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THE IMPACT OF FLEXIBLE WORKING ARRANGEMENTS ON INCOME: AN INSTRUMENTAL VARIABLE ANALYSIS OF WORK AUTONOMY IN THE UK

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ABSTRACT

This research investigates the impact of flexible working arrangements (FWAs) on individual net labor income. Using data from the UK Household Longitudinal Study, we employ fixed effects and instrumental variable models to examine whether having more control over work causes a higher wage level. The study indicates that work autonomy is positively and statistically significantly associated with individual net labor income. As job segmentation and house ownership are used as instrumental variables to address potential endogeneity, we find that FWAs improved productivity and income levels with a higher coefficient than we previously concluded in the baseline model. The findings also emphasize the complex interaction between FWAs and work-life balance, where variables such as housework time and the number of children can negatively affect earnings. This study contributes to the understanding of FWAs' function in income determination and provides insights for designing jobs to maximize both worker performance and financial outcomes.

Keywords: Flexible working arrangements, Income, Instrument variable, Fixed effect model.

1. INTRODUCTION

Today's post-pandemic era stimulates the development of flexible working arrangements (FWAs). Daily applications of FWAs include remote work and flexible working schedules. With the same workload but flexible working plans, it seems that employees can possibly improve their income level. That being said, FWAs remain a dual influence. On the one hand, it helps some employees achieve a work-life balance, reduce the income gap, and improve gender equality. On the other hand, it may also increase unpaid overtime and worsen work-life balance, etc. As FWAs influence those variables, it may also bring a secondary influence on income – FWAs impact work-life balance, overtime work, etc., and those factors further influence income.

How do FWAs impact monthly net monthly labor income? This research attempts to study the longitudinal effects of FWAs on income with panel data from *Understanding Society: the UK Household Longitudinal Study (UKHLS)*. We hypothesize that FWAs improve the net labor income level. Based on our hypothesis, the income does not reflect the impact of FWAs directly, though. Since instrumental variables are capable of eliminating the endogeneity between covariates and allowing causal inference, instrument variables will be effective in determining whether this effect occurs. The study will use the fixed effect model and instrumental variables to explore the causal effects of FWA on income. Specifically, the study will adopt variables of job skills and house ownership as instruments. In the following sections, the paper is going to analyze whether the hypothesized relationship exists through Stata. Finally, we will conclude in which way FWAs affect income with qualitative explanations.

One applicable contribution of this paper is that it helps both employees and companies make reasonable schedules that balance workers' efficiency and company expenditure for salary.

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The empirical findings in this model highlight the importance of creating tailored work schedules that optimize worker autonomy. The evidence can be invaluable for companies aiming to enhance productivity without disproportionately increasing labor costs. Similarly, employees can benefit from this research by understanding how to maintain a healthy work-life balance while maximizing their income potential.

2. LITERATURE REVIEW

2.1 Various Aspects of the Definition of the FWAs

The flexible working arrangements (FWAs) have been defined from multiple aspects. The definition of "flexibility" has several interpretations. From Humphreys, Fleming, and O'Donnell (1999)'s perspective, FWAs include temporal flexibility, locational flexibility, and other innovative forms such as term-time working and teleworking. All three forms of flexibility are exemplified in FWAs. Typical forms of FWAs in those definitions include, for example, flexitime, job sharing, family-related leaves, remote work, etc. Most papers include various narrowed forms of FWAs, whereas research on aggregated forms of FWAs remains limited. To this end, this paper is going to use a comprehensive variable to measure FWAs.

Different papers adopt different points of view regarding the implementation of FWAs. Lewis (2003) suggests employees are able to start and finish work times flexibly and obtain the option to work remotely. On the other hand, Čiarnienė, Vienažindienė, and Adamonienė (2018) define FWAs from an employer's perspective: FWAs are advantages offered by employers that provide workers flexibility over their work schedules and locations outside of established parameters. This paper will use an employee view of FWAs to measure the hypothesis.

