How employment diversification affects labour competitiveness: A gender perspective

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Abstract

As China's population continues ageing, and the birth rate continues decreasing, the demographic dividend that the nation once had is gradually fading. Meanwhile, information technology is rapidly developing, and new forms of employment continue emerging, facilitating the diversification of China's traditional employment forms. This study investigates how the diversified employment environment affects labour competitiveness in China from the specific perspective of gender difference. From a theoretical standpoint, we examine the mechanism of informal employment on men's and women's employment decisions and labour market competitiveness. We then construct a multi-value labour supply decision model and a nonlinear employment difference decomposition model to identify the key factors that affect individuals' employment decisions, assessing those factors in terms of gender differences. We use micro-data from the China Family Panel Studies, finding that women's labour competitiveness is lower than that of men. Family factors have a significant influence on women's decisions regarding labour market participation, informal employment provides more options for women to balance occupational life and homecare, and severe gender discrimination and inequality are the primary obstacle to women's entering the informal employment sector. In analysing these impacts, we seek to provide insights regarding how to elevate women's competitiveness in the labour market, particularly in the informal employment sector.

1 INTRODUCTION

With China's ageing population structure, the nation is gradually losing its demographic dividend. Furthermore, highly popularised college education is increasing imbalances between labour supply and demand. The circumstances of 'hard to hire' and 'hard to be hired' coexist in the contemporary era. The Chinese government has proposed establishing a more efficient employment promoting system to expand employment, in addition to elevating employment quality and alleviating systemic unemployment. Successful implementation of this pro-employment strategy requires a comprehensive understanding of how China's labour market shifts. With the rapid development of the Internet, the digital economy is thriving, along with multiple diversified forms of employment. These newly emerging employment forms have pushed the traditional labour market to evolve into a much more complex structure, which includes formal employment, traditional informal employment and new informal employment forms. Diversification is an irreversible trend for China's labour market, generating both opportunities and challenges. As a perpetual reservoir of labour force potential, the female workforce will always have a critical role in driving China's economy. Since women primarily serve dual roles in the labour market and family, female employment decisions are highly constrained by family factors (Lundborg et al., 2017). The new diversified employment

environment opens the possibility for women to balance household and childcare duties with occupational life, enabling women who were previously held back by fertility, nurture and housework to (re)integrate into the labour market and regain labour competitiveness.

Under the expanding environment of employment diversification, this study examines labour competitiveness in China based on gender differences, also identifying the causes of those differences. We examine whether factors that affect employment decisions differ between men and women in the environment of employment diversification. Does the diversified employment environment result in more reasonable employment decisions for households? Furthermore, does employment diversification alleviate labour market inequalities based on gender differences and fortify women's labour competitiveness? The trend of employment diversification, the problems of employment structure imbalance and employment discrimination are not only happening in China, but also in many countries. We study how the diversification of employment forms affects the employment decisions through gender perspective, specifically in terms of women's participation decisions and labour market competitiveness, which can provide reference for other Eastern Asian countries to formulate better employment policies.

Section 2 summarises the related literature and theoretical foundations. Section 3 introduces the empirical study methods and the dataset used for this study. Section 4 analyses and discusses the estimated results. Section 5 presents the study's conclusion.

2   THEORETICAL BACKGROUND AND MECHANISM ANALYSIS

2.1 Theoretical Background

Most existing literature examining gender differences in employment decisions have used men as a comparison group; however, family factors have a more significant influence over women than men (Chen et al., 2021). Such family factors generally include housework and family care. Lachance-Grzela and Bouchard (2010) found that neither higher human capital restoration nor higher income seem to counter the fact that women take on a higher proportion of housework in a family and tend to bear more housework in most circumstances (Sullivan & Gershuny, 2016). However, with the development of science and technology, the impact of housework on women's employment decisions may be gradually weakening. Oettinger (2011) found that previous conflicts between women's personal and professional lives are being resolved with the development of information technology. Ekiz Gökmen (2022) also determined that family care duties are one of the main causes of Turkish women's low employment rate.

In terms of family care segmentation, some scholars have focused on the impact of childcare on female employment. Baranowska-Rataj and Matysiak (2016) found that family scale and the number of children have a significant negative influence on women's labour force participation and working hours. Duan (2022) claimed that preschool children's care has a negative spillover effect on women's employment opportunities. The cost of childcare has been considered an important factor for scholars in examining the impact of family factors on women's employment decisions. Givord and Marbot (2015) confirmed that the French family subsidy policy significantly enhanced women's labour force participation, even demonstrating a more significant influence for women with larger families. Morrissey (2017) suggested that reductions in self-paid childcare fees increase the possibility for women to join the work force and expand their working hours. Gathmann and Sass (2018) found that increasing childcare costs reduce childcare participation and decrease women's probability of labour market participation. Study results related to women's employment in elderly care are relatively consistent. Gomez-Leon et al. (2019) found that the informal care provided by middle-aged

women for elderly parents/parents-in-law increases the possibility of withdrawing from the labour market. Miller and Bairoliya (2021) determined that unpaid care for elderly parents weakens individuals' (especially women's) bargaining power in the labour market. Meurs and Giddings (2021) also verified that living with elderly or disabled parents increases the family care burden for women with negative impacts on employment probabilities.

