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Property Rights, Labor Reallocation, and Gender Inequality in Rural China

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***Selected Paper prepared for presentation at the 2023 Agricultural & Applied Economics Association
Annual Meeting, Washington DC; July 23-25, 2023***

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Abstract

This study examined the gender-differentiated effects of improved land property rights on labor reallocation using quasi-exogenous variation in the timing of the implementation of the Rural Land Contracting Law in China, which allows farmers to lease out their land. We found that while both men and women tend to shift their labor away from the agricultural sector and into non-agricultural sectors following the land reform, women lag behind men, with a noticeable gender gap in the growth of off-farm labor participation (+17.1% among men; + 8.7% among women) and days worked in off-farm sectors (+27.0% among men; +16.2% among women). This gender-differentiated effect of improved property rights is mainly driven by gender-specific labor market conditions rather than gender gaps in human capital and gender identity norms. Unskilled rural workers are likely to engage in blue-collar occupations, which are male-dominated. Even if women with the same qualifications and occupations as men are employed, they may receive less pay. These findings suggest that implementing land reforms without accompanying reforms to address the root causes of the gendered difference in off-farm employment would limit the potential of the reform benefit. This study has significant policy implications for developing countries in the process of rural transformation.

JEL Classification: Q15, D13, J16, J71

Keywords: Property Rights, Labor Reallocation, Gender Inequality, Rural China

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1. Introduction

A common phenomenon in developing countries is that the agriculture sector absorbs a substantial share of the labor force, up to two-thirds of the population. By contrast, less than 5% of the population works in agriculture in developed countries¹. However, agriculture's value-added per worker is lower than that of the non-agriculture sector, particularly in developing countries (Gollin et al., 2014). For instance, in most countries across Sub-Saharan Africa and South Asia, the agricultural value-added per worker was typically less than \$1,000 in 2017.² This misallocation of workers is the primary cause of the low aggregate productivity in developing countries (Restuccia et al., 2008). Well-defined land property rights have long been recognized as an essential premise for efficient workforce allocation because greater security of tenure tends to encourage farmers to engage in land rental and move into non-farm employment (Chernina et al., 2014; de Janvry et al., 2015). However, despite efforts emphasizing equality and empowerment for women in agriculture (Nelson et al., 2012), little is known about whether there is a gender disparity in the reallocation of labor from agricultural to non-agricultural employment following property rights reforms. This study is among the first to explore this issue.

We examined the effects of the Rural Land Contracting Law (RLCL) in China—a property rights reform that provides farmers with legal rights to lease their farmland as part of existing protections for property rights security—on gender-differentiated labor reallocation. Two conditions make China an important setting for studying how the prevailing gender-biased opportunities in the labor market manifest themselves in the process of labor

¹ See <https://ourworldindata.org/employment-in-agriculture>

² See <https://ourworldindata.org/employment-in-agriculture>

reallocation from the agricultural to the non-agricultural sector induced by land reform. First, while women have fewer land inheritance rights in some developing countries (Roy, 2015), men and women have equal land rights in China.³ Codifying equality implies that gender disparity in land rights is unlikely to be the primary reason for gender differences in responses to land reform. However, other associated factors, such as human capital gaps, gender-identity norms, and gender discrimination in labor markets, may cause gender-differentiated effects of land reform on labor allocation, even in the absence of gender differences in land rights. Second, by allowing farmers to act as lessors (they can lease their land to others), the RLCL provides a unique opportunity to estimate the gender-differentiated process in the labor movement to non-agricultural sectors.

To examine the relationship between land reform and labor reallocation from a gender perspective, in this study, we utilized four datasets. Following Chari et al. (2021), we first collected data on when each province in China began to implement land reform after the central government's official announcement of the RLCL in 2003. Next, we combined these data with a panel dataset from a nationally representative household survey, the China Health and Nutrition Survey (CHNS), which covers approximately 7,200 households, including over 30,000 individuals in 15 provinces and municipalities with substantially diverse socioeconomic indicators.⁴ For supplementary analysis of the mechanisms, we adopted data from (i) the 2005 One-Percent Population Census of China, which includes more detailed information about individual occupations from a broader sample, and (ii) the 2000 (second wave) China's Women Social Status Survey (CWSS), which provides information about

³ However, it is still possible for women in rural China to lose their rights to land upon marriage, divorce, or widowhood (Hare et al., 2007; Judd, 2007).