2.2 The Potential Influence of FWAs on Income

Berber, Gašić, Katić, and Borocki (2022) have examined that FWAs can hardly influence wages directly. Nonetheless, based on our hypothesis the use of FWAs still influences income indirectly and such impact remains bittersweet for employees. FWAs are associated with higher job satisfaction (Xiang, Whitehouse, Tomaszewski, and Martin 2021, 14). To be specific, some aspects of FWAs, such as flexible work hours, can directly increase the return on labor (the financial return and values generated by labor) and reduce staff turnover (the rate at which employees leave a company and new recruits replace them) (Kotey and Sharma 2019, 16), which is likely to stimulate employees' willingness to work and productivity. Some FWAs, such as part-time work, reduce work pressure and help workers balance between work and personal life (Russell, O'Connell, and McGinnity 2009), which also develops employees' satisfaction. From the management perspective, FWAs can decrease absenteeism in organizations (Stella, Iheriohanma, and Iheanacho 2020). Hence, it can be inferred that a virtuous circle where employees gain better experience in daily work, higher productivity helps achieve better products, and the wage level becomes higher can be achieved.

However, FWAs can have a negative influence on work-life balance. Some FWAs may lead to intensified workloads and fewer opportunities (Xiang, Whitehouse, Tomaszewski, and Martin 2021, 12). In remote work, one of the forms of FWAs, the increased burden of multitasking can diminish the perceived flexibility of time (Young and Schieman 2018), as managing work and childcare simultaneously may reduce leisure time, particularly for mothers, and the work-life boundaries become increasingly blurry. Therefore, both the tendency to mismanage time and the increased family burden may lead to worse work achievement and then a lower income level.

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FWAs can help reduce women's disadvantaged status in work. Chung and Van der Lippe (2020, 368) reveal that despite men having a greater likelihood to gain access to FWAs than women, especially mothers, Chung and Booker (2023) suggest that women are more likely to take advantage of FWAs (once they are able to access FWAs) than men. For example, a study indicates that access to flexible time reduces the likelihood of cutting back on working hours for first-time mothers (Chung and Van der Horst 2018).

In addition, while FWAs are said to sometimes alleviate women's suffering tension, they sometimes have the opposite effect - FWAs can lead to a greater gendered wage gap and discourage more women workers from using them. Women tend to be stigmatized for utilizing these arrangements compared to men (Brescoll, Glass, and Sedlovskaya 2013; Munsch 2016). In the UK, this issue is compounded by men's, even the general society's, stigma associated with flexible workers and negative perceptions towards mothers' commitment to work but still taking extended maternity leave against women (Chung 2020). As a result, women's subjective initiative to actively work can be reduced which may reduce their income in the long term. This can reinforce traditional gender roles, with mothers dedicating more time doing housework and childcare and fathers spending more time working (Sullivan and Lewis 2001). Predictably, this can have severe negative consequences for women's earnings and career progression, ultimately widening the gender pay gap over time (Sigle-Rushton and Waldfogel 2007).

Overall, the effects of FWAs on income are complex and depend on various factors, including arrangement type and implementation. Therefore, the impact of FWAs is multifaceted and cannot be easily categorized as solely beneficial or detrimental. Nevertheless, most literature has not covered the next step: how the direct influence of FWAs on the mentioned instruments, including job satisfaction, work-life balance, and women's working hours after pregnancy, may impact the income itself. In this paper, we will examine and try to prove potential causal relationships mentioned in existing literature.

3. DATA AND METHOD

3.1 Data

The article uses *Understanding Society (UKHLS)*, a British national representative longitudinal household survey. In the data of *Understanding Society*, there are questions asking about flexible working arrangements every two waves beginning from wave 2. In specific, the data in this research come from wave 1 and wave 2, 4, 6, 8, 10, and 12 of UKHLS (2009/2010, 2010/2011, 2012/2013, 2014/2015, 2016/2017, 2018/2019, 2020/2021). Among them, wave 1 provides basic demographic information about the individual while the rest of waves provide the information about FWA, outcomes, and other time-varying covariates; while even waves are included because the information about respondents' FWAs is present.

