years shown in Figure 4, the blue bars are particularly large in the 5–9 hour bin. In 2024, for example, 3.2 percent of workers reported working 5 to 9 hours per week, whereas the DFL-weighted estimate for this bin is only 1.7 percent. This suggests that compositional changes—particularly workforce aging—account for a 1.5 percentage

point increase in this specific bin. Given that the total gap between actual and counterfactual part-time work in 2024 is 3.3 percentage points (as shown in Figure 2), nearly half of the explanatory power derives from this particular hour bin. Excluding this bin, compositional changes explain only about 10 percent of the overall increase in part-time work. This raises the question of why that specific hour bin differs from the others. This question will be scrutinized in Section IV. C.

B. *The Contribution of Each Factor*

The analysis in the previous section examines the contribution of changes in the joint distribution of worker characteristics. A follow-up question asks which factor contributes the greatest amount of explanatory power. To answer this, I examine the contribution of each component individually using the method proposed by Fortin *et al*. (2011). Among various factors, Figure 5 focuses on two: age and sex. The green and yellow lines show the counterfactual fraction of part-time workers using DFL weights that exclude one specific variable—age or sex, respectively. Again, the gap between the blue and red lines reflects the total explanatory power of all included variables. The gap between the green and red lines isolates the contribution of age, and the gap between the yellow and red lines does so for the contribution of sex. Additional results for other variables are reported in Appendix C.

Figure 5 shows that changes in the age distribution contribute the greatest amount of explanatory power. The gap between the blue and green lines—representing the explanatory power of all factors except age—is minimal. The contribution of rising female labor force participation is small, and other factors—discussed in Appendix C—contribute minimally. Overall, the compositional shifts in the workforce over the past 15 years offer limited explanatory power for the rise in part-time work, with

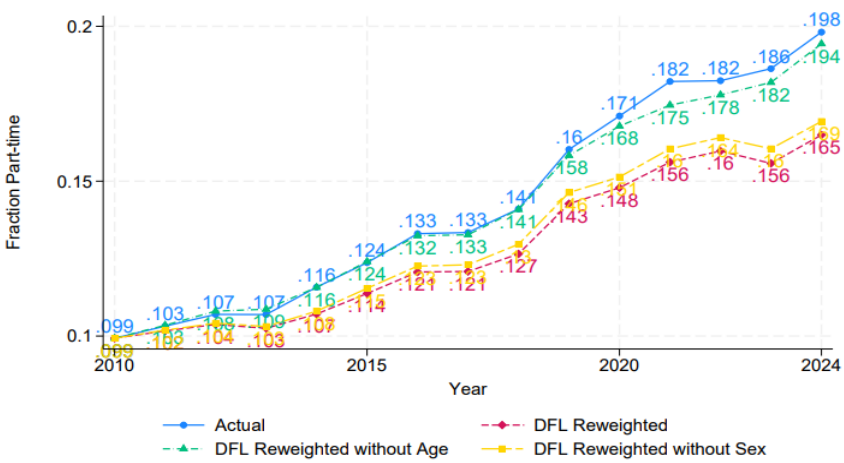

FIGURE 5. CONTRIBUTIONS OF AGE AND SEX

Notes: EAPS-ET. The blue line shows the actual fraction of part-time workers, defined as those who work less than 36 hours per week. The red dotted line shows the fraction of part-time workers calculated according to DFL weights. The green (triangle dot) and yellow (square dot) lines show the fraction of part-time workers calculated by DFL weights, excluding age (green) and sex (yellow) when constructing the DFL weights, respectively. Similar results for other variables are reported in Appendix C.

workforce aging emerging as the only factor contributing significant explanatory power.

In Appendix D, I provide results from an additional exercise. The analysis above controls for the joint distribution of characteristics that are fixed, except for one specific variable. In Appendix D, I construct DFL weights only using one specific variable, meaning that the joint distributions of other characteristics are allowed to change, while a particular variable is fixed. The analysis in Appendix D reinforces the finding that age provides the most significant explanatory power. In contrast to the results in this section and Appendix C, however, other variables also provide more or less explanatory power, except for education, which contributes to reducing part-time work.

The gap between the results in Appendices C and D can be understood as follows. In Appendix C, I control for the joint distribution of other variables, holding them constant, thereby allowing me to net out the contribution of one specific variable. In Appendix D, I allow the joint distribution of other variables to change over time, while holding one particular variable constant. Given that a change in one variable is correlated with others, as in the expansion of older workers in the low-skilled service industry, controlling for one particular variable also partially controls for the joint distribution of other variables. Therefore, the contributing power of a particular variable becomes larger, as shown in Appendix D.

The empirical results in this section suggest that most of the explanatory power stems from the change in the age distribution, i.e., workforce aging. Combining this result with the analyses from Figure 4 suggests that older workers associated with the specific 5-9 hour bin, rather than the broader workforce aging trend, provide the most explanatory power. The next section will explore why.

C. *Role of the Senior Employment Program*

The analysis in the previous section suggests that a specific factor may be influencing older workers who work 5–9 hours per week. The 5–9 hour bin accounts for a disproportionately large share of the explained increase in part-time work. Given that workforce aging contributes the most to the explanatory power, any factor influencing this hour bin is likely related to older workers.

A strong candidate is the Senior Employment Program, a government program aimed at addressing severe poverty among the elderly in South Korea. The program offers part- time, low-wage jobs to individuals aged 65 or above, providing both income support and opportunities for social engagement.[1] In response to the persistently high poverty rate among the elderly in South Korea (Lee, 2023), the program has expanded significantly in recent years, in terms of both budget and the number of participants (Choi and Cho, 2023). The most common format, the "public" type, typically requires participants to work 30 hours per month, placing participants in the 5–9 hours per week range.

While the available data do not provide identifiers for program participation, it is

[1]For details about this program, see Choi and Cho (2023).

possible to infer likely participants using the methodology proposed by Cho and Ko (2021) and Choi and Cho (2023). This approach identifies workers aged 65 and older who are employed in certain service industries and report monthly earnings that exactly match the program's official payment amount as likely participants.[2] Although indirect, this method offers a practical way to approximate participant status in the absence of explicit identifiers.

The validity of this method is supported by the evidence in Table 2. A significant fraction of older part-time workers report monthly earnings that precisely align with the program's monthly payment in each corresponding year. For instance, among part-time older workers, the fraction of those who earn exactly 220,000 KRW increased from 0.5 percent in 2016 to 32.9 percent in 2017, the year in which the program payment was raised from 200,000 KRW to 220,000 KRW. Similarly, the fraction reporting 220,000 KRW dropped to 1.8 percent in 2018 when the official payment rose to 270,000 KRW. These sharp shifts, closely aligned with program changes, suggest that the bunching at specific income levels is not random but rather reflects actual program participation. In contrast, no similar dynamics are observed among workers aged 16–64, who are not eligible for the program. Their income distributions remain relatively stable, providing further support of the validity of the method.

[2]Cho and Ko (2021) and Choi and Cho (2023) define likely participants as those who earn the exact amount or less. However, in the context of part-time work, treating all low-wage workers as likely participants would create bias. Therefore, this paper considers only those who earn the exact amount as likely participants.

TABLE 2—FRACTION OF WORKERS RECEIVING EXACTLY 200K, 220K, 270K AND 290K AMONG PART-TIME WORKERS

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Paid 200k/m, 65+	0.473	0.499	0.487	0.458	0.470	0.410	0.432	0.127	0.046	0.029	0.013	0.018	0.007	0.009	0.007
Paid 200k/m, 16-64	0.058	0.052	0.052	0.052	0.035	0.025	0.028	0.029	0.020	0.016	0.009	0.010	0.006	0.003	0.004
Paid 220k/m, 65+	0.003	0.007	0.001	0.006	0.005	0.005	0.005	0.329	0.018	0.006	0.000	0.000	0.000	0.001	0.001
Paid 220k/m, 16-64	0.004	0.007	0.008	0.002	0.004	0.004	0.002	0.003	0.001	0.001	0.001	0.000	0.001	0.000	0.000
Paid 270k/m, 65+	0.001	0.001	0.004	0.001	0.003	0.002	0.003	0.002	0.440	0.408	0.322	0.386	0.410	0.403	0.019
Paid 270k/m, 16-64	0.006	0.003	0.004	0.002	0.001	0.005	0.001	0.001	0.005	0.005	0.005	0.003	0.002	0.002	0.001
Paid 290k/m, 65+	0.000	0.004	0.000	0.001	0.004	0.001	0.000	0.000	0.001	0.006	0.020	0.003	0.007	0.005	0.372
Paid 290k/m, 16-64	0.002	0.001	0.003	0.000	0.004	0.003	0.003	0.002	0.001	0.001	0.001	0.000	0.003	0.001	0.002

Notes: EAPS-ET. All results are weighted by actual weights. The Senior Employment Program paid 200,000 KRW until 2016, 220,000 KRW starting in 2017, 270,000 KRW from 2018 to 2023, and 290,000 KRW starting in 2024.