⁴ Refer to <https://www.cpc.unc.edu/projects/china> for more details.

gender identity norms.

Drawing on the variation in land reform timing across provinces, we employed a difference-in-differences (DID) method to analyze the issues of interest and obtain several main findings. First, we investigated gender-differentiated labor reallocation following the RLCL: after the property rights laws were implemented, we found a large gender-differentiated gap in off-farm labor participation (+17.1% among men; + 8.7% among women) and increased days worked in off-farm sectors (+27.0% among men; +16.2% among women). As for the agricultural sector, we found that while both men and women worked fewer hours in the agricultural sector, the magnitude of the reduction in annual farm hours is even larger for women (35.2%) than men (16.5%). Although land reform encourages both men and women to shift their labor away from the agricultural sector and into non-agricultural sectors, women lag behind men when transiting into the off-farm sector.

We conducted a series of robustness checks to verify whether the effects we estimated were indeed from land reform. The validity of this identification relies on the conditional exogeneity of the timing of RLCL implementation. To examine this identification issue, we first showed that provincial reform timing is not associated with most province-level socioeconomic characteristics and that changes in these characteristics after the land reform are not linked to reform status. Our results are also robust to additional controls for local economic conditions, the mean salary level in cities, and alternative measures of off-farm employment. An event study further verified that the trend for outcomes of interest was identical to that for the implementation in provinces that reformed early, those that reformed late, and those that had yet to reform. We also conducted two placebo tests by randomly

assigning reform timing to provinces and estimating the reform effects on the urban population sample. Another concern is that the RLCL's effects might have been confounded by other reforms in rural China, such as the elimination of agricultural tax (Chari et al., 2021) and China's accession to the WTO (Erten and Leight, 2021; Khanna et al., 2020). However, the results barely change after controlling for agricultural tax reform and the gaps between Normal Trade Relations (NTR) and non-NTR tariffs. Finally, we followed Callaway and Sant'Anna (2021) to address the "negative weight problem" in staggered DID design (Goodman-Bacon, 2021; de Chaisemartin and D'Haultfoeuille, 2020; Baker et al., 2022). The main results remain unchanged.

In the mechanism analysis, we found that this gender-specific response can be explained (at least partially) by the disadvantaged labor market conditions faced by women. Unskilled rural workers are more likely to engage in blue-collar occupations, which are male-dominated. Even if women become employed and share the same qualifications and occupations as men, they are considerably discriminated against in terms of their earnings. We were able to rule out other mechanisms, including gender-human capital gaps and gender identity norms, which do not explain why women lag behind men after the land reform.

Our study is related to two strands of literature. The first strand investigates the impact of property rights reform on factor reallocation and its effects on rural development. Insecure property rights may be associated with the misallocation of both land and labor factors, and reforms aimed at more secure property rights lead to land reallocation (Chari et al., 2021; Cheng et al., 2019) and labor reallocation (de Janvry et al., 2015; Gao et al., 2021; Giles and Mu, 2018). This type of reallocation has also been identified in the case of the RLCL in

China (Deininger and Jin, 2009; Chari et al., 2021). Our research complements these studies, as we investigated possible associations between the RLCL and gender-differentiated labor reallocation. To the best of our knowledge, we are among the first to document the gender gap in the non-agricultural labor market caused by land reform in the agricultural sector.

The second strand of literature examines gender gaps in society. Despite a remarkable convergence in the economic roles of men and women in the labor market, there are persistent and large gender gaps in labor supply, wages, and representation in top jobs (Cortés and Pan, 2020; Jarrell and Stanley, 2004). Many studies have shown that potential contributors to these gender gaps include: (i) human capital differentials that appear to lessen over time as human capital investments between men and women converge (Blau and Kahn, 2017; Goldin, 2014), (ii) labor market opportunities that may be associated with physical conditions and bargaining (Biasi and Sarsons, 2022; Card et al., 2016; Gerard et al., 2021; Sorkin, 2017), and (iii) gender identity norms that assign a breadwinner role to husbands and shift the role of married women from paid labor supply to spending more time taking care of children and doing housework (Kleven and Landais, 2017; Zinovyeva and Tverdostup, 2021; Bertrand et al., 2015). We contributed to this line of work by providing quasi-experimental evidence on the role of these factors as mechanisms in determining gender-differentiated labor reallocation in response to land reform in China. We identified the mechanisms by which gender disparities might emerge even if land reform has no gender preferences.