The sample after data cleansing: sample size, gender, age at wave 1, and ethnicity. The study recodes each variable by combining its original tag and the beginning year of the corresponding wave. For example, variable "pcnet", a variable that measures whether the respondent has access to the internet from home, is recoded to pcnet2010, pcnet2012, pcnet2014, pcnet2016, pcnet2018, and pcnet2020, pertaining to wave1, wave2, wave4, wave6, wave8, wave10, and wave12, respectively. The meaning and sequence of each variable are therefore clear and easy to identify.

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3.2 Method

The research will first use a longitudinal fixed effect model and then employ a two-stage least squares model with instrumental variables. First, to measure the reliability of the five variables (workers' autonomy over work tasks, pace, manner, task order, and hours) or internal consistency, we calculated Cronbach's α to ensure that they collectively represent a single underlying construct. A high degree of correlation was demonstrated, and we named the newly generated variable work autonomy and used it as an independent variable in a fixed effects linear model. Our fixed effects model is as follows:

$$\ln_{(lab_{it})} = \beta_1 wkaut_{it} + X_{it} + \varepsilon_{it}$$

We used the logarithm value for net labor income, $\ln_{(lab_{it})}$, as the dependent variable. Wkaut represents the level of work autonomy, X_{it} are control variables, and ε_{it} is the error term. In particular, X_{it} includes age, education qualification, marital status, the number of children, housework hours, job satisfaction, and travel mode.

The study employs a stage least square model with fixed effects. The typical regression model is as follows:

$$X = \alpha Z + other\ variables + error\ term$$

$$Y = \beta \hat{X} + other\ variables + error\ term$$

In this paper, each variable is assigned a realistic significance. Work autonomy, as a substitute for the operational definition of FWAs, is the independent variable, Z. The instrument variable consists of two parts: the job skill level and house ownership. The net labor income is employed as the dependent variable. The empirical model of the first stage is presented as follows:

$$wkaut_{\text{it}} = \alpha_1 + \gamma_1 jbseg_{it} + \delta X_{it} + \alpha_i + \lambda_t + \varepsilon_{it}$$

where $wkaut_{\text{it}}$ is endogenous variable work autonomy, $jbseg_{it}$ is the instrumental variable (job segment), X_{it} are the other exogenous control variables (e.g., age, marital status), α_i represents the individual fixed effects, capturing time-invariant individual characteristics, λ_t represents fixed effects, and ε_{it} is the error term.

$$\ln_{(lab_{it})} = \alpha_2 + \beta_1 wkaut_{\imath t} + \widehat{\theta X_{it}} + \alpha_\imath + \varepsilon_{\imath t}$$

where $\ln_{lab_{it}}$ is the dependent variable, $wkaut_{\text{it}}$ is the instrumented value of the work autonomy from the first stage, $\widehat{X_{it}}$ is the control variable, α_i is the individual fixed effect, and ε_{it} is the error term for the second stage.

3.3 Dependent Variable

Total net monthly labor income serves as the dependent variable. This variable is derived from three separate variables in the real survey: net usual pay, net pay in a second job, and net self-employment income. Specifically, the net usual pay describes the amount of the respondent's take-home pay to the nearest pound, the net pay in a second job is one's net usual pay in their second job, and the net self-employment income is the net income from their self-employment business only. Subsequently, a new variable that suggests the net monthly labor income is derived by

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combining those three variables, where "net" denotes the amount after income taxes and national insurance contributions.

$\ln_{lab}$, the logarithm of labour income, is used as the final version of the dependent variable. For one reason, some common variables may not have a linear relationship with income, such as age, the number of children subjects have, etc. For another, the dataset will be standardized to reduce the inconvenience of understanding caused by large differences between magnitudes of independent variables.