As they are influenced more strongly by family factors, women are more likely to be marginalised in the labour market than men, with a higher possibility of participating in unstable or part-time jobs that are most likely to be lower income and exclude welfare and social security. A clear tendency of informal employment is observable among women (Jerónimo Kersh, 2018; Wirba et al., 2021), resulting in the phenomenon of women transferring from formal to informal employment following marriage or childbirth (Zhang & Managi, 2021; Schmieder, 2021). Informal employment is a relative concept in comparison to formal employment. Traditional informal employment is primarily characterised by low incomes and a lack of basic social security in labour hours, work environment, social insurance, labour relationships and other formal employment provisions (Skedinger, 2018; Rodriguez-Loureiro et al., 2020). Researchers once believed that only those who were unable to enter the formal employment sector would turn to the traditional informal employment sector (Williams & Krasniqi, 2021). Traditional informal employment is considered to be a suitable and sustainable form of employment for low-skilled, low-income workers (Gordon, 2017; Liwiński, 2022). From the perspective of labour market segmentation, the traditional informal employment market is deemed as a low-end secondary labour market (Khan, 2021). Informal employment is also associated with poverty, wherein poverty can establish the intergenerational transmission of informal employment (Kishwar & Alam, 2021). Informal employment can free individuals from the work time constraints of formal employment, which enables women to balance family and occupational lives; however, in the absence of guaranteed labour rights and due welfare, women could face potential gender discrimination and work form discrimination. Previous studies have demonstrated a more severe gender imbalance in informal employment (Neog & Sahoo, 2023; Wang & Raymo, 2021). Thus, the high mobility of women from formal to informal employment after marriage or childbirth and its comparatively lower income and competitiveness has a negative influence on professional women (Fujishiro et al., 2021; Padrosa et al., 2022). This indicates that reintegration into the labour market following a family-related professional break could be at a cost of mental health for women (Ruiz et al., 2017; Rodriguez-Loureiro et al., 2020). Therefore, high employment rates due to employment diversification might not be related to high quality employment. An abundance of research has examined labour supply and labour competitiveness based on gender differences, but the statistics regarding informal employment remain fuzzy and ambiguous. As limited research has investigated how informal employment affects the employment decisions of different genders, our research investigates this question with evidence from China.

2.2 Mechanism Analysis on the Impact of Informal Employment

Employment decisions are significantly affected by working hours. Compared to the traditional 8-hour-a-day system of the formal employment sector, the flexible employment of the informal sector can enable women to choose their working hours under the constraints of limited disposable time. Informal and formal sectors are considered in individual employment decisions. In this case, there is an obvious difference in the selection of formal or informal employment, and distinguishing between these employment forms can truly reflect the individuals' realistic conditions when determining available employment hours. From the perspective of family economics, employment decisions can be defined as the distribution of

labourers' available disposable time (excluding the timing and activities required to maintain household and family life) between paid work and the family time (including housework, child rearing, care for the elderly and leisure).
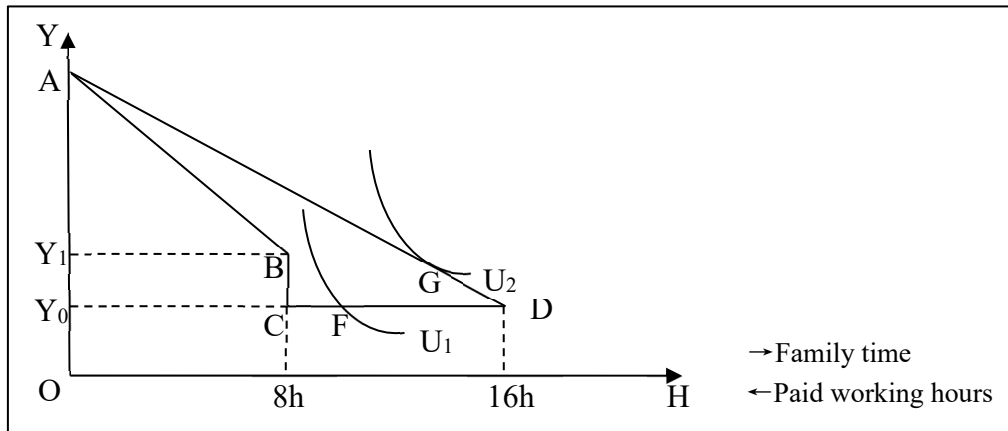

Fig. 1 – Employment decisions for labourers who prefer family time. Source: own research