The remainder of this paper is organized as follows: Section 2 briefly reviews the institutional background of land reform and off-farm employment in China. Section 3 presents the data and identification strategy. Section 4 reports the main results about how

labor reallocation of men and women has differed since the land reform was implemented in rural China. Section 5 discusses the potential mechanisms driving this gender-specific pattern. Section 6 concludes.

2. Background

Since 1949, most restructuring in China has involved rural land system reform. The first land-related reform occurred between 1949 and 1953 when the Chinese government launched a national-level land revolution. Land ownership exploitation by the landlord class was abolished, and private ownership of public land was transformed into public ownership to enable farmers to access more property. As more farmers could operate and transfer land freely after the reform, China's grain output increased from 113 million tons in 1949 to 195 million tons in 1957 (Zhou et al., 2020). However, with the introduction of the People's Commune and the influence of the Great Leap Forward, rural land operations took the form of collective ownership, which negatively impacted farmers' enthusiasm for agricultural production. Thus, from 1958 to 1961, grain output decreased from 197 million tons to 136 million tons (Zhou et al., 2020). Despite adjustments that clarified collective ownership as a three-level system comprising the commune, brigade, and team as the basic holder, agricultural production and rural development before 1978 were hindered by low enthusiasm among farmers.

At the start of the reform and opening up in the late 1970s (Liu et al., 2014), rural land system restructuring in China was initiated at Xiaogang Village in Fengyang County, Anhui

Province, becoming the basis of the Household Responsibility System (HRS). The HRS attempted to partition land ownership property rights into two parts: ownership by village collectives and ownership by farmers with contractual management rights (private use rights) (Wang and Zhang, 2017). This plan increased farmers' enthusiasm for agricultural production, and rural development aligned more closely with the market economy in China. The pilot expansion of this reform in 1984 marked the beginning of the nationwide popularization of the HRS and the confirmation of a 15-year land contract (Cheng et al., 2019).

Although farmers obtained private use rights for farmland after 1979, they risked losing land owing to insecurity, as local governments had the right to reassign plots until the late 1990s. In 1998, the Land Management Law extended the land contract period to 30 years and, to some extent, enhanced land tenure security (Chari et al., 2021). However, with the relaxation of the *hukou* system⁵, some farmers were allowed to leave agriculture and find jobs in cities, abandoning farmlands that could not be transferred to other farmers (Shi, 2018, 2022). This called for an official clarification of the legitimacy of farmland transfers. In response, the Chinese government announced the RLCL in 2003. Although land transfers before 2003 primarily occurred among neighbors and were based on informal land rental agreements (e.g., verbal agreements), they sometimes caused disputes that could not be resolved. The 2003 land reform gave farmers the legal right to transfer land and further outlined the rules for leasing, transferring leases, and dispute settlement.

Chari et al. (2021) and Zhou et al. (2020) showed that legally allowing farmers to lease farmland and standardizing the farmland transfer procedure were the main differences

⁵ The Chinese *Hukou* system is a means of population registration, either urban or rural. Before 1984, rural and urban residents were required to continue residing and working within their geographical locations, suggesting that rural-urban migration was strictly controlled.

between the RLCL and previous reforms, leading to two changes in farmland. First, the RLCL decreased the probability of land reallocation led by local governments (e.g., land expropriation), which made farmers feel more secure about their land rights. For instance, the ratio of villages involved in this type of land reallocation was as low as 4% from 2001 to 2006 and reduced even as far as zero in the following two years (Chari et al., 2021). Second, the RLCL significantly promoted land transfers in rural China. As shown in Appendix Figure A1, the percentage of transferred area to the total contracted area more than doubled from 2002 (1.4%) to 2005 (3.1%). After 2008, the scale of farmland transfer expanded more quickly owing to rapid industrialization and urbanization.