3.4 Independent Variable

In this analysis, the FWAs is measured by the work autonomy. In the survey of UKHLS, respondents are asked by 5 questions about their work autonomy including the autonomy on self-reported control over tasks, work pace, manner of work, task order, and work hours. Each item is a 4-point rated scale from 'a lot' to 'none', which then was reversely coded for the purpose of interpretation. We calculated a Cronbach's Alpha for the 5 items in each wave to comprehensively measure the degree to which individuals maintain autonomy on their jobs.

Using work autonomy is more adaptable than generating a new FWA variable which includes too many specific forms of arrangement such as part-time working, work from home, job sharing, working a compressed week, etc. Additionally, questions about work autonomy reflects more personal feelings than the questions about specific forms of FWA, where there are both employers and employee's feelings about the job itself.

3.5 Instrument Variables

The study adopts two instrument variables based on existing literature: job skill level, and house ownership. The two instruments are recoded for a clearer understanding. The Job skill level was coded with a scale of 1-3 from non to high skill. Moreover, house ownership was coded as a binary variable that describes whether the respondent owns a house or not, where owning a house is 1 and not owning one is 0.

The job skill level and house ownership fulfill the three requirements for the definitive assumptions for defining an instrument variable – the relevance assumption, the exclusion restriction, and the exchangeability assumption (Lousdal 2018). First, according to the relevance assumption, both the job skill level and house ownership have a causal effect on the use of FWAs. The enhancement of the job skill level reduces the time spent finishing required tasks and adds more time for flexible schedules, exemplifying FWAs; owning one house or more and work autonomy are both influenced by unmeasured wealth level (i.e., the house ownership is intended to influence work autonomy). *Second, job skill level and house ownership cannot affect income directly only if they have an impact through the work autonomy. Thirdly, work autonomy does not share the same causes as net labor income. Determinants of work autonomy are shaped by both individual factors, including contract status, qualification, working hours, and gender, and macro-level factors, including union density and generalized societal trust (Lopes, Calapez, and Lopes 2017). All those factors do not have a significant impact on income.*

3.6 Control Variables

Control variables in this study include age, job satisfaction, marital status, number of children, and housework time. Sarbu (2014) has pointed out that tenure, education, and the use of computers, overtime, etc., are all determinants of the FWA on the individual level. Thus, work

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autonomy tend to be endogenous when our model include these variables as covariates. The reason why the control variables have a potential influence on income is explained as follows: as aging, participants' working experiences increase, which usually improves one's income level; marriage and the number of children decrease the income of participants, as suggested in the former literature review section; and housework time tends to distract the paid working time. Therefore, they are selected as controlled variables rather than independent variables. In addition, all control variables have exogeneity. More information pertaining to the coding can be found in the following data analysis section.

4. ANALYSIS RESULTS

We used the total net monthly labor income as the dependent variable and then considered the abilities for workers to get autonomy over work as the main independent variable. Control variables include age, marital status, number of children, and housework time. Autonomy is measured through workers' self-reported control over tasks, work pace, manner of work, task order, and work hours.

Table 1 displays the results of the baseline model of the fixed effect at the individual level. In the fixed effects linear model (Tabel 1), autonomy over work is positively and significantly (with $p < 0.001$) linked to net labor income with a coefficient of 0.0351. For 1-point increases in work autonomy, a 0.04 higher unit in labor income will be generated. It might be because those who have higher autonomy in work will be motivated to devote themselves to their job tasks, which will thus bring them a higher salary. The results are consistent with existing literature, which suggests positive connections between work autonomy and employment income. The model also assessed covariates related to employment performance, including time spent on housework, job satisfaction, and performance-related pay. The negative coefficient of time spent on housework shows less housework time could help workers concentrate on working and therefore get high performance. Results do not suggest significant associations between job satisfaction and labor income. No matter how an individual's satisfaction with a job increases, the income from labor work does not change significantly.