However, applying this method to years prior to 2017 is less reliable due to heaping—the tendency of respondents to report rounded values such as 200,000 KRW. This reporting bias likely causes the number of program participants to be overestimated, with the magnitude of the bias differing significantly between the periods before and after 2017. For example, even after the program's payment was increased to 220,000 KRW in 2017, 12.7 percent of older part-time workers continued to report earning exactly 200,000 KRW. Moreover, from 2010 to 2016, a consistent 3–5 percent of younger part-time workers (under age 65), who are not eligible for the program, also reported earning exactly 200,000 KRW. These patterns suggest that part of the observed bunching may be due to heaping rather than program participation. As a result, the method is considered less reliable before 2017, and the empirical analysis focuses on 2017 onward, when the identification of participants is more credible.

Following Cho and Ko (2021) and Choi and Cho (2023), I define likely participants based on their age, industry, and monthly labor income. Specifically, workers aged 65 or above and working in the four aforementioned service industries[3] earning the exact amount paid by the program are defined as likely participants. The industry criterion follows Cho and Ko (2021) and Choi and Cho (2023).

To assess the role of the Senior Employment Program in the growth of part-time work, I replicate the DFL decomposition, excluding likely participants, for the period of 2017 onward. The analysis resets the reference year to 2017 while keeping the same set of covariates. Figure 6 presents the results.

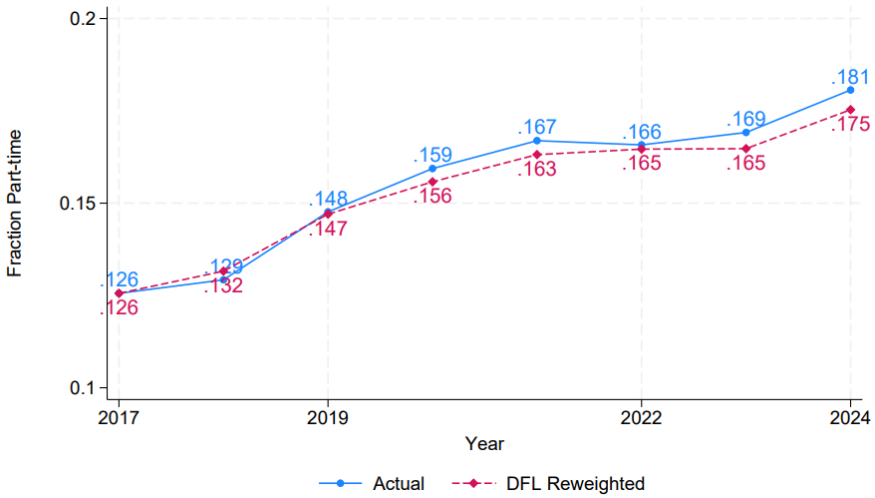

FIGURE 6. FRACTION OF PART-TIME WORKERS WITH ACTUAL AND DFL WEIGHTS, EXCLUDING EMPLOYEES IN THE SENIOR EMPLOYMENT PROGRAM

Notes: *Source*: EAPS-ET. The blue line shows the actual fraction of part-time workers, defined as those who work less than 36 hours per week. The red dotted line shows the fraction of part-time workers calculated according to DFL weights, excluding likely participants in the Senior Employment Program.

[3]'Public Administration and Defense; Compulsory Social Security', 'Education', 'Human Health and Social Work Activities', and 'Membership Organizations, Repair, and Other Personal Services'. See Table A1 for details of the industry classification.

In Figure 6, first, the overall fraction of part-time workers declines. This decline is mechanical, reflecting the exclusion of many part-time workers who are likely participants. The increase in the fraction of part-time work from 2017 to 2024 falls from 6.5 percentage points (13.3% to 19.8%) to 5.5 percentage points (12.6% to 18.1%). However, the growth of part-time work is still substantial, implying that the expansion of the government program explains only a minor portion of the growth in part-time work.

More importantly, the gap between the actual and counterfactual fractions of part-time workers narrows substantially, indicating that the explanatory power of compositional changes, particularly workforce aging, declines once participants in the Senior Employment Program are removed. In 2024, the gap fell to just 0.6 percentage points, suggesting that compositional changes explain only about 10 percent of the increase in part-time work during this period. These results indicate that the expansion of the Senior Employment Program—rather than broader demographic shifts—has primarily driven the explanatory power of compositional changes.

These findings suggest that even workforce aging does not account for a significant portion of the growth in part-time work in the labor market outside government programs, although the magnitude of the growth in the market remains substantial. Therefore, to explain the growth of part-time work in the labor market, it is necessary to explore broader structural forces, including shifts in worker preferences and labor demand, institutional changes, and labor market policies.

V. Reasons behind the Limited Explanatory Power of Observable Variables

As discussed in Section 4, compositional changes in the workforce—such as shifts in age, gender, and industry—explain only a limited portion of the recent growth in part-time work, particularly outside the government program. This finding is somewhat surprising given the substantial magnitude of demographic and structural changes in the South Korean labor market over the past 15 years, as depicted in Figure 1 and Table 1. For example, the fraction of older workers aged 60 or above increased by more than two times, and the majority of them work part-time. Why, then, do such workers account for so little of the growth?

This section explores why the explanatory power of compositional changes is limited, despite their scale. I offer two explanations. First, much of the growth in part-time work occurred within certain demographic and industry groups, rather than being driven by compositional changes. Second, the expansion of the older workers is partially offset by the decline of young workers, another feature of workforce aging. In the South Korean labor market, young and older workers are groups that are likely to work part-time. With workforce aging, the fraction of the former decreased, while the fraction of the latter increased. In other words, two demographic shifts caused by workforce aging offset each other, resulting in low explanatory power.

Taken together, these analyses shed light on the underlying dynamics that limit the explanatory power of compositional shifts, providing a more detailed understanding of the drivers of the growth in part-time work.

A. *Within-Group Increase*

One reason behind the limited explanatory power of compositional changes is the widespread growth of part-time work within certain demographic and industry groups, as mentioned above, rather than across them. This is somewhat expected from the analysis in Section 4. In this section, I quantify the role of within-group increases. To investigate this within-group growth, I define 160 groups based on the interaction of sex (two categories), age (five categories), and industry (sixteen categories). The age groups are defined as follows: under 30, 30s, 40s, 50s, and 60 or older.

For each group, I calculate the fraction of part-time workers during two periods: 2010–2012 and 2022–2024. In Figure 7, each point represents one group, with the red 45-degree line indicating no change between the two periods. A point located above the red line indicates an increase in the group's part-time share. The size of each point reflects the average group size across the two periods, and only groups with at least 30 observations in each period are included. A total of 148 groups meet this criterion.

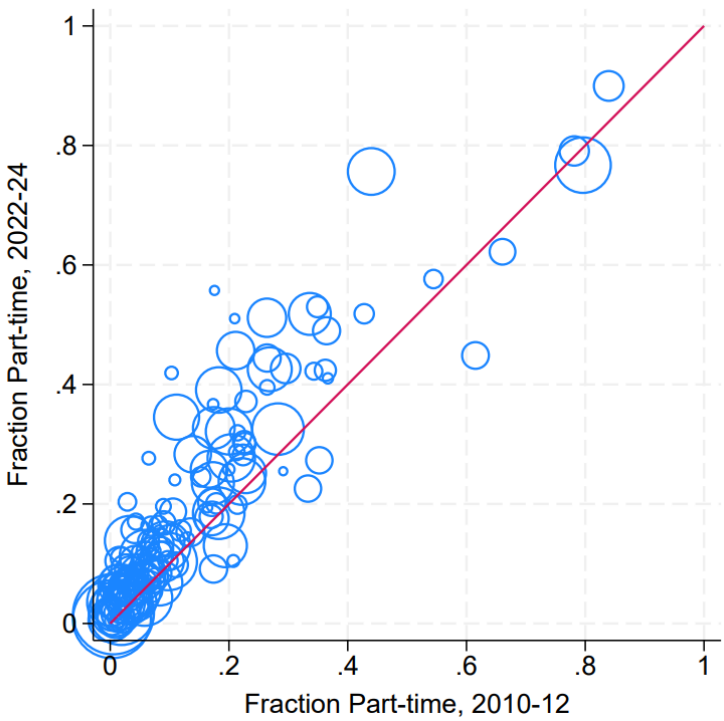

FIGURE 7. WITHIN-GROUP INCREASES OF THE FRACTION OF PART-TIME WORKERS

Notes: EAPS-ET. The red line indicates the 45-degree line. All groups located above the red line experienced growth in part-time work over the sample period. The size of the circle reflects the size of the workers in the corresponding group.