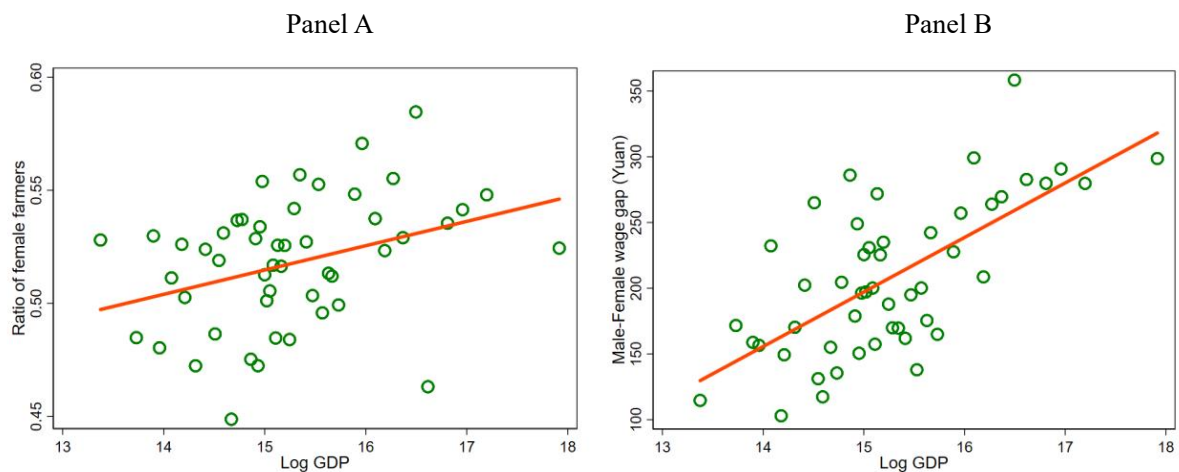
Rural-urban migration remains the pivotal method of obtaining off-farm employment and is the most critical phenomenon accompanying the land reform, having been at least partially affected by the reform. Prior to 1978, China was characterized as a dual society, with strict segmentation between rural and urban areas. Farmers were not permitted to leave agriculture and migrate to cities for off-farm employment, suggesting that rural-urban migration was not possible then. Following the HRS, some rural residents started migrating to cities because of the higher return to labor in non-agricultural sectors. However, the migration rate was very low because of institutional barriers, as the government encouraged farmers to “leave the land without leaving the village” (*litu bulixiang*). In 1978, 93% of rural laborers (around 283 million) worked in agriculture; in 1983, the total number of migrants was only about two million (Cai et al., 2009).

The expansion of migration began in the 1980s with the gradual abolition of institutional obstacles; the number of migrants increased to 30 million in the late 1980s and, by 2000, had

grown to 75.5 million because of rapid economic growth after 1992 (Cai et al., 2009). As shown in Appendix Figure A2, the number of migrants sharply increased by 2002 to 104.7 million—20 million more than in 2001. This number rose to 113.9 million in 2003, with migrants accounting for 44.4% of urban employees. In 2021, the number of migrants reached 292.5 million.

The rapid expansion of migrants highlights the potential post-reform changes in farmers' off-farm employment. Panel A of Figure 1 indicates that women are more likely to be left behind in the agricultural sector when the economy expands, which may contribute to a widening gender wage gap, as shown in Panel B of Figure 1. This gender gap corresponds to the main question this study attempts to explore: Was the labor reallocation trend the same for men and women after China's land reform?

Figure 1: Left-Behind Women, the Male-Female Wage Gap, and GDP Growth



Notes: Cities are divided into 50 groups according to GDP quantile. Panel A shows the relationship between the share of female farmers in each quantile (y-axis) and the log GDP in each quantile (x-axis). Panel B shows the relationship between the male-female wage gap in each quantile (y-axis) and the log GDP in each quantile (x-axis). The data were obtained from the 2005 One-Percent Population Census of China.

3. Data and Identification Strategy

3.1 Data

The main analysis of this study draws on a combination of datasets from the China Health and Nutrition Survey (CHNS) and the timing of implementation of the land reform in each province. We also used supplementary data from the other two surveys, including the 2005 One-Percent Population Census of China and the second wave of China's Women Social Status Survey (CWSS).