Fig. 1 presents the budget constraints for labourers to participate in formal and informal employment, respectively, specifying disposable time as 16 hours. Formal employment has an 8-hour-per-day fixed time and offers basic salary incomes (Y_1-Y_0), so the budget constraint line of formal employment is ABCD. Influenced by the culture, system and other relevant characteristics, most labourers do not completely recognise informal employment. People tend to consider formal employment as more respectable than informal employment, and formal employment is a relatively reliable form of social security. Therefore, most of those in the informal employment group are unable to enter formal employment because of limited skill levels and are forced to select informal employment with overall low wage rates. The consequent budget constraint of informal employment is represented by AD, and the wage rate (the slope factor of the budget constraint line) is $w_{AB} > w_{AD}$. Labourers can be divided into three types according to time distribution preferences, including preferences for housework, leisure and work hours. The first two types of labourers prefer more family time in the time distribution, with indifference curves that are relatively steeper than those who prefer employment. Fig. 1 reveals that employment constraints for individuals who prefer family duties will intersect the indifference curve at F point, and the corresponding working time of point F is less than the basic 8-hour workday of formal employment. In such circumstances, exiting the labour market seems to be the optimal choice. In the informal sector, the intersection of the indifference curve and informal employment budget line is at point G, wherein the individuals still engage in paid labour on the labour market. Paid working time is relatively short, but the individual does not exit the labour market. In addition, the utility level obtained in the informal sector is larger than that following direct withdrawal from the labour market ($U_2 > U_1$). In comparison to men, women tend to be more strongly influenced by family factors; hence, the development of informal employment can boost female labour market participation. In addition, age is a key factor of employment decisions, in which younger aged groups have a relatively flat indifference curve; hence, are more likely to participate. The middle-aged group are burdened with family matters, rendering informal employment a better choice. The elderly are not physically capable of engaging in traditional informal employment, nor can they access the emerging informal employment due to a lack of internet technology. In addition, most elderly

family members prefer to take care of their grandchildren and will most likely exit the labour market.

Thus, we framed the following hypotheses:

H1: Employment diversification improves women's labour market participation. Yet overall, women's competitiveness in the labour market is still lower compared with men.

H2: Demographic features have influence over labour competitiveness, especially towards women in the formal employment sector.

H3: The influence of human capital on labour competitiveness is more significant in the formal employment sector, especially among women.

H4: Subjective cognition and social security participation increase labour competitiveness, especially in the formal employment sector.

H5: Family factors are negatively related with labour competitiveness, especially among women.

3   RESEARCH OBJECTIVE, DATA AND METHODOLOGY

3.1 Research Objective

Our study investigates four employment statuses that link individuals to the labour market: formal employment, informal employment, unemployment and exit from the labour market. We endeavour to examine the factors that affect individuals' decision-making regarding these four employment statuses. Furthermore, we compare differences in different employment forms (formal and informal employment) from the gender perspective to analyse the key factors that influence these differences and assess the level of gender discrimination in formal and informal employment.

3.2 Data

The data used in this study are obtained from the China Family Panel Studies (CFPS). This micro-study data project is implemented by the Institute of Social Science Survey, Peking University and includes 16,000 target samples from 25 Chinese provinces, cities and autonomous regions, collecting data from individuals, families and communities through tracking to reflect the trajectories of Chinese society, economy, population, education and health. This micro-study data project is conducted nationwide through a multidisciplinary social tracking survey. Regarding labour supply and employment decisions, the tracking survey data for Chinese families have advantages, as items in the questionnaire distinguish the four employment statuses. The survey tracking data of CFPS2020 are used for empirical analysis. Based on regulations regarding China's statutory retirement age, females between 16 and 54 years of age and males between 16 and 59 were selected as the primary study sample. Following data screening and relevant exclusions, 2,696 mixed study samples remained, including 1,488 females and 1,208 males. Notably, the logarithmic treatment of total family income was conducted to endow the regression coefficient with a higher discernibility degree. In addition, the CFPS2020 dataset only includes individual demographic information, and information on household wealth is not yet available. As a result, the household financial data used for 2020 was predicted based on matching individual samples in 2016 and 2018.

3.3 Methodology

A multi-valued choice model of employment decision-making was adopted in this study. Influenced by the 8-hour-per-day system of formal employment in China's labour market, labourers cannot independently select their working time. If working time was directly

introduced as the explained variable, the sample data would be unrepresentative, and the estimated results would fail to truly reflect individuals' employment decision behaviour. Therefore, formal and informal employments were divided, and individuals' employment form selection reflects labourers' decisions regarding working hours. The employment form was subdivided into formal and informal in employment selection. Non-employment was subdivided into unemployment and exit from the labour market to examine differences in employment diversity and forms of non-employment. In contemporary times, labourers face multi-valued employment decisions, motivating the construction of a multi-valued selection model of labour supply decisions. A multinomial logit model was selected for the diversified estimation of employment decisions, with the labour supply decision model presented as below:

$$\ln\left[\frac{P(employ=j)}{P(employ=1)}\right] = \beta_0 + \beta_1 gender + \beta_2 age + \beta_3 sage + \beta_4 edu + \beta_5 hukou +$$
$$\beta_6 marrstab + \beta_7 lifesati + \beta_8 health + \beta_9 ifendowment + \beta_{10} ifmedicalins +$$
$$\beta_{11} fmlcount + \beta_{12} helpparent + \beta_{13} housework + \beta_{14} houseown + \beta_{15} lnfinc +$$
$$\beta_{16} central + \beta_{17} west \tag{1}$$

where β_0 denotes the data truncation item and β_i represents the partial regression coefficient of the corresponding independent variable.