Furthermore, the model shows a negative and statistically significant association between the number of children and the dependent variable. As the number of children increases, income decreases significantly. Marital status, highest qualification, and age all show a positive and significant relationship with net labor income. When workers age or receive a higher education level, they tend to be more skilled and naturally get higher salaries.

This research further examines the causal effects of work autonomy on net labor income through instrumental variable analysis. First, we use the Hausman test (table 2) to check the endogeneity of the baseline fixed effects model. In specific, we compared the differences between the fixed effects linear model with the model's adopted instruments by checking the chi-square test results. The P-value for chi-square is lower than 0.001, rejecting the null hypothesis. Thus, it can be concluded that there is a systematic difference in coefficients, which means the difference between the fixed effects linear model and the instrumental variable model is significant. Therefore, the endogeneity of the baseline model has been proved where the work autonomy is the endogenous variable. To deal with the endogeneity of the work autonomy variable, we decided to use a fixed effects model with instrumental variables (two-stage least squares estimation).

Results of first-stage regression on work autonomy and instrumental variable analysis are displayed in Table 3 and Table 5, respectively. Work autonomy was the endogenous variable, and

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job segmentation and house ownership are instruments. In the tests of under-identification and weakness of instruments (Tabel 5), the implications of job segmentation and house ownership are significant. It indicates that the two instruments can predict the endogenous variable generally in a linear model. However, it is still important to check the results of several tests. First, the significant result from the under-identification test implies there is enough information to estimate the model, and the instruments could sufficiently identify the endogenous variable. The weak identification test with a result greater than 19.93 (10% maximal IV size according to Stock and Yogo (2002)'s scale) indicates a strong correlation between instrumental variables and endogenous variables identifying strong instruments. Therefore, combining the two tests, the introduction of instruments could largely reduce biases by addressing endogeneity in our baseline model. The null hypothesis of the Sargan test is that the instruments are exogenous. We fail to reject the null hypothesis since the result of the test is insignificant, which implies that the instruments are valid. In conclusion, the instrumental model is effective.

Compare the results of the instrumental model with the baseline model; there are two critical improvements. The higher coefficient for the work autonomy in 2SLS methods implies that when endogeneity is addressed, the actual effect of autonomy over work on influence is conspicuously larger than the initial analysis. The difference between the fixed effects and 2SLS models emphasizes endogeneity in the fixed effects model and thus suggests the 2SLS model provides a more accurate and unbiased estimate of the impact of work autonomy on individual net income. Additionally, after running the instrumental variable regression, marital status became less statistically significant than in the fixed effects model, illustrating that marital might have been spuriously correlated with the dependent variable in the baseline model.

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Labor income	Coefficient	Std. err.	P>t
Work autonomy	0.0351***	0.005	0
Age	0.0241***	0.001	0
Educational qualification (ref. no higher education)			
Higher education qualification	0.279***	0.027	0
Marital status (ref. never married)			
Ever married	0.060***	0.015	0
Number of children under 14 years old (ref. no child)			
1	-0.091***	0.012	0
2	-0.172***	0.015	0
3	-0.205***	0.030	0
4	-0.535***	0.072	0
5	-0.018	0.215	0.932
Hours on housework per week	-0.002***	0.001	0
Job satisfaction	-0.001	0.002	0.606
Whether have performance related pay (ref. yes)			
No	-0.048***	0.009	0
Whether drive to workplace (ref. no)			
Yes	-0.028	0.013	0.031
R-squared:			
Within=0.1534			
Between=0.0511			
Overall=0.587			
Standard errors in parentheses			
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$			