The CHNS comprises panel survey data collected by the Carolina Population Center at the University of North Carolina and the National Institute for Nutrition and Health at the Chinese Center for Disease Control and Prevention. This survey adopted a stratified, multilevel random cluster sampling method and included information on household demographic characteristics, economic status, employment, and living conditions, especially individuals' nutritional and health status, allowing us to examine the effect of land property rights in depth. The baseline national survey wave was conducted in 1989. We used rural data from six annual waves between 2000 and 2015, covering 17,765 individuals and 4,994 households in 52 cities from 12 provinces (Beijing, Liaoning, Heilongjiang, Shanghai, Jiangsu, Shandong, Henan, Hubei, Hunan, Guangxi, Chongqing, and Guizhou).

Table 1: Summary Statistics

Variable name	All sample		Male		Female	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Panel A: Variables by individual-year						
Annual off-farm days	189.689	117.414	197.885	116.063	179.942	118.270
Have work (=1)	0.440	0.496	0.498	0.500	0.387	0.487
Annual farm hours	378.815	679.140	348.443	663.033	407.651	692.870

Education attainment						
<i>High school (=1)</i>	0.081	0.273	0.104	0.305	0.060	0.238
<i>Above high school (=1)</i>	0.033	0.179	0.038	0.190	0.029	0.167
Age	42.115	19.536	41.029	19.626	43.127	19.398
Female	0.518	0.500	N	N	N	N

Panel B: Variables by household-year						
Female head (=1)	0.103	0.303	N	N	N	N
Household size	3.367	1.533	N	N	N	N
Share of men	0.215	0.202	N	N	N	N
Household income (Thousand Chinese Yuan)	30.984	38.025	N	N	N	N

Notes: This table shows the summary statistics for the outcome and main control variables. In Panel A, “Off-farm days” and “Farm hours” indicate annual off-farm workdays and farm work hours, respectively. “Have work” is a dummy variable, which is equal to 1 if the person has off-farm work this year, and 0 otherwise. “Housework hours” represents hours involved in housework per day, including time spent buying food, cooking, washing clothes, and cleaning the house. “High school” and “Above high school” are dummies, equaling 1 if the highest degree is high school and the highest degree is college or above, respectively, and 0 otherwise. In Panel B, “Female head” is a dummy that equals 1 if the head of the household is female. “Household size” is the number of household members. “Share of men” indicates the share of male adults (16–50 years old) in this household. “Household income” means the annual income (thousand yuan) of this household.

Table 1 presents the summary statistics for the outcome variables and main control variables. Columns 1 and 2 are for all samples, Columns 3 and 4 are for males, and Columns 5 and 6 are for females. Most questions are asked at the individual-year level, but it also includes questions about household demographics at the household-year level. Panel A reports the summary statistics at the individual-year level.

The main outcome variables of interest are an indicator of whether individuals work in the off-farm sector, days of off-farm work, and agricultural work. The data show that 44% of the sample worked in off-farm sectors for an average of 190 days. Compared with women, men were more likely to work in off-farm employment (50% vs. 39%) and worked for more days (198 days vs. 180 days). By contrast, women devoted more time to agricultural work, with 408 hours per year; men, for their part, spent 348 hours per year on agricultural work. As

for educational attainment, men are more educated than women. Demographic differences between families are also noteworthy.

In summary, the descriptive statistics presented in this section indicate that men are more likely to engage in off-farm employment, whereas women primarily engage in agricultural work. In the following section, we explored whether these gender-differentiated outcomes suggest labor reallocation following the land property rights reforms.

Following Chari et al. (2021), we collected information on the timing of RLCL implementation at the province level from 2003 to 2012. As the RLCL was implemented in a top-down order, we can rule out program placement bias by sorting out the specific implementation time of the RLCL for each province. We added the implementation information of five additional provinces to those in Chari et al. (2021): Heilongjiang, Beijing, Henan, Guizhou, and Hubei. We then removed the provinces not included in the CHNS, leaving 12 provinces in our sample. Appendix Table A1 presents detailed information.

We also used data from two additional surveys to analyze the mechanisms for interpreting our main results, with the summary statistics of the main variables shown in Appendix Table A2. First, we examined data from the 2005 One-Percent Population Census of China conducted by the National Bureau of Statistics to examine gender discrimination in the labor market. The census comprises 2.3 million individuals and one million households in 31 provinces (Freeman et al., 2019). The detailed income and occupation information gathered at the individual level from the census allowed us to explore gender disparities in occupation and earnings immediately after implementing the RLCL.