The results show that 83 percent of the groups lie above the 45-degree line, implying that the majority of demographic-industry combinations have experienced growth in part-time work over time. This pattern provides evidence that within-group increases across a wide range of workforce groups mainly drive the growth in part-time work.

One may question whether this result is merely an artifact of the use of broad industry classifications. If compositional changes primarily work within broad industry categories across detailed groups, the current analysis may fail to capture this growth within detailed categories. Because EAPS-ET only provides a broad industry classification, this question cannot be addressed by this data. However, in Chung (forthcoming), I demonstrate substantial within-group growth of part-time work, even in three-digit detailed industry and occupation categories, using the Regional Employment Survey. In other words, the within-group increase remains robust even under more granular group definitions.

These findings imply that the growth in part-time work is driven by strong within-group dynamics, rather than compositional shifts. The widespread growth in part-time work within various demographic-industry groups, rather than changes in their relative sizes, explains why group composition alone cannot account much for the overall trend.

B. *Competing Trends in Workforce Aging: Declining Young Workers versus Expanding Older Workers*

Workforce aging appears to be a strong candidate for explaining the rise in part-time work, especially given the patterns depicted in Figure 1 and Table 1. However, the findings in the previous sections suggest that the explanatory power of this trend is surprisingly limited. This subsection explains why.

Figure 8 panel (a) presents the share of part-time workers by age, based on pooled data from 2010 to 2024. The pattern shows a clear U-shaped curve. Among the youngest workers, part-time work is extremely common, with approximately 90 percent of 16-year-olds holding part-time jobs. However, this rate declines sharply for those in their early 20s and falls below 10 percent by age 25, remaining low through middle age. The fraction of part-time workers then rises again starting with those in their late 50s, eventually reaching nearly 90 percent among workers in their 80s. These trends confirm that part-time work is concentrated among two key demographic groups: young workers and older workers.

However, workforce aging is not simply about the expansion of older workers; it also entails a decline in the fraction of younger workers. As shown in Table 1, the fraction of workers aged under 30 has declined, while that of those aged 60 and above has increased over the same period. In this sense, one key demographic with a high incidence of part-time work (younger workers) has shrunk, while the other (older workers) has grown.

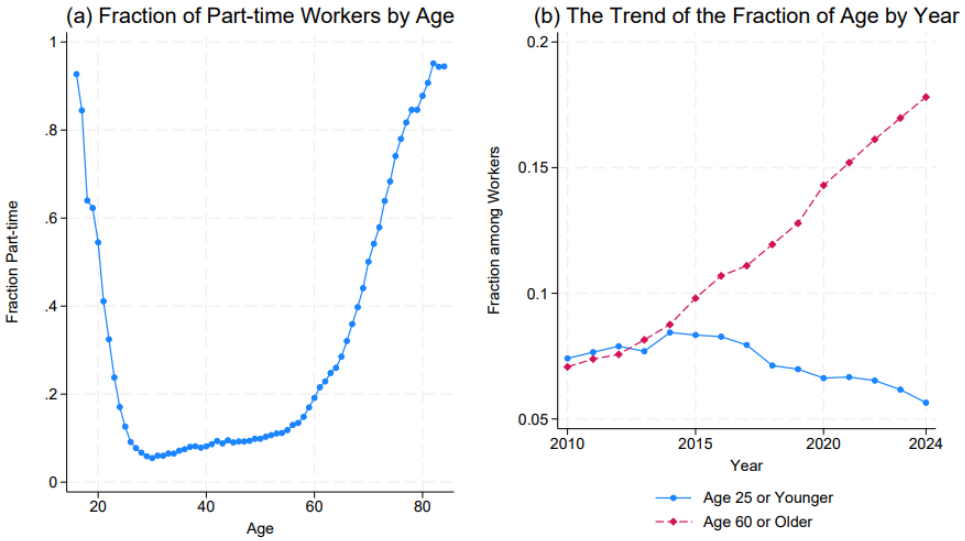

FIGURE 8. RELATIONSHIP BETWEEN AGE AND PART-TIME WORK

Notes: EAPS-ET, years 2010-2024. The left panel shows the fraction of part-time workers among workers by age. The right panel shows the fraction of workers in each age group among all workers. All results are weighted by the actual weights.

This dynamic is further illustrated in Figure 8 panel (b), which shows the fractions of workers in the two core part-time age groups: those aged 25 or below and those aged 60 or older. The figure reveals that while the fraction of older workers has steadily increased, that of younger workers has declined since around 2014, indicating that from 2014, one of the two core part-time age groups has expanded, while the other has contracted. Interestingly, in Figure 3, the fractions explained among the growth peak in 2013, and they exceeded 50% until 2014.

Therefore, the implication of workforce aging on the growth of part-time work is not straightforward. Due to workforce aging, the fraction of older workers increases while that of younger workers declines. The former contributes to the growth of part-time work, whereas the latter slows the growth. Although the increase in older workers is larger in absolute terms, the decrease in younger workers seems to have partly offset the contribution of the expansion of the fraction of older workers to the overall growth of part-time work. This helps explain the modest explanatory power of the age composition observed in the decomposition results.

These findings carry an important implication. The future impact of demographic change on part-time work will depend not only on the expansion of older workers but also on the relative size of the group of young workers. During the period of 2010–2024, the net effect of these opposing demographic trends appears to have offset each other to some extent, limiting the overall explanatory power of workforce aging. However, this outcome may not persist in the future. If the expansion of older workers dominates the decline in young workers, workforce aging itself may contribute substantially to the growth of part-time work.

VI. Discussion and Conclusion

This paper examines the extent to which the recent growth in part-time work in South Korea can be attributed to compositional changes in the workforce. Using the DFL decomposition framework, I find that although there have been substantial demographic and structural shifts, such as workforce aging, these changes account for only a limited portion of the increase in part-time work. The explanatory power even drops when likely participants in the Senior Employment Program are excluded, indicating that this program has played a meaningful role. Further investigation reveals that much of the increase stems from within-group changes, and that specific demographic trends, such as the decline in young workers, have partially offset the impact of workforce aging on part-time work.

These findings present two implications for future research on the growth of part-time work in South Korea. First, the limited explanatory power of compositional changes implies that other factors must be investigated to understand the growth of part-time work. In particular, future research should investigate potential shifts in worker preferences and labor demand, as well as changes in institutional and policy frameworks. Although some studies have examined the causes of the growth in workers working fewer than 15 hours per week in connection with discontinuity in labor costs at the threshold (e.g., Kim *et al*., 2023; Chung, forthcoming), the growth of part-time workers above the 15-hour threshold remains largely underexplored in the literature. Future research in this direction could be profitable.

Second, although compositional changes have not played a significant role in the past, they may become more influential in the future. This study finds that two key demographic groups dominate part-time work: workers aged 25 or younger and those aged 60 or older. In the early part of the sample period (2010–2013), these two groups were similar in size. Since then, the share of young workers has declined, while the share of older workers has increased. These opposing trends have partially offset each other, reducing the net impact of workforce aging on part-time work. However, if the rise in the population of older workers outpaces the decline in young workers, the compositional impact of aging on part-time work may become much more substantial in the coming years.