The dependent variables of the empirical model are employment status. To horizontally compare formal employment, informal employment, unemployment and exit from the labour market, the roles of each proposed influence factor differ, and a discrete quaternary variable of labour supply was constructed based on employment and non-employment status; specifically, employ = 1 representing formal employment, employ = 2 representing informal employment, employ = 3 representing unemployment and employ = 4 representing exit from the labour market. Employ = 1 or 2 belong to employed status, whereas the employ = 3 or 4 represent non-employment status. The independent variables of the empirical model indicating labour supply influence factors were classified into six variables: demographic, human capital, subjective cognition, social security, family and individual and family economic characteristics. The demography characteristic is composed of gender (gender=1 if male), age and quadratic component (age, sage), type of registered permanent residence (hukou=1 if urban), and regional dummy variables (central, west); the human capital characteristic consists of the education years (edu) and physical conditions (health, five-point scale); the subjective cognition characteristic refers to life satisfaction (lifesati, five-point scale); the social security characteristic includes the pension insurance participation (ifendowment=1 if insured) and medical insurance participation (ifmedicalins=1 if insured); the family characteristic refers to the marriage stability (marrstab=1 if stable), family structure (fmlcount, household size), parents' care condition (helpparent, number of dependent parents) and housework burden (housework, daily housework hours); the individual and family economy characteristic is composed of personal housing ownership condition (houseown) and total family income condition (lnfinc, logarithm of household income).

The employment difference decomposition model was also adopted. A nonlinear decomposition model referencing the Blinder–Oaxaca linear decomposition model was used to decompose gender employment differences and to analyse the rational composition and unreasonable discrimination of employment differences. Characteristic and coefficient differences were decomposed referencing Yun (2004), and the weight of $\bar{X}_A \beta_A$ and $\bar{X}_B \beta_B$ were obtained using the Taylor first-order linearisation decomposition equation to avoid path dependency generated by the use of sequential replacement in the variable subdivision of previous research. Following linearisation, the structure weight of the kth concomitant variable in characteristic difference part (E) was determined as follows:

$$W_{\Delta_{X_k}} = \frac{\beta_{A_k}\left(\bar{X}_{A_k} - \bar{X}_{B_k}\right)}{\sum_{k=1}^{K} \beta_{A_k}\left(\bar{X}_{A_k} - \bar{X}_{B_k}\right)} \qquad (2)$$

The coefficient weight of the kth concomitant variable in the coefficient difference part (C) was calculated as follows:

$$W_{\Delta_{\beta_k}} = \frac{\bar{X}_{A_k}\left(\beta_{A_k} - \beta_{B_k}\right)}{\sum_{k=1}^{K} \bar{X}_{A_k}\left(\beta_{A_k} - \beta_{B_k}\right)} \qquad (3)$$

where $\sum_k W_{\Delta_{X_k}} = \sum_k W_{\Delta_{\beta_k}} = 1$ is the structure weight. $W_{\Delta_{X_k}}$ reflects the linearised contribution of the characteristic difference E of the kth concomitant variable and is made up of the weighted inter-group mean deviation value of the control group effect. Likewise, $W_{\Delta_{\beta_k}}$ denotes the linearised contribution of coefficient difference C of the kth concomitant variable and was determined by the weighted inter-group effect difference value of the control group mean value. The results indicate that two weights are proportional to the contribution of observed value decomposition, and two weights do not change with the change of the concomitant variable scale. Therefore, inter-group initial difference is equal to the weighted sum of difference contribution of each concomitant variable.

$$\bar{Y}_A - \bar{Y}_B = E + C = \sum_{k=1}^{K} W_{\Delta_{X_k}} E + \sum_{k=1}^{K} W_{\Delta_{\beta_k}} C = \sum_{k=1}^{K} E_k + \sum_{k=1}^{K} C_k \qquad (4)$$

The samples were divided into formal and informal employment, and the gender employment differences of the two employment type groups were determined. In addition, the employment and gender differences of the two types of labour markets were surveyed through rational comparison. To ensure the rationality of employment difference decomposition, the decomposition references the control group setting (no discrimination status) of Oaxaca (1973), Reimers (1983), Cotton (1988) and Neumark (1988), comparing the decomposition results of each decomposition method.