Tabel 1. fixed effects linear model

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Table 2. Hausman test

	(b) Baseline model with adopted instruments	(B) Baseline model	(b-B) Difference	sqrt(diag(V_b-V_B)) Std. err.
Work autonomy	0.930	0.083	0.847	0.044
Age	0.001	0.003	-0.001	0.000
Educational qualification (ref. no higher education)	0.178	0.374	-0.197	0.010
Marital status (ref. never married)	0.103	0.146	-0.044	0.003
Number of children under 14 years old (ref. no child)				
1	-0.127	-0.209	0.082	0.005
2	-0.242	-0.298	0.056	0.003
3	-0.127	-0.284	0.157	0.008
4	0.147	-0.477	0.624	0.032
Hours on housework per week	-0.008	-0.014	0.007	0.000
Job satisfaction	-0.128	-0.003	-0.125	0.006
House ownership (ref. not owned)	0.105	0.143	-0.037	0.003
Whether have performance related pay (ref. yes)	-0.106	-0.189	0.083	0.005
Whether drive to workplace (ref. no)	-0.048	-0.046	-0.002	0.001

Test of H0: Difference in coefficients not systematic
chi2(9) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 377.90
Prob > chi2 = 0.0000
(V_b-V_B is not positive definite)

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Table 3. First stage regression on work autonomy

Work autonomy	Coefficient	Std. err.	P>t
Job segmentation	0.201***	0.018	0
House ownership (ref. not owned)			
Own house	0.041	0.028	0.144
Hours on housework per week	0.000	0.001	0.839
Job satisfaction	0.069***	0.004	0
Whether have performance related pay (ref. yes)			
No	-0.026	0.017	0.117
Whether drive to workplace (ref. no)			
Yes	-0.031	0.024	0.197
Age	0.006***	0.001	0
Educational qualification (ref. no higher education)			
Higher education qualification	0.036	0.050	0.467
Marital status (ref. never married)			
Ever married	0.015	0.028	0.581
Number of children under 14 years old (ref. no child)			
1	0.038	0.023	0.101
2	0.022	0.028	0.437
3	-0.033	0.056	0.562
4	-0.218	0.131	0.096
5	-0.794*	0.391	0.043

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4. Tests of under-identification and weakness of instruments

Underidentification test (Anderson canon. corr. LM statistic):	129.255
Chi-sq(2) P-value	0.000
Weak identification test (Cragg-Donald Wald F statistic):	65.303
Stock-Yogo weak ID test critical values:	
10% maximal IV size	19.93
15% maximal IV size	11.59
20% maximal IV size	8.75
25% maximal IV size	7.25
Sargan statistic (overidentification test of all instruments):	0.15
Chi-sq(1) P-value	0.699

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Table 5. Instrumental regression on net income

	Labor income	
Work autonomy	0.634***	-0.07
Age	0.020***	-0
Hours on housework per week	-0.002**	-0
Job satisfaction	-0.043***	-0.01
Whether have performance related pay (ref. yes)		
No	-0.029*	-0.01
Whether drive to workplace (ref. no)		
Yes	-0.011	-0.02
Educational qualification (ref. no higher education)		
Higher education qualification	0.230***	-0.04
Marital status (ref. never married)		
Ever married	0.048*	-0.02
Number of children under 14 years old (ref. no child)		
1	-0.112***	-0.02
2	-0.180***	-0.02
3	-0.180***	-0.05
4	-0.376***	-0.11
5	0.469	-0.32
Observations	14582	
Adjusted R^2	-1.457	
AIC	12159.317	

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

5. CONCLUSION

We examined the relationship between workers' level of autonomy and net labor income. Our main contribution is that we illustrated and explained the significance of work autonomy and its role in income determination by running a fixed effects and instrumental variables model. This research also contributes to the ongoing discussion of work-life balance, indicating that family structure and other family-related factors like housework time show a negative association with net labor income.

Our main motivation for conducting the research is to have a better understanding of how the level of work flexibility will influence financial outcomes. We aimed to find out whether workers who reach high work flexibility in the workplace naturally get a higher salary. Our research has important implications for both labor economics and the organizational management

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field, as it provides guidance for managers in a company to design jobs to maximize workers' performance, satisfaction, and wage expenses.