APPENDIX

A. *Industry Classification*

TABLE A1—INDUSTRY CLASSIFICATION

9th Classification (2010-12)	10th Classification (2013-24)	Consistent Classification
Agriculture, Forestry, and Fishing	Agriculture, Forestry, and Fishing	#1 Agriculture, Forestry, and Fishing
Manufacturing	Manufacturing	#2 Manufacturing
Electricity, Gas, Steam, and Water Supply	Electricity, Gas, Steam and Air Conditioning Supply	#3 Electricity, Gas, Water Supply and Sewage
Sewage, Waste management, Materials Recovery, and Remediation Activities	Water Supply; Sewage, Waste management, and Materials Recovery	
Construction	Construction	#4 Construction
Wholesale and Retail Trade	Wholesale and Retail Trade	#5 Wholesale and Retail Trade
Transportation	Transportation and Storage	#6 Transportation and Storage
Accommodation and Food Service Activities	Accommodation and Food Service Activities	#7 Accommodation and Food Service Activities
Information and Communications	Information and Communications	#8 Information and Communications
Financial and Insurance Activities	Financial and Insurance Activities	#9 Financial and Insurance Activities
Real Estate Activities and Renting and Leasing	Real Estate Activities	#10 Real Estate, Renting and Leasing, and Business Facilities Management
Business Facilities Management and Business Support Services	Business Facilities Management and Business Support Services; Rental and Leasing Activities	
Professional, Scientific, and Technical Activities	Professional, Scientific, and Technical Activities	#11 Professional, Scientific, and Technical Activities
Public Administration and Defense; Compulsory Social Security	Public Administration and Defense; Compulsory Social Security	#12 Public Administration and Defense; Compulsory Social Security
Education	Education	#13 Education
Human Health and Social Work Activities	Human Health and Social Work Activities	#14 Human Health and Social Work Activities
Arts, Sports, and Recreation Related Services	Arts, Sports, and Recreation Related Services	#15 Arts, Sports, and Recreation Related Services
Membership Organizations, Repair, and Other Personal Services	Membership Organizations, Repair, and Other Personal Services	#16 Membership Organizations, Repair, and Other Personal Services

B. *Summary Statistics with Actual and DFL Weights*

TABLE B1—SUMMARY STATISTICS WITH ACTUAL AND DFL WEIGHTS, 2010-2013

	2010	2011		2012		2013	
	Actual	Actual	DFL	Actual	DFL	Actual	DFL
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Age	40.554	40.807	40.550	41.108	40.546	41.586	40.529
	(12.116)	(12.333)	(12.115)	(12.440)	(12.124)	(12.536)	(12.128)
Age 16-29	0.214	0.189	0.216	0.175	0.229	0.161	0.253
Age 30-39	0.283	0.277	0.283	0.276	0.282	0.268	0.282
Age 40-49	0.269	0.267	0.269	0.266	0.269	0.270	0.269
Age 50-59	0.164	0.172	0.164	0.180	0.164	0.190	0.163
Age 60+	0.071	0.074	0.071	0.076	0.071	0.081	0.071
Less than HS	0.152	0.148	0.152	0.140	0.152	0.133	0.151
High School Graduate	0.330	0.318	0.330	0.315	0.329	0.314	0.329
Some College	0.215	0.224	0.215	0.230	0.215	0.225	0.215
B.A.	0.250	0.257	0.250	0.259	0.251	0.272	0.251
Above B.A.	0.053	0.054	0.053	0.056	0.053	0.056	0.054
Male	0.578	0.578	0.578	0.577	0.578	0.576	0.579
Married	0.651	0.640	0.652	0.647	0.652	0.649	0.652
Managers	0.023	0.022	0.023	0.021	0.023	0.017	0.024
Professionals and Related	0.218	0.222	0.218	0.221	0.219	0.227	0.219
Clerks	0.210	0.217	0.209	0.219	0.209	0.219	0.209
Service Workers	0.091	0.090	0.091	0.093	0.091	0.095	0.091
Sales Workers	0.087	0.084	0.087	0.088	0.087	0.087	0.087
Agriculture, Forestry, and Fisheries	0.004	0.004	0.004	0.003	0.004	0.003	0.004
Craft and Related Trades	0.097	0.093	0.097	0.091	0.097	0.089	0.097
Plan and Machine Operators and Assemblers	0.108	0.108	0.108	0.113	0.107	0.116	0.108
Elementary Workers	0.162	0.161	0.162	0.151	0.162	0.147	0.163
Observations	26,378	26,242	26,242	25,528	25,528	25,482	25,482

Notes: EAPS-ET. Columns with 'Actual' are weighted by actual weights, and columns with 'DFL' are weighted by DFL weights. Standard deviations are in parentheses, while those of indicator variables are omitted. To construct DFL weights, age (each year), education (five categorical variables), sex, marital status, occupation (nine occupations), industry (16 industries), and firm size (six categories) are used.

TABLE B2—SUMMARY STATISTICS WITH ACTUAL AND DFL WEIGHTS, 2010-2013 (CONT.)

	2010	2011		2012		2013	
	Actual	Actual	DFL	Actual	DFL	Actual	DFL
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Industry #1	0.010	0.010	0.010	0.008	0.010	0.007	0.010
Industry #2	0.207	0.200	0.207	0.204	0.207	0.201	0.208
Industry #3	0.008	0.008	0.008	0.008	0.008	0.009	0.008
Industry #4	0.082	0.081	0.082	0.075	0.082	0.075	0.083
Industry #5	0.119	0.121	0.119	0.122	0.119	0.117	0.119
Industry #6	0.041	0.042	0.041	0.042	0.041	0.042	0.041
Industry #7	0.067	0.063	0.067	0.064	0.067	0.068	0.067
Industry #8	0.035	0.038	0.035	0.036	0.035	0.036	0.035
Industry #9	0.047	0.048	0.047	0.046	0.046	0.047	0.047
Industry #10	0.079	0.080	0.079	0.079	0.080	0.079	0.080
Industry #11	0.043	0.049	0.043	0.051	0.043	0.048	0.043
Industry #12	0.057	0.057	0.057	0.055	0.057	0.055	0.057
Industry #13	0.084	0.078	0.084	0.078	0.084	0.078	0.084
Industry #14	0.066	0.071	0.066	0.075	0.067	0.082	0.067
Industry #15	0.014	0.014	0.013	0.014	0.013	0.014	0.013
Industry #16	0.039	0.041	0.039	0.041	0.039	0.041	0.039
Firm Size 1-4	0.181	0.185	0.181	0.184	0.181	0.183	0.181
Firm Size 5-9	0.172	0.171	0.172	0.173	0.172	0.177	0.171
Firm Size 10-29	0.229	0.229	0.228	0.230	0.228	0.222	0.228
Firm Size 30-99	0.207	0.200	0.207	0.196	0.207	0.201	0.207
Firm Size 100-299	0.099	0.102	0.099	0.099	0.099	0.097	0.099
Firm Size 300+	0.113	0.113	0.113	0.118	0.113	0.121	0.114
Observations	26,378	26,242	26,242	25,528	25,528	25,482	25,482

Notes: EAPS-ET. Columns with 'Actual' are weighted by actual weights, and columns with 'DFL' are weighted by DFL weights. Standard deviations are in parentheses, while those of indicator variables are omitted. To construct DFL weights, age (each year), education (five categorical variables), sex, marital status, occupation (nine occupations), industry (16 industries), and firm size (six categories) are used. For Industry definitions, see Table A1.

TABLE B3—SUMMARY STATISTICS WITH ACTUAL AND DFL WEIGHTS, 2014-2017

	2014		2015		2016		2017	
	Actual	DFL	Actual	DFL	Actual	DFL	Actual	DFL
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Age	41.886	40.492	42.289	40.467	42.710	40.393	43.003	40.294
	(12.822)	(12.133)	(13.028)	(12.144)	(13.280)	(12.149)	(13.334)	(12.178)
Age 16-29	0.191	0.216	0.189	0.216	0.189	0.219	0.188	0.223
Age 30-39	0.258	0.282	0.250	0.284	0.241	0.284	0.238	0.284
Age 40-49	0.266	0.268	0.261	0.268	0.256	0.266	0.253	0.264
Age 50-59	0.197	0.163	0.202	0.162	0.207	0.160	0.210	0.158
Age 60+	0.088	0.071	0.098	0.071	0.107	0.071	0.111	0.071
Less than HS	0.128	0.151	0.128	0.151	0.126	0.153	0.122	0.156
High School Graduate	0.319	0.329	0.320	0.329	0.320	0.327	0.317	0.326
Some College	0.221	0.214	0.213	0.215	0.208	0.214	0.208	0.213
B.A.	0.276	0.252	0.285	0.251	0.288	0.252	0.297	0.251
Above B.A.	0.056	0.054	0.054	0.054	0.058	0.054	0.056	0.054
Male	0.571	0.581	0.566	0.582	0.562	0.584	0.560	0.584
Married	0.640	0.653	0.629	0.654	0.625	0.653	0.616	0.652
Managers	0.018	0.024	0.016	0.025	0.015	0.025	0.014	0.026
Professionals and Related	0.221	0.220	0.220	0.219	0.221	0.219	0.223	0.220
Clerks	0.216	0.208	0.213	0.208	0.215	0.208	0.220	0.206
Service Workers	0.098	0.091	0.098	0.091	0.102	0.091	0.101	0.090
Sales Workers	0.088	0.087	0.086	0.086	0.085	0.086	0.085	0.085
Agriculture, Forestry, and Fisheries	0.003	0.004	0.003	0.004	0.003	0.004	0.003	0.004
Craft and Related Trades	0.086	0.096	0.090	0.096	0.089	0.095	0.085	0.094
Plan and Machine Operators and Assemblers	0.117	0.107	0.119	0.107	0.115	0.107	0.114	0.107
Elementary Workers	0.151	0.162	0.155	0.164	0.156	0.164	0.156	0.168
Observations	25,383	25,383	25,454	25,454	24,985	24,985	25,350	25,350

Notes: EAPS-ET. Columns with 'Actual' are weighted by actual weights, and columns with 'DFL' are weighted by DFL weights. Standard deviations are in parentheses, while those of indicator variables are omitted. To construct DFL weights, age (each year), education (five categorical variables), sex, marital status, occupation (nine occupations), industry (16 industries), and firm size (six categories) are used.