4   RESULTS AND DISCUSSION

4.1   Overall Influences of Employment Diversification on Labour Competitiveness

Tab. 1 presents the empirical results of the multinomial logit regression (marginal effect) of the mixed samples. Among the demographic variables, gender has a significant positive marginal effect on formal and informal employment, particularly in the formal sector. At the same time, gender exerts a negative marginal effect on exit decisions but does not have a significant marginal effect on unemployment. The findings demonstrate that men secure employment more easily than women, women's disadvantage is more obvious in the formal employment market, and women are more likely to exit the labour market than men. The age factor presents an inverse U-shaped distribution (first rising and then declining). This is consistent with the findings of Heintz et al. (2018) on Bangladesh. And the age inflection points of formal and informal employment converge at ~34.8 and 39.9 years of age, respectively. Regarding non-employment in both sectors, the possibility of labour market exit presents a positive U-shaped distribution (first declining and then rising), and the age inflection point converges at ~35.5 years of age, indicating that the possibility of exit is lowest at that age, and the sensitivity of individual unemployment to age is not high. The measurement results of registered permanent residence characteristics indicate that rural labourers are more easily employed in both formal and informal sectors, while the urban labour has a higher possibility of exiting or remaining unemployed. Regarding regional influence in China, the possibility of exit and unemployment in the central region is higher than the eastern and western regions, only in the formal sector. In terms of human capital, the regression results indicate that education is positively correlated

with formal sector employment, and individuals with lower education tend to enter the informal sector or exit the labour market. Tansel and Acar's (2017) research on Turkey also verified the necessity of education for formal employment.

Tab. 1 – Multinomial logit regression of mixed samples. Source: own research

Variables	Formal employment	Informal employment	Unemployment	Exit from the labor market
gender	0.209***(0.022)	0.039***(0.009)	0.013(0.009)	-0.261***(0.020)
age	0.054***(0.009)	0.009***(0.003)	-0.004(0.003)	-0.059***(0.008)
sage	-0.001***(0.000)	-0.000***(0.000)	0.000(0.000)	0.001***(0.000)
edu	0.018***(0.003)	-0.003***(0.001)	-0.001(0.001)	-0.014***(0.003)
hukou	-0.059**(0.025)	-0.014*(0.008)	0.021**(0.010)	0.053**(0.023)
marrstab	-0.117***(0.031)	-0.005(0.013)	-0.014(0.015)	0.136***(0.028)
lifesati	0.001(0.010)	-0.003(0.003)	-0.019***(0.004)	0.021**(0.010)
health	0.047***(0.010)	0.003(0.003)	-0.000(0.004)	-0.050***(0.010)
ifendowment	0.174***(0.022)	-0.012(0.008)	-0.008(0.009)	-0.154***(0.021)
ifmedicalins	-0.043(0.032)	0.029***(0.008)	0.018*(0.010)	-0.004(0.031)
fmlcount	-0.019***(0.006)	0.002(0.002)	0.000(0.002)	0.017***(0.005)
helpparent	0.005(0.015)	0.008*(0.005)	0.015***(0.005)	-0.028*(0.014)
housework	-0.053***(0.008)	0.002(0.003)	0.008***(0.003)	0.044***(0.007)
houseown	0.028(0.027)	-0.001(0.009)	-0.019**(0.009)	-0.008(0.026)
lnfinc	0.018***(0.006)	-0.001(0.002)	-0.001(0.002)	-0.016***(0.005)
central	-0.116***(0.025)	0.006(0.009)	0.020*(0.011)	0.090***(0.023)
west	-0.041(0.030)	0.014(0.011)	0.019(0.014)	0.008(0.028)
Observations	2696			
LR chi2(51)	928.25 (Prob>chi2=0.0000)			
Pseudo R2	0.1767			

Note: Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

The impact of education on unemployment is insignificant. The health aspect enhances the probability of labourers' formal employment and decreases the possibility of exit. Individual cognition of life satisfaction does not significantly affect either sector. For non-employment status, higher life satisfaction will reduce the unemployment possibility but also increases the probability of exiting the labour market. The result regarding social security variables shows that among the four forms of employment status, the pension participation rate has significant influence on formal employment and labour market exit. The probability of formal employment is higher, and the exit rate is lower for those with state pensions. The study of Pfau-Effinger (2017) found that the improvement of social welfare such as pension would make some informal workers in Moldova leave the labour market ahead of time. The rate of healthcare participation positively affects informal employment and unemployment, indicating that individuals who enrolled with healthcare projects are more likely to participate in informal employment and have higher unemployment rates. Among the influence factors of family characteristics, marriage stability has a significant influence on formal employment and labour market exit. Individuals with a steady marriage have a lower probability of formal employment and a higher possibility of labour market exit. Family scale has no correlation with

unemployment; however, a large family shifts individuals from formal to informal employment or even labour market exit. Parental care is significantly correlated with informal employment and unemployment but negatively associated with labour market exit. This is consistent with the research conclusion of Meurs and Giddings (2021) on Bulgaria. Household duties significantly reduce the probability of entering formal employment and enhance the possibility of labour market exit. The results of personal and family financial factors reveal that real estate ownership has a significant negative correlation with unemployment, while total family income is positively associated with formal employment and reduces the possibility of labour market exit. Heintz et al. (2018) proved that family wealth inhibits women's informal employment in Bangladesh.