Additionally, the Hausman test showed there is potential endogeneity in the baseline model because work autonomy also correlates with unobserved factors that also affect income. So our second motivation was to address the endogenous variable through the use of instrumental variables. We innovatively assigned using job segmentation and house ownership as instruments, aiming to provide more accurate results for the association between work flexibility and net labor income.

Our findings showed a positive and statistically significant association between work autonomy and net labor income, which confirms our previous hypothesis that a higher level of FWAs is related to higher earnings. Besides the baseline model illustrating the trend, our instrumental variables regression model revealed an even stronger link because of the isolation of endogeneity. This result indicated FWAs are not only desirable choices for workers but also an economical decision. The ability to control work tasks, pace, order, time, and place could enhance workers' efficiency and productivity; therefore, workers are better paid.

We found that a greater number of children and a greater time spent on housework were associated with a lower income level, likely because the more time and energy spent on family, the less effort will be paid to the workplace, so workers will have a poor performance. That is consistent with the broader discussion of work-life balance, showing household responsibilities can limit career growth.

One major limitation of this model is that different types of labor forces are not differentiated. The impact of FWAs on domestic labor division may vary by arrangement type, gender, and occupation. For instance, Chung and Booker (2023) has pointed out that flexitime can enable more egalitarian divisions, especially in lower-skilled occupations. Second, FWAs may help women remain in relatively stressful yet high-paying occupations (Fuller and Hirsh, 2018), and workplaces with FWAs often exhibit a smaller gender wage gap (Van der Lippe et al., 2018). Additionally, lower-wage workers face unique challenges in accessing and benefiting from FWAs due to the nature of their jobs and personal characteristics (Danziger and Boots 2008). Further exploration of this topic can still narrow down this category.

To sum up, as the worker reach a higher level of FWAs, they will be better paid.

Acknowledgment

In recent years, especially after COVID-19, the flexible working arrangement has become more and more prevalent. After reading more than 50 papers, we found that researchers have paid a lot of attention to the implications of flexible working arrangements.

We discussed the research topic with our advisor. The advisor suggested we read papers about flexible working arrangements for we were both into econometrics and the topic of gender inequality and work-life balance.

Our advisor made an introduction to Stata and several regression models that might be used in our research topic. Then we familiarized all the basic and required instructions of our model by ourselves. After that, we divided our modeling process into two parts where Wang was in charge of cleansing and recoding the dataset and finishing the primary regression model and Dong was in charge of the subsequent regression and the analysis. We began to write two separate do-files, but we had to send the latest results to each other every time we updated our do-files. Thus, to sync

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and better collaborate online, we created a new Google Doc folder where we could download other's files whenever we wanted to edit our own do-files. Everything became smooth but the topic itself. For one, the topic had been researched thoroughly so that it was less likely to break through; for another, the concept of "inequality" is too broad to be described in the dataset. Therefore, we considered using a more adaptable and describable variable, work autonomy, as the independent variable, which also describes employees' FWAs.

We began to compose our paper in late August. Wang composed the introduction, literature review, data and method, and the second question of the acknowledgment; Dong composed the abstract, results, and the first question of the acknowledgment. We spent over two weeks composing the paper and three days refining the arguments and diction with our advisor.

We would like to appreciate our advisor, Wang, Lili, and her professional assistance during the entire paper writing process. She has provided crucial guidance and support to make our research possible. As our statistics teacher in senior high school, she has continued to provide invaluable mentorship for the paper. When the research had just begun, she searched several papers for us to read in order to help us have a more insightful understanding of the field of knowledge. Plus, she helped us to evaluate whether the database we chose was appropriate for research, which conspicuously helped us improve the efficiency. Her feedback and thoughtful direction have been invaluable throughout the project's entire process. During our research, she has provided several insightful and crucial pieces of advice. For example, she has suggested we test for endogeneity through the Hausman test and find whether the results will be different after addressing endogeneity. She provided us with her time and suggestions selflessly and without any form of reciprocation.

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