TABLE B4—SUMMARY STATISTICS WITH ACTUAL AND DFL WEIGHTS, 2014-2017 (CONT.)

	2014		2015		2016		2017	
	Actual	DFL	Actual	DFL	Actual	DFL	Actual	DFL
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Industry #1	0.007	0.010	0.007	0.011	0.007	0.010	0.006	0.012
Industry #2	0.206	0.208	0.210	0.206	0.201	0.207	0.199	0.207
Industry #3	0.009	0.008	0.009	0.008	0.009	0.008	0.009	0.008
Industry #4	0.073	0.082	0.073	0.083	0.075	0.083	0.076	0.083
Industry #5	0.121	0.119	0.116	0.118	0.114	0.118	0.116	0.119
Industry #6	0.041	0.041	0.041	0.042	0.039	0.041	0.039	0.040
Industry #7	0.069	0.067	0.074	0.067	0.075	0.068	0.073	0.068
Industry #8	0.034	0.036	0.037	0.035	0.036	0.036	0.036	0.035
Industry #9	0.043	0.046	0.039	0.046	0.040	0.046	0.038	0.046
Industry #10	0.077	0.079	0.079	0.080	0.082	0.079	0.084	0.080
Industry #11	0.047	0.043	0.047	0.043	0.048	0.043	0.045	0.043
Industry #12	0.052	0.057	0.050	0.057	0.052	0.057	0.055	0.056
Industry #13	0.077	0.084	0.076	0.085	0.076	0.085	0.077	0.084
Industry #14	0.087	0.067	0.088	0.066	0.092	0.066	0.093	0.065
Industry #15	0.013	0.013	0.015	0.013	0.013	0.013	0.014	0.014
Industry #16	0.042	0.039	0.041	0.039	0.039	0.039	0.039	0.040
Firm Size 1-4	0.186	0.182	0.184	0.181	0.178	0.179	0.177	0.181
Firm Size 5-9	0.176	0.170	0.177	0.171	0.180	0.171	0.178	0.173
Firm Size 10-29	0.222	0.227	0.224	0.227	0.226	0.228	0.228	0.228
Firm Size 30-99	0.195	0.208	0.194	0.208	0.193	0.208	0.193	0.206
Firm Size 100-299	0.098	0.099	0.097	0.099	0.100	0.100	0.101	0.099
Firm Size 300+	0.123	0.114	0.123	0.114	0.123	0.114	0.123	0.114
Observations	25,383	25,383	25,454	25,454	24,985	24,985	25,350	25,350

Notes: EAPS-ET. Columns with 'Actual' are weighted by actual weights, and columns with 'DFL' are weighted by DFL weights. Standard deviations are in parentheses, while those of indicator variables are omitted. To construct DFL weights, age (each year), education (five categorical variables), sex, marital status, occupation (nine occupations), industry (16 industries), and firm size (six categories) are used. For definitions of the Industry, see Table A1.

TABLE B5—SUMMARY STATISTICS WITH ACTUAL AND DFL WEIGHTS, 2018-2021

	2018		2019		2020		2021	
	Actual	DFL	Actual	DFL	Actual	DFL	Actual	DFL
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Age	43.338	40.199	43.668	40.022	44.270	39.991	44.517	39.834
	(13.468)	(12.181)	(13.625)	(12.176)	(13.841)	(12.176)	(14.037)	(12.182)
Age 16-29	0.184	0.224	0.183	0.229	0.175	0.229	0.178	0.233
Age 30-39	0.236	0.289	0.230	0.290	0.221	0.292	0.212	0.294
Age 40-49	0.249	0.261	0.243	0.260	0.241	0.258	0.237	0.255
Age 50-59	0.212	0.156	0.216	0.152	0.220	0.151	0.221	0.148
Age 60+	0.119	0.071	0.128	0.070	0.143	0.070	0.152	0.069
Less than HS	0.118	0.157	0.114	0.164	0.112	0.162	0.111	0.166
High School Graduate	0.308	0.327	0.305	0.325	0.298	0.327	0.295	0.325
Some College	0.206	0.213	0.209	0.211	0.211	0.212	0.214	0.210
B.A.	0.307	0.250	0.313	0.246	0.320	0.247	0.323	0.247
Above B.A.	0.061	0.054	0.059	0.053	0.059	0.053	0.057	0.053
Male	0.558	0.585	0.556	0.588	0.558	0.591	0.551	0.587
Married	0.613	0.651	0.603	0.651	0.603	0.653	0.592	0.649
Managers	0.017	0.025	0.018	0.024	0.017	0.025	0.016	0.024
Professionals and Related	0.227	0.218	0.224	0.216	0.226	0.216	0.229	0.217
Clerks	0.222	0.206	0.220	0.204	0.217	0.204	0.216	0.207
Service Workers	0.099	0.091	0.104	0.089	0.100	0.088	0.102	0.090
Sales Workers	0.083	0.086	0.081	0.084	0.080	0.084	0.074	0.086
Agriculture, Forestry, and Fisheries	0.003	0.004	0.004	0.004	0.004	0.006	0.003	0.006
Craft and Related Trades	0.085	0.097	0.086	0.097	0.087	0.096	0.087	0.095
Plan and Machine Operators and Assemblers	0.110	0.107	0.108	0.108	0.103	0.107	0.101	0.107
Elementary Workers	0.155	0.167	0.154	0.172	0.166	0.174	0.171	0.168
Observations	25,374	25,374	25,233	25,233	24,900	24,900	25,143	25,143

Notes: EAPS-ET. Columns with 'Actual' are weighted by actual weights, and columns with 'DFL' are weighted by DFL weights. Standard deviations are in parentheses, while those of indicator variables are omitted. To construct DFL weights, age (each year), education (five categorical variables), sex, marital status, occupation (nine occupations), industry (16 industries), and firm size (six categories) are used.

TABLE B6—SUMMARY STATISTICS WITH ACTUAL AND DFL WEIGHTS, 2018-2021 (CONT.)

	2018		2019		2020		2021	
	Actual	DFL	Actual	DFL	Actual	DFL	Actual	DFL
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Industry #1	0.006	0.011	0.006	0.014	0.006	0.019	0.006	0.016
Industry #2	0.197	0.209	0.193	0.208	0.194	0.207	0.185	0.207
Industry #3	0.010	0.008	0.010	0.008	0.011	0.008	0.011	0.008
Industry #4	0.079	0.083	0.080	0.086	0.082	0.085	0.084	0.082
Industry #5	0.113	0.120	0.110	0.118	0.107	0.117	0.101	0.119
Industry #6	0.040	0.041	0.039	0.042	0.040	0.041	0.043	0.043
Industry #7	0.068	0.068	0.071	0.066	0.064	0.066	0.060	0.067
Industry #8	0.039	0.035	0.038	0.035	0.038	0.035	0.041	0.035
Industry #9	0.040	0.046	0.037	0.045	0.037	0.044	0.037	0.046
Industry #10	0.078	0.079	0.081	0.079	0.081	0.080	0.082	0.080
Industry #11	0.046	0.043	0.049	0.042	0.049	0.043	0.051	0.043
Industry #12	0.056	0.056	0.052	0.055	0.055	0.055	0.056	0.055
Industry #13	0.075	0.083	0.076	0.082	0.073	0.083	0.074	0.083
Industry #14	0.100	0.065	0.106	0.064	0.114	0.063	0.123	0.063
Industry #15	0.014	0.013	0.017	0.013	0.016	0.014	0.015	0.013
Industry #16	0.038	0.040	0.035	0.041	0.033	0.040	0.031	0.040
Firm Size 1-4	0.174	0.183	0.181	0.183	0.174	0.183	0.178	0.182
Firm Size 5-9	0.177	0.173	0.178	0.176	0.173	0.173	0.174	0.173
Firm Size 10-29	0.229	0.228	0.223	0.225	0.227	0.231	0.229	0.232
Firm Size 30-99	0.195	0.207	0.190	0.207	0.196	0.205	0.190	0.205
Firm Size 100-299	0.098	0.098	0.097	0.097	0.097	0.096	0.096	0.099
Firm Size 300+	0.126	0.113	0.130	0.112	0.133	0.111	0.133	0.110
Observations	25,374	25,374	25,233	25,233	24,900	24,900	25,143	25,143

Notes: EAPS-ET. Columns with 'Actual' are weighted by actual weights, and columns with 'DFL' are weighted by DFL weights. Standard deviations are in parentheses, while those of indicator variables are omitted. To construct DFL weights, age (each year), education (five categorical variables), sex, marital status, occupation (nine occupations), industry (16 industries), and firm size (six categories) are used. For Industry definitions, see Table A1.