4.2 Heterogeneous Influence of Employment Diversification on Labour Competitiveness

Tab. 2 presents the multinomial logit regression results for men, revealing that age significantly influences both formal and informal employment sectors among men, demonstrating an inverse U-shaped distribution, with the age of convergence at ~35.7 and 37.5 years of age, respectively. Men in the formal employment sector are younger than those in the informal sector. Age also has significant influence on the possibility of unemployment and labour market exit among men, with a U-shaped distribution and inflection points at ages ~40.1 and 34.9, respectively. The registered permanent residence factor significantly affects all employment forms. Compared with urban areas, men from rural areas have a higher employment rate. Men from the central area have significant disadvantages in formal employment and a higher exit rate than those of eastern and western regions. The results of the human capital analysis indicate that men with superior education backgrounds have better chances of formal employment, while those with lower education have a stronger possibility of engaging in informal employment. This is consistent with the findings of Totouom et al. (2018) on Cameroon.

Tab. 2 – Multinomial logit regression of male samples. Source: own research

Variables	Formal employment	Informal employment	Unemployment	Exit from the labor market
age	0.031***(0.010)	0.008*(0.006)	-0.010**(0.005)	-0.029***(0.008)
sage	-0.000***(0.000)	-0.000*(0.000)	0.000**(0.000)	0.000***(0.000)
edu	0.010***(0.004)	-0.007***(0.002)	-0.001(0.002)	-0.002(0.003)
hukou	-0.074**(0.030)	-0.002(0.015)	0.039**(0.016)	0.038*(0.023)
marrstab	0.054(0.042)	0.023(0.017)	-0.012(0.021)	-0.065*(0.035)
lifesati	0.032***(0.012)	-0.001(0.006)	-0.019***(0.006)	-0.012(0.009)
health	0.046***(0.012)	0.006(0.006)	-0.004(0.006)	-0.048***(0.009)
ifendowment	0.137***(0.029)	-0.020(0.014)	-0.020(0.014)	-0.097***(0.023)
ifmedicalins	-0.013(0.037)	0.034**(0.015)	0.018(0.014)	-0.039(0.031)
fmlcount	-0.014**(0.007)	0.003(0.003)	0.002(0.004)	0.010*(0.005)
helpparent	0.002(0.018)	0.009(0.008)	0.008(0.008)	-0.020(0.015)
housework	-0.035***(0.011)	0.005(0.005)	0.012***(0.004)	0.017**(0.008)
houseown	0.003(0.030)	0.008(0.015)	-0.015(0.014)	0.004(0.023)
lnfinc	0.010(0.006)	-0.003(0.003)	0.001(0.004)	-0.007*(0.004)
central	-0.094***(0.031)	0.020(0.016)	0.009(0.015)	0.066***(0.025)
west	-0.037(0.037)	0.024(0.020)	0.009(0.019)	0.004(0.029)

Observations	1208
LR chi2(48)	359.91 (Prob>chi2=0.0000)
Pseudo R2	0.1667

Note: Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Men with better health can more easily obtain formal employment, while those with poor health tend to exit the labour market. The regression results of individual life satisfaction indicate that men's recognition of life satisfaction exerts a significant negative impact on the possibility of unemployment. State pension and medical insurance participation is positively correlated with formal employment among men. The regression results for family factors indicate that marriage stability only affects exit rate among men, with a negative relationship. Family scale has significant influence over men's informal employment and labour market exit decisions. The probability of formal employment is negatively associated with family scale for males, as those with larger families are more likely to exit the labour market. Parental care support has no significant influence on males' employment decisions. Men with a long duration of housework have a relatively low probability of securing formal employment, and the possibility of unemployment and exit from the labour market increases accordingly. From the perspective of personal and family economic factors, home ownership does not significantly influence men's employment decisions. The total family income only negatively affects the possibility of men's labour market exit.

Tab. 3 shows the multinomial logit regression results for women.

Tab. 3 – Multinomial logit regression of female samples. Source: own research

Variables	Formal employment	Informal employment	Unemployment	Exit from the labor market
age	0.071***(0.015)	0.012***(0.004)	0.002(0.005)	-0.084***(0.015)
sage	-0.001***(0.000)	-0.000***(0.000)	-0.000(0.000)	0.001***(0.000)
edu	0.023***(0.004)	0.000(0.001)	-0.001(0.002)	-0.022***(0.004)
hukou	-0.030(0.034)	-0.019**(0.008)	0.004(0.012)	0.045(0.034)
marrstab	-0.263***(0.047)	-0.040(0.025)	-0.020(0.021)	0.323***(0.040)
lifesati	-0.020(0.014)	-0.003(0.003)	-0.019***(0.004)	0.041***(0.014)
health	0.033**(0.015)	-0.001(0.003)	0.003(0.005)	-0.035**(0.015)
ifendowment	0.192***(0.030)	-0.007(0.007)	-0.001(0.010)	-0.184***(0.030)
ifmedicalins	-0.090*(0.046)	0.020***(0.007)	0.017(0.012)	0.052(0.046)
fmlcount	-0.023***(0.008)	0.002(0.002)	-0.001(0.003)	0.022***(0.008)
helpparent	-0.007(0.021)	0.005(0.004)	0.017***(0.006)	-0.015(0.021)
housework	-0.055***(0.011)	-0.001(0.002)	0.003(0.003)	0.053***(0.010)
houseown	0.030(0.042)	-0.009(0.007)	-0.019(0.011)	-0.003(0.042)
lnfinc	0.021*(0.011)	0.001(0.002)	-0.002(0.002)	-0.019*(0.010)
central	-0.121***(0.033)	-0.002(0.007)	0.029**(0.014)	0.095***(0.033)
west	-0.036(0.040)	0.003(0.009)	0.025(0.018)	0.007(0.040)
Observations	1488			
LR chi2(48)	422.91 (Prob>chi2=0.0000)			
Pseudo R2	0.1493			