Next, to complement our investigation of gender identity norms, we analyzed data from

the second wave of the CWSS, conducted jointly by the All-China Women's Federation and the National Statistics Bureau of China in 2000. The survey comprises nine information categories: health, education, economy, social security, politics, marriage and family, lifestyle, legal rights and cognition, and gender concept and attitude. In our analysis, the final sample is comprised of 19,449 individuals.

3.2 Identification Strategy

To investigate the gender-differentiated effects of the RLCL on the sectoral allocation of labor, we used the following basic regression specification:

$$(1) \quad Y_{ihpt} = \beta_0 + \beta_1 Reform_{pt-1} + \beta_2 Reform_{pt-1} \times Female_i + \beta_3 Female_i + \delta_t + \eta_h + \varepsilon_{ihpt},$$

where Y_{ihpt} represents the labor market outcomes of individual i in household h of province p by year t . $Reform_{pt-1}$ is an indicator of whether the reform has been implemented in province p and year $t - 1$ ⁶. $Female_i$ is a gender dummy equal to 1 for women and 0 otherwise. Our primary independent variable of interest was the interaction between the reform indicator and the female indicator, which represents a gender-differentiated response to the reform. The regression controls for household and year fixed effects, denoted by η_h and δ_t , respectively. In alternative specifications, birth cohort fixed effects were further included to account for changes in other policies (e.g., the One Child Policy) pertaining to labor market outcomes. We also allowed the birth cohort fixed effects to vary by the province to absorb cohort-by-province unobservable in some

⁶ As many reforms were implemented late in the year (e.g., October and November), our primary focus was the year after the implementation.

specifications. In all regressions, standard errors were clustered by province.

The validity of the empirical strategy relies on the conditional exogeneity of the timing of the property rights reform. A potential concern would arise if more developed regions adopted the reform earlier than less developed regions: the estimated reform effects could be biased if socioeconomic characteristics are associated with the trends of outcome variables. To evaluate whether and to what extent this case would affect our main results, we limited the sample to pre-reform years and the year of reform implementation and regressed the year in which each province started implementing the reform on a series of key provincial socioeconomic characteristics (de Janvry et al., 2015; Chari et al., 2021). The results in Appendix Table A3 show that the provincial reform timing is not associated with any of the factors.⁷

We also preliminarily tested the essential parallel trend assumption underlying the DID estimation. We regressed each of the variables regarding economic condition, amenity, and government expenditure on the reform dummy to examine whether any socioeconomic changes are associated with the reform (see Appendix Table A4). We found that all coefficients were statistically insignificant. To further examine this issue, we conducted an event study for robustness checks (Section 4.2) and found no significant trends in the outcomes of interest before the land reform, followed by a shift in the coefficients after the reform. This indicates that the timing of reform implementation was not driven by changes in off-farm employment in the province.

In Section 4.2, we conducted a series of robustness checks to confirm the stability of our

⁷ These factors include GDP; employment in the manufacturing sector, construction sector, and tertiary sector; rural electricity consumption; rural income; rural expenditures on food, clothing, and housing; and human capital factors, such as the number of health institutions, senior high schools, and primary schools.

results. We added different controls and ruled out the confounding effects of other policies. In addition, we conducted two placebo tests by randomly allocating provinces to each of the waves of land reform and using urban samples instead of rural samples. These ruled out the potential problems caused by omitted variables.

4. Results

Next, we present our main results on the gender-differentiated effects of property rights reform on labor reallocation in rural China.

4.1 Main Results

Based on Equation (1), Table 2 and Table 3 present the implications of land reform on off-farm labor market outcomes and how it differs by gender. We first showed the gender-specific off-farm labor market effect through the extensive margin, where the outcome variable is an indicator of whether individuals were off-farm employed. Results are presented in Table 2. All columns control for household fixed effects and year fixed effects. In some specifications, we included birth cohort fixed effects (Columns 2, 5) and birth cohort by province fixed effects (Columns 4, 6) to account for other cohort-specific policies. Since we were concerned about the compounding effects of demographics, we further controlled for age and indicators of educational attainment in Columns 4-6. Across all the specifications, both the land reform indicator and the interaction term are statistically significant.