TABLE B7—SUMMARY STATISTICS WITH ACTUAL AND DFL WEIGHTS, 2022-2024

	2022		2023		2024	
	Actual	DFL	Actual	DFL	Actual	DFL
	(1)	(2)	(3)	(4)	(5)	(6)
Age	44.807	39.685	45.084	39.430	45.436	39.219
	(14.160)	(12.200)	(14.273)	(12.222)	(14.364)	(12.173)
Age 16-29	0.176	0.238	0.169	0.243	0.161	0.253
Age 30-39	0.208	0.296	0.209	0.297	0.215	0.293
Age 40-49	0.230	0.253	0.228	0.251	0.223	0.253
Age 50-59	0.225	0.145	0.223	0.140	0.223	0.135
Age 60+	0.161	0.069	0.170	0.068	0.178	0.066
Less than HS	0.103	0.166	0.096	0.171	0.091	0.179
High School Graduate	0.296	0.329	0.294	0.326	0.285	0.328
Some College	0.212	0.210	0.210	0.208	0.211	0.203
B.A.	0.332	0.243	0.339	0.242	0.350	0.238
Above B.A.	0.058	0.052	0.061	0.053	0.063	0.052
Male	0.551	0.591	0.545	0.596	0.540	0.603
Married	0.589	0.647	0.585	0.640	0.582	0.644
Managers	0.019	0.025	0.021	0.025	0.018	0.024
Professionals and Related	0.232	0.217	0.242	0.215	0.247	0.213
Clerks	0.215	0.205	0.216	0.203	0.219	0.199
Service Workers	0.106	0.090	0.113	0.087	0.115	0.088
Sales Workers	0.072	0.086	0.069	0.084	0.068	0.081
Agriculture, Forestry, and Fisheries	0.003	0.004	0.003	0.003	0.004	0.010
Craft and Related Trades	0.084	0.097	0.078	0.099	0.074	0.101
Plan and Machine Operators and Assemblers	0.100	0.105	0.099	0.108	0.097	0.105
Elementary Workers	0.169	0.171	0.159	0.175	0.160	0.180
Observations	25,124	25,124	25,727	25,727	25,555	25,555

Notes: EAPS-ET. Columns with 'Actual' are weighted by actual weights, and columns with 'DFL' are weighted by DFL weights. Standard deviations are in parentheses, while those of indicator variables are omitted. To construct DFL weights, age (each year), education (five categorical variables), sex, marital status, occupation (nine occupations), industry (16 industries), and firm size (six categories) are used.

TABLE B8—SUMMARY STATISTICS WITH ACTUAL AND DFL WEIGHTS, 2022-2024 (CONT.)

	2022		2023		2024	
	Actual	DFL	Actual	DFL	Actual	DFL
	(1)	(2)	(3)	(4)	(5)	(6)
Industry #1	0.005	0.017	0.005	0.017	0.005	0.017
Industry #2	0.191	0.205	0.185	0.203	0.181	0.202
Industry #3	0.010	0.008	0.010	0.008	0.010	0.008
Industry #4	0.081	0.080	0.078	0.088	0.074	0.091
Industry #5	0.100	0.121	0.098	0.121	0.097	0.115
Industry #6	0.042	0.042	0.041	0.042	0.045	0.046
Industry #7	0.062	0.067	0.066	0.067	0.067	0.067
Industry #8	0.043	0.036	0.044	0.035	0.047	0.034
Industry #9	0.035	0.045	0.034	0.043	0.035	0.042
Industry #10	0.079	0.079	0.079	0.084	0.075	0.087
Industry #11	0.052	0.043	0.053	0.042	0.057	0.041
Industry #12	0.057	0.056	0.058	0.055	0.058	0.054
Industry #13	0.074	0.082	0.073	0.081	0.072	0.082
Industry #14	0.124	0.063	0.129	0.062	0.130	0.060
Industry #15	0.015	0.013	0.016	0.013	0.016	0.013
Industry #16	0.031	0.042	0.032	0.038	0.031	0.039
Firm Size 1-4	0.169	0.187	0.172	0.182	0.174	0.182
Firm Size 5-9	0.174	0.171	0.172	0.174	0.165	0.182
Firm Size 10-29	0.225	0.228	0.228	0.227	0.223	0.226
Firm Size 30-99	0.191	0.206	0.189	0.206	0.195	0.208
Firm Size 100-299	0.100	0.097	0.097	0.101	0.100	0.095
Firm Size 300+	0.141	0.110	0.141	0.110	0.143	0.107
Observations	25,124	25,124	25,727	25,727	25,555	25,555

Notes: EAPS-ET. Columns with 'Actual' are weighted by actual weights, and columns with 'DFL' are weighted by DFL weights. Standard deviations are in parentheses, while those of indicator variables are omitted. To construct DFL weights, age (each year), education (five categorical variables), sex, marital status, occupation (nine occupations), industry (16 industries), and firm size (six categories) are used. For Industry definitions, see Table A1.

C. *Contributions of Other Factors*

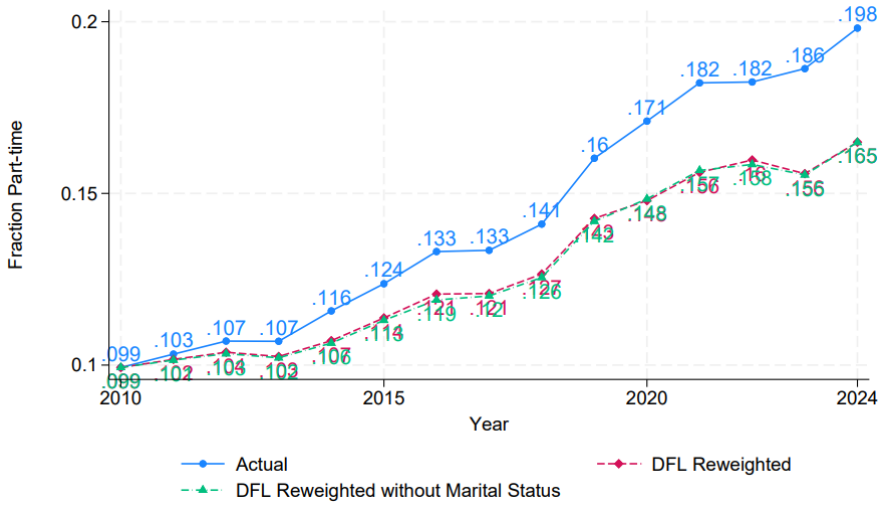

FIGURE C1. CONTRIBUTION OF MARITAL STATUS

Notes: EAPS-ET. The blue line shows the actual fraction of part-time workers, defined as those who work less than 36 hours per week. The red dotted line shows the fraction of part-time workers calculated by DFL weights. The green line shows the fraction of part-time workers calculated by DFL weights, excluding marital status in the construction of DFL weights.

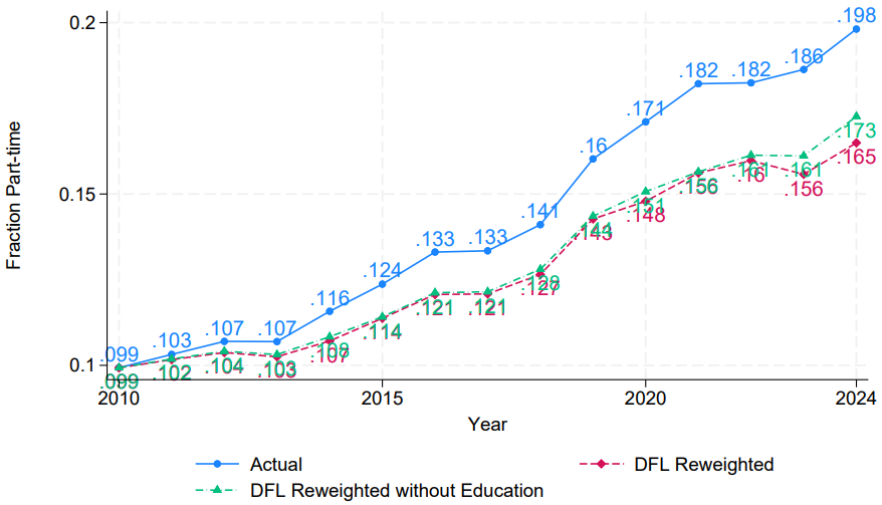

FIGURE C2. CONTRIBUTION OF EDUCATION

Notes: EAPS-ET. The blue line shows the actual fraction of part-time workers, defined as those who work less than 36 hours per week. The red dotted line shows the fraction of part-time workers calculated by DFL weights. The green line shows the fraction of part-time workers calculated by DFL weights, excluding education attainment variables in the construction of DFL weights.