Note: Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

The results of the demographic feature indicate that, in women's employment decisions, age also presents an inverse U shape, and the age inflection point of formal employment (~39.6 years old) is less than that of informal employment (~47.9 years old). The impact of age on the possibility of women's labour market exit presents a U-shaped distribution, with convergence at age ~41. A registered permanent residence is significantly negatively related to unemployment among women. Women from rural areas have a higher rate of informal employment, while those from the central region have a lower probability of formal employment and higher exit rates than those from eastern and western regions. No significant difference is evident in the informal sector. The influence of education on women's employment status shows that a superior education background does not impose a higher employment possibility, which could suggest that the market imposes higher human capital requirements on females than males, because higher education background fails to result in better employment for women. Women with better health have lower exit rates. Higher life satisfaction reduces unemployment and exit rates but increases informal employment. Social security characteristics indicate that only pension insurance participation will significantly influence females' selection of formal employment and labour market exit. Women's medical insurance participation will significantly increase the probability of formal employment and reduce the probability of informal employment. The regression results for family characteristics show that marriage stability exerts a more apparent impact on women than men. A stable marriage will reduce the possibility of formal employment and increase labour market exit rates for women. The variable of family scale only significantly reduces the possibility of formal employment and increases exit rates for women but does not significantly affect informal employment. While parental burden has a consistent influence in both men's and women's employment decisions, it only increases women's unemployment rate. Housework will reduce the possibility of women entering formal employment and increase exit rates. The comparative results regarding the marginal effect on men and women reveal that housework has a more significant role for women than men, indicating that women's employment is more constrained by family factors. The measurement results of personal and family economic factors are consistent with the male regression results. Total family income will significantly enhance the possibility of women's formal employment and reduce the probability of labour market exit.

4.3 Decomposition of Labour Competitiveness Differences

Barriers exist in the two-level formal and informal employment markets, and an obvious difference is observed in male and female employment decisions. Therefore, the gender differences of formal and informal employment are decomposed for formal and informal employment types for the comparative analysis of gender employment gaps. Tab. 4 presents the results regarding gender difference in labour competitiveness due to employment diversification. When the male sample is used as the control group, the differences in the contribution of characteristics and coefficient difference in the gender employment gap of formal employment reaches 19.5% and 80.5%, respectively. In addition, the differences in the contribution of characteristics and coefficient difference in the gender employment gap of informal employment reaches −48.4% and 148.4%, respectively. When the coefficient weight of the male control group is set at 50%, the rational explainable gender difference decomposed in the formal employment decision accounts for 31%, while the irrationality attributed to discrimination accounts for 69%. The employment difference resulting from the overestimation of men and the underestimation of women due to the discrimination accounts for 27.4% and 41.6%, respectively. The rational explainable gender difference decomposed in the informal employment decision accounts for −11.5%, while the irrationality attributed to discrimination accounts for 111.5%. The employment difference resulting from the overestimation of men and

the underestimation of women accounts for 68.3% and 43.2%, respectively. When the male sample proportion is set to the coefficient weight of the control group, the gender difference resulting from the differences in characteristics in the formal employment market accounts for 29.8%, while that resulting from coefficient differences is 70.2%. Specifically, employment differences resulting from the overestimation of men and the underestimation of women accounts for 24.4% and 45.8%, respectively. The gender difference resulting from the differences in characteristics in the informal employment market accounts for −13.9%, while that resulting from the coefficient differences accounts for 113.9%. Specifically, the employment difference resulting from the overestimation of men and the underestimation of women accounts for 63.6% and 50.3%, respectively. When the regression results of mixed samples are adopted as the control group, the rational employment difference attributed to the differences in characteristics in formal employment accounts for 46.5%, while the irrational employment difference attributed to the differences in characteristics in formal employment account for 53.5%. Specifically, the gender difference resulting from the overestimation of men and the underestimation of women accounts for 29.5% and 24%, respectively. The rational employment difference attributed to the differences in characteristics in informal employment accounts for 8.9%, while the irrational employment difference attributed to the differences in characteristics accounts for 91.1%. Specifically, the gender difference resulting from the overestimation of men and the underestimation of women is 50.3% and 40.8%, respectively.