The coefficients imply that land reform increases the probability of working in off-farm sectors by 9.1 – 9.9 percentage points for men; however, women are 4.3% - 5.0% less likely than men to be off-farm employed. As 57.8% of rural workers are off-farm employed, the

point estimates represent a 17.1% increase at the mean for men, while only an 8.7% increase for women⁸, indicating a gender gap of 8.4%.

Table 2: Land Reform and Off-farm Work

	Dependent variable: Employed (=1)					
	(1)	(2)	(3)	(4)	(5)	(6)
Land reform (β_1)	0.0967** (0.0405)	0.0915** (0.0408)	0.0971** (0.0415)	0.0992** (0.0408)	0.0912** (0.0407)	0.0969** (0.0415)
Land reform \times Female (β_2)	-0.0495*** (0.0149)	-0.0440** (0.0154)	-0.0448** (0.0146)	-0.0455*** (0.0146)	-0.0431** (0.0154)	-0.0439** (0.0145)
<i>P value of $\beta_1 + \beta_2$</i>	0.161	0.147	0.126	0.121	0.139	0.119
Observations	20,907	20,907	20,907	20,907	20,907	20,907
Adjusted R-squared	0.332	0.345	0.349	0.341	0.345	0.350
Mean of the dependent variable	0.578	0.578	0.578	0.578	0.578	0.578
Demographics	No	No	No	Yes	Yes	Yes
Household FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Cohort FE	No	Yes	No	No	Yes	No
Cohort \times Province FE	No	No	Yes	No	No	Yes

Notes: The dependent variable is an indicator of off-farm employment. All regressions control for household fixed effects and year fixed effects. Columns 4–6 also control for demographics, including age, and indicators for educational attainment. Robust standard errors clustered at the provincial level are reported in parentheses. Data were obtained from the *China Health and Nutrition Survey (CHNS)*. *** significant at 1%; ** significant at 5%; * significant at 10%.

We then turned our attention to the off-farm labor market impact at the intensive margin.

Table 3 reports the intensive effect of land reform on off-farm labor supply, where the dependent variable is annual off-farm days. Consistent with the extensive margin, land property rights reform leads to more off-farm labor supply, while women tend to work fewer days in off-farm sectors than men.

As shown in Column 6, where in addition to household-fixed effects and year-fixed effects, both demographics and cohort by province fixed effects are included, the number of off-farm working days increased by 27.0% for men and only 16.2% for women after the

⁸ This is based on the results in column 6 with full controls included.

implementation of the property rights law, indicating a gender gap of 10.8 percentage points.

Table 3: Land Reform and Annual Off-farm Days

	Dependent variable: Log annual off-farm days					
	(1)	(2)	(3)	(4)	(5)	(6)
Land reform (β_1)	0.236** (0.0794)	0.255*** (0.0806)	0.268** (0.0946)	0.258*** (0.0801)	0.257*** (0.0804)	0.270** (0.0940)
Land reform \times Female (β_2)	-0.0750** (0.0339)	-0.0942** (0.0385)	-0.108** (0.0434)	-0.0890** (0.0342)	-0.0949** (0.0386)	-0.108** (0.0433)
<i>P</i> value of $\beta_1 + \beta_2$	0.0278	0.0290	0.0325	0.0230	0.0284	0.0305
Observations	12,892	12,892	12,892	12,892	12,892	12,892
Adjusted R-squared	0.198	0.207	0.209	0.203	0.207	0.209
Demographics	No	No	No	Yes	Yes	Yes
Household FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Cohort FE	No	Yes	No	No	Yes	No
Cohort \times Province FE	No	No	Yes	No	No	Yes

Notes: The dependent variable is the logarithm of the annual off-farm days. All regressions control for household fixed effects and year fixed effects. Columns 4–6 also control for demographics, including age, and indicators for educational attainment. Robust standard errors clustered at the provincial level are reported in parentheses. Data were obtained from the *China Health and Nutrition Survey (CHNS)*. *** significant at 1%; ** significant at 5%; * significant at 10%.

In addition to days of off-farm work, we next examine whether the gender-specific off-farm labor supply is accompanied by consistent gender-differentiated effects on annual farm work. As women are less likely to work in off-farm sectors after the reform, do they spend more time in agriculture? In contrast, Table 4 suggests that when both men and women move out of the agriculture sector, women spend less time on agriculture than men in response to the land reform. The point estimates imply that men worked 16.5% fewer hours on average, and women tended to work around 35.2% fewer hours in the agricultural sector.