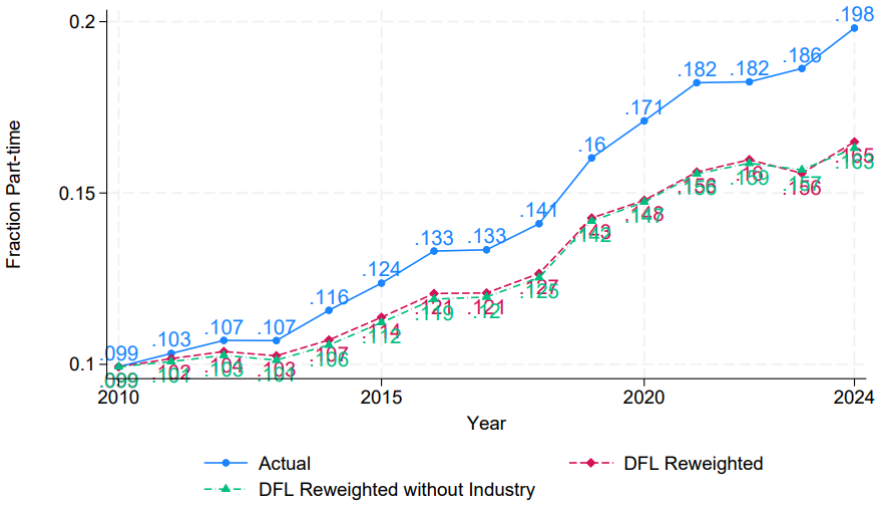

FIGURE C3. CONTRIBUTION OF INDUSTRY

Notes: EAPS-ET. The blue line shows the actual fraction of part-time workers, defined as those who work less than 36 hours per week. The red dotted line shows the fraction of part-time workers calculated by DFL weights. The green line shows the fraction of part-time workers calculated by DFL weights, excluding industry fixed effects in the construction of DFL weights.

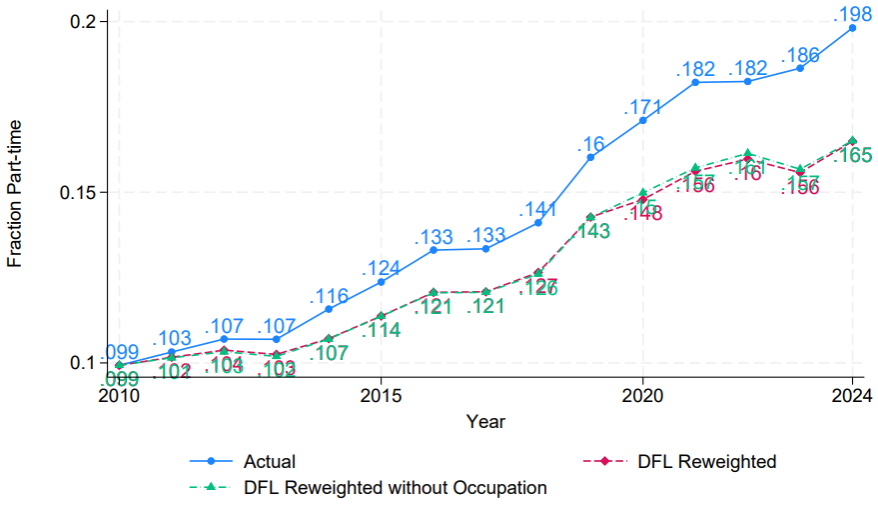

FIGURE C4. CONTRIBUTION OF OCCUPATION

Notes: EAPS-ET. The blue line shows the actual fraction of part-time workers, defined as those who work less than 36 hours per week. The red dotted line shows the fraction of part-time workers calculated by DFL weights. The green line shows the fraction of part-time workers calculated by DFL weights, excluding occupation fixed effects in the construction of DFL weights.

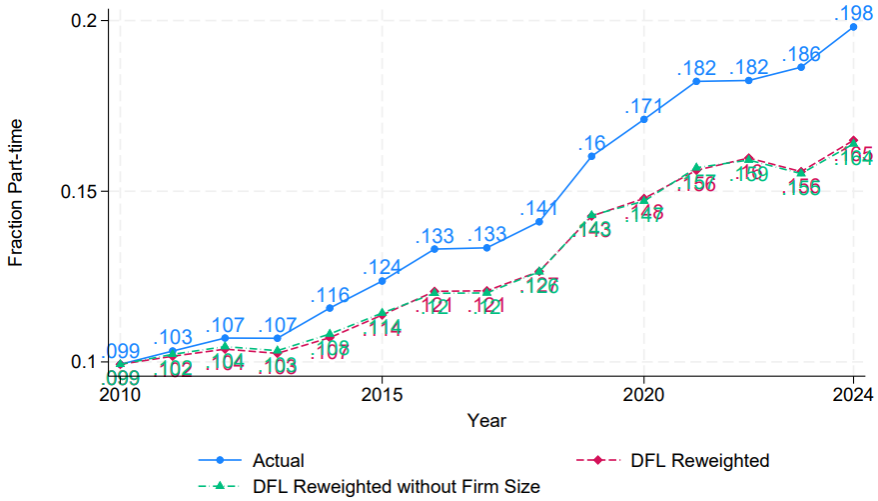

FIGURE C5. CONTRIBUTION OF FIRM SIZE

Notes: EAPS-ET. The blue line shows the actual fraction of part-time workers, defined as those who work less than 36 hours per week. The red dotted line shows the fraction of part-time workers calculated by DFL weights. The green line shows the fraction of part-time workers calculated by DFL weights, excluding firm size fixed effects in the construction of DFL weights.

D. *Contribution of Each Factor, Alternative Method*

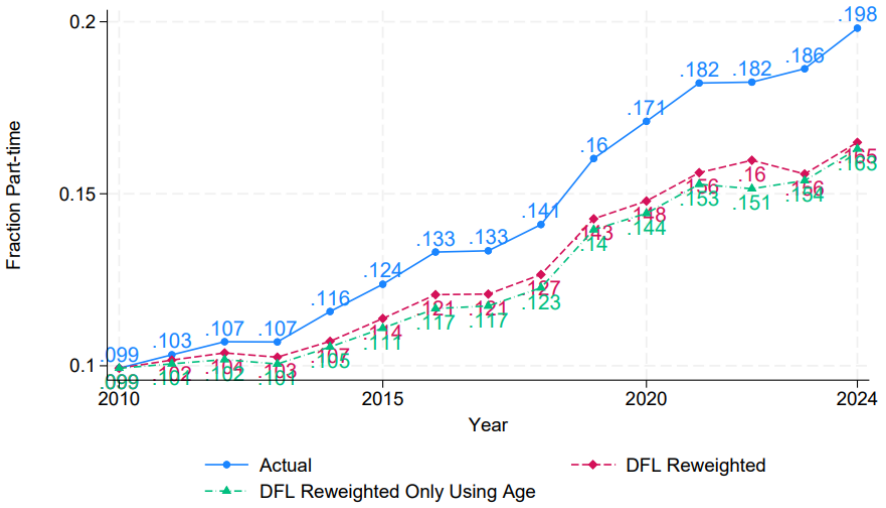

FIGURE D1. CONTRIBUTION OF AGE

Notes: EAPS-ET. The blue line shows the actual fraction of part-time workers, defined as those who work less than 36 hours per week. The red dotted line shows the fraction of part-time workers calculated by DFL weights. The green line shows the fraction of part-time workers calculated by DFL weights, only using age in the construction of DFL weights.