Tab. 4 – Gender difference decomposition by employment type. Source: own research

Weight reference	Difference type	Formal employment		Informal employment	
		Coefficient	Proportion	Coefficient	Proportion
Oaxaca (1973)	Characteristic difference	0.046536	19.5%	-0.018382	-48.4%
	Coefficient difference	0.191585	80.5%	0.056382	148.4%
Reimers (1983)	Characteristic difference	0.073844	31.0%	-0.004359	-11.5%
	Reverse discrimination gap	0.065301	27.4%	0.025945	68.3%
	Direct discrimination gap	0.098976	41.6%	0.016413	43.2%
Cotton (1988)	Characteristic difference	0.071007	29.8%	-0.005272	-13.9%
	Reverse discrimination gap	0.057981	24.4%	0.024161	63.6%
	Direct discrimination gap	0.109133	45.8%	0.019110	50.3%
Neumark (1988)	Characteristic difference	0.110807	46.5%	0.003363	8.9%
	Reverse discrimination gap	0.070269	29.5%	0.019117	50.3%
	Direct discrimination gap	0.057046	24.0%	0.015520	40.8%
Total		0.238121	100.0%	0.037999	100.0%

The gender income gap comparison results of formal and informal employment confirm a greater formal employment gender gap overall. Regardless of any decomposition method, the differences in the irrational coefficient of the gender employment gap in informal employment is larger than that of formal employment, indicating that gender discrimination is more severe in the informal employment market than in the formal employment market. Additionally, segmentation of the irrational gender employment gap demonstrates a larger proportion of the employment gender discrimination resulting from the overestimation of male characteristics in the informal employment market, indicating that the informal employment market is more open to receiving male labourers. In this case, females confront discouraging circumstances when making employment decisions, as they face difficulty entering the formal employment market and gender discrimination in the informal employment market. This is consistent with the findings of Rogan and Alfers (2019) on South Africa.

5   CONCLUSION

Based on a multi-value labour supply decision model and a nonlinear employment difference decomposition model, we used a CFPS dataset to examine the influence factors of household employment decisions, with five conclusions. First, men possess more competitive strength than women in both formal and informal forms of employment. Compared to men, unemployed women are more likely to remain unemployed for a longer average duration and even be pushed into exiting the labour market. As the structural gender differences in traditional employment are considerably higher than informal employment, gender discrimination in informal employment is much more severe than traditional employment, and the return value of men is continuously overestimated, which suppresses women's labour market competitiveness. Second, from the demographic statistics, the impact of age on employment decisions presents an inverse U-shaped distribution. The average age of traditional employment is younger than that of informal employment, and informal employment provides women with more options for managing occupations and family roles. For women, a younger age can be a key factor in reducing gender differences in employment. Labour in rural areas has stronger competitiveness than those in urban areas. Migrant workers (from rural to urban areas) in the formal employment sector are endowed with strong self-selection, while women in the informal employment sector have lower self-selection options in comparison to men. In addition, individuals' employment decisions are also affected by regional location, as China's central region clearly has a lower employment rate than its eastern and western regions. Men in the central region are more likely to enter formal employment. Regional differences in employment decisions are primarily evident in formal employment. Third, from the perspective of human capital, individuals with higher education are more likely to enter formal employment and have a lower probability of informal employment, and the effect of education level is clearly stronger on women than men. The impact of education level on female employment decisions is primarily evident in formal employment, revealing that the labour market imposes a higher education threshold on women than men. Women with lower education levels have higher labour market exit rates. Health factors significantly promote competitiveness in men but have no significant influence on women. Fourth, subjectively, our study demonstrates that women with higher life satisfaction are more likely to exit the labour market. From the perspective of social security, we find that state pension participation is positively correlated with entering formal employment for both genders, while in the informal employment sector, the negative influence from the absence of state pension over employment decision is only observable in men. Fifth, family roles tend to be a constraint of female employment decisions. Marriage status is negatively correlated with women's employment decisions, and men are more likely to participate in formal employment and women are more likely to participate in informal employment in stable families. We also find that a larger family can increase men's probability of informal employment and women's possibility of labour market exit. Caregiving is positively correlated with unemployment, and housework is negatively correlated with formal employment, particularly among women. This aligns with the traditional view of females' responsibility for housework, which increases gender discrimination towards women and weakens women's labour market competitiveness. From the perspective of family wealth, family income has a positive influence on employment decisions in the formal employment sector. The genders exhibit inequality regarding the effects of family wealth share, which highlights gender differences in employment and weakens women's competitiveness. With the trend of employment diversification, China's employment policies should be shifted towards gender equality, such as creating more market employment opportunities for women, strengthening employment protection, reducing gender discrimination, and promoting the balance between women's family and work. Due to data limitations, this paper does not further divide the traditional informal employment and the

emerging informal employment among the informal employment groups, and the differences of labour competitiveness within the informal employment sector need to be further explored.

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