Table 4: Land Reform and Annual Farm Hours

	Dependent variable: Log annual farm hours					
	(1)	(2)	(3)	(4)	(5)	(6)

Land reform (β_1)	-0.121*	-0.119*	-0.165**	-0.103	-0.118*	-0.165**
	(0.0643)	(0.0629)	(0.0629)	(0.0661)	(0.0628)	(0.0627)
Land reform \times Female (β_2)	-0.216**	-0.205**	-0.189**	-0.213**	-0.204**	-0.187**
	(0.0736)	(0.0810)	(0.0805)	(0.0760)	(0.0792)	(0.0790)
<i>P</i> value of $\beta_1 + \beta_2$	0.000651	0.00115	0.000758	0.00123	0.00120	0.000755
Observations	10,272	10,272	10,272	10,272	10,272	10,272
Adjusted R-squared	0.330	0.348	0.347	0.346	0.349	0.348
Demographics	No	No	No	Yes	Yes	Yes
Household FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Cohort FE	No	Yes	No	No	Yes	No
Cohort \times Province FE	No	No	Yes	No	No	Yes

Notes: The dependent variable is the logarithm of the annual farm hours. All regressions control for household fixed effects and year fixed effects. Columns 4–6 also control for demographics, including age, and indicators for educational attainment. Robust standard errors clustered at the provincial level are reported in parentheses. Data were obtained from the *China Health and Nutrition Survey (CHNS)*. *** significant at 1%; ** significant at 5%; * significant at 10%.

Taken together, land reform encourages both men and women to shift their labor away from the agricultural sector and into non-agricultural sectors but also indicates gender heterogeneity in employment transformation toward the off-farm sector for rural people.

4.2 Sensitivity Analyses

We performed a wide range of robustness checks to examine the robustness of gender-specific effects of RLCL on labor reallocation.

4.2.1 Additional Controls

We first introduced a wide array of control variables that may have confounded the estimated empirical pattern. Cities that experience economic growth may be places with well-defined property rights and higher shares of off-farm labor. To allay this concern, we controlled for economic conditions in Appendix Table A5. Our results are similar to those presented in Table 3 after we controlled for total GDP, share of secondary sector in GDP, and share of tertiary industry in GDP.

Salary is an important determinant of farmers' off-work decisions. Farmers may choose employment in off-farm sectors to earn higher salaries and lease out their land rather than because of the reform itself. To deal with the confounding effects of salary, we added the mean salary in each city in Table A6. Our results barely changed.

4.2.2 Other Reforms

An additional concern with DID estimates is that, in addition to the land reform, other reforms taking place during the same period would have compounding effects that biased the true impact of land reform. In other words, the concern stems mainly from implementing other reforms following the rollout of the RLCL.

The first significant change for rural households around this period was the abolition of the agricultural tax. Specifically, the central government planned to launch a rural tax-and-fee reform in 2000, aiming to replace all agricultural taxes and fees with a uniform agricultural tax. This was followed by the gradual elimination of the agricultural tax in 2004, with a target set to entirely abolish the tax within five years. However, almost all provinces abolished the agricultural tax before the end of 2005 (Chen, 2017; Wang and Shen, 2014).

We attempted to rule out this concern in two ways. First, Wang and Shen (2014) showed that farmers' net income is not increased by tax abolition, adding evidence that agricultural tax reform might not significantly impact labor and land reallocation in rural China. Second, to further address this concern and isolate the effect of the rural tax reform, we controlled for an indicator of whether a province conducted the tax reform in a specific year. Our identification relies on comparing the late-RLCL and early-RLCL groups with identical agricultural tax reform statuses. As shown in Appendix Table A7, land reform still has a

significant and positive effect on days of off-farm employment; the effect is smaller for women. As the coefficients of interest remain identical to those in Table 3, this suggests that the agricultural gender-differentiated RLCL effect does not contaminate the estimated tax reform.

Second is China’s accession to the WTO. The determinants of structural change include both the “push factors” and “pull factors” (Erten and Leight, 2021). While our paper primarily focused on “push factors,” trade liberalization acting as the most important “pull factor” could have also