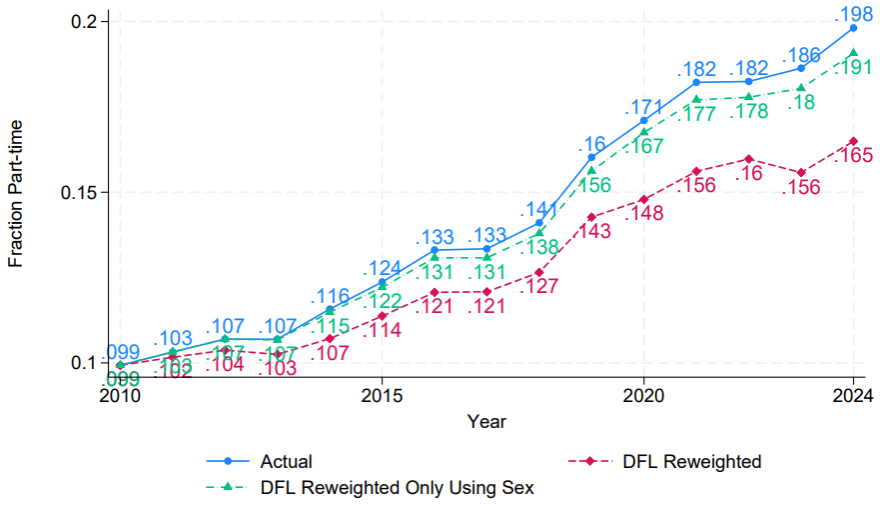

FIGURE D2. CONTRIBUTION OF SEX

Notes: EAPS-ET. The blue line shows the actual fraction of part-time workers, defined as those who work less than 36 hours per week. The red dotted line shows the fraction of part-time workers calculated by DFL weights. The green line shows the fraction of part-time workers calculated by DFL weights, only using sex in the construction of DFL weights.

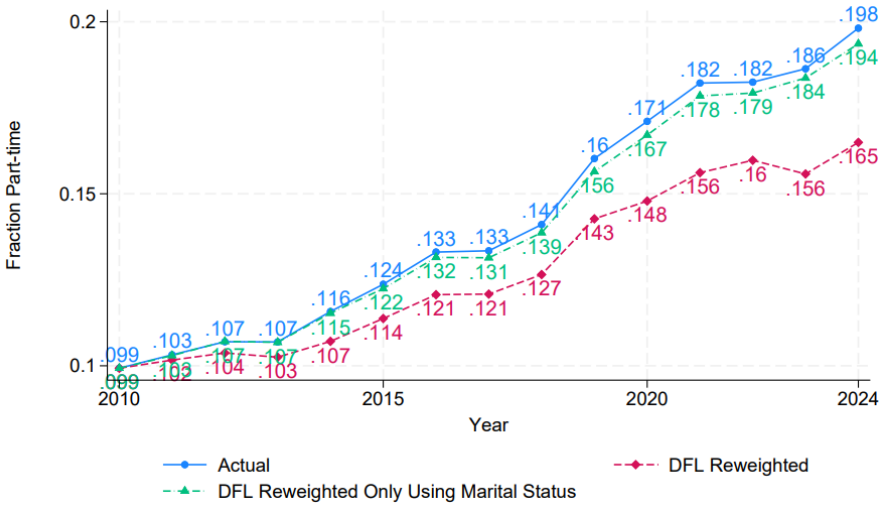

FIGURE D3. CONTRIBUTION OF MARITAL STATUS

Notes: EAPS-ET. The blue line shows the actual fraction of part-time workers, defined as those who work less than 36 hours per week. The red dotted line shows the fraction of part-time workers calculated by DFL weights. The green line shows the fraction of part-time workers calculated by DFL weights, only using marital status in the construction of DFL weights.

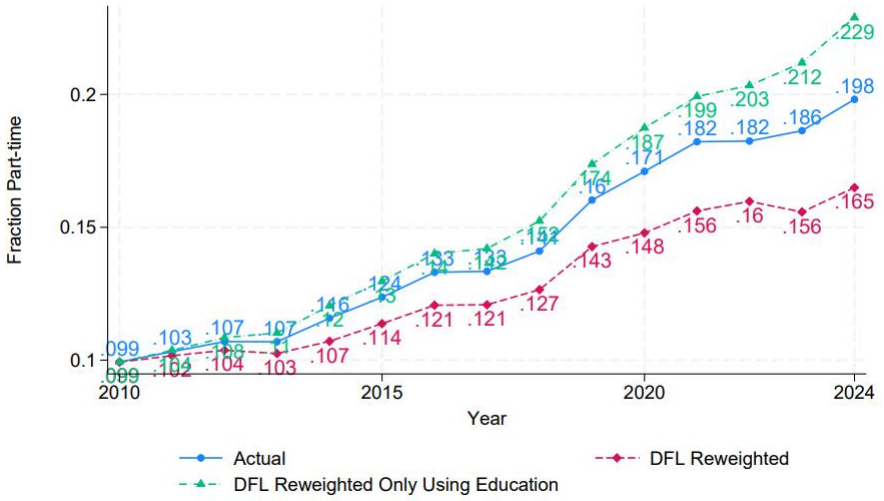

FIGURE D4. CONTRIBUTION OF EDUCATION

Notes: EAPS-ET. The blue line shows the actual fraction of part-time workers, defined as those who work less than 36 hours per week. The red dotted line shows the fraction of part-time workers calculated by DFL weights. The green line shows the fraction of part-time workers calculated by DFL weights, only using education attainment variables in the construction of DFL weights.

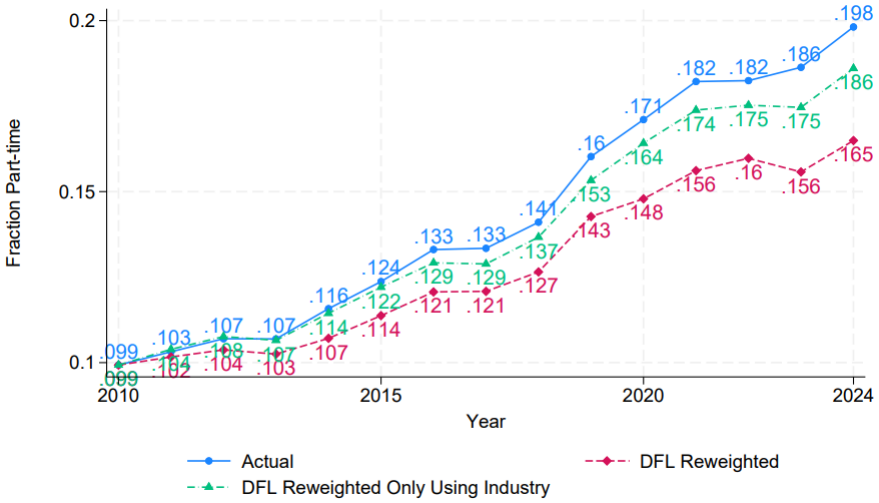

FIGURE D5. CONTRIBUTION OF INDUSTRY

Notes: EAPS-ET. The blue line shows the actual fraction of part-time workers, defined as those who work less than 36 hours per week. The red dotted line shows the fraction of part-time workers calculated by DFL weights. The green line shows the fraction of part-time workers calculated by DFL weights, only using industry fixed effects in the construction of DFL weights.

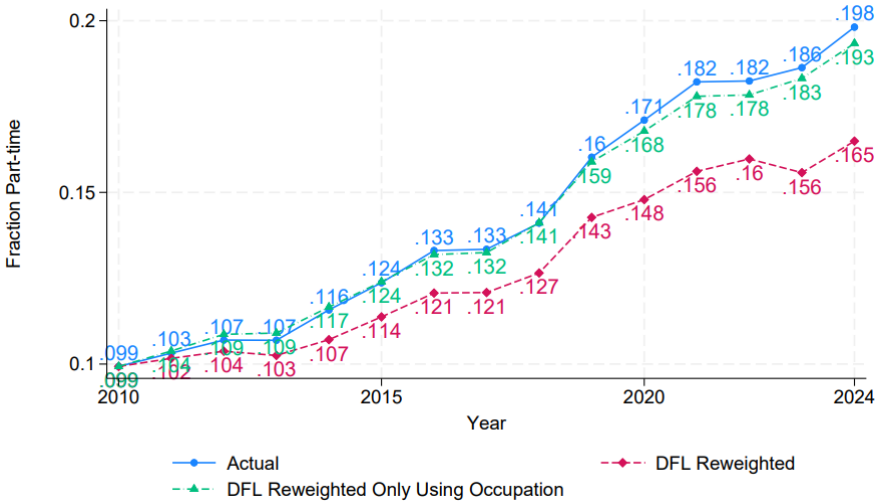

FIGURE D6. CONTRIBUTION OF OCCUPATION

Notes: EAPS-ET. The blue line shows the actual fraction of part-time workers, defined as those who work less than 36 hours per week. The red dotted line shows the fraction of part-time workers calculated by DFL weights. The green line shows the fraction of part-time workers calculated by DFL weights, only using occupation fixed effects in the construction of DFL weights.

FIGURE D7. CONTRIBUTION OF FIRM SIZE

Notes: EAPS-ET. The blue line shows the actual fraction of part-time workers, defined as those who work less than 36 hours per week. The red dotted line shows the fraction of part-time workers calculated by DFL weights. The green line shows the fraction of part-time workers calculated by DFL weights, only using firm size fixed effects in the construction of DFL weights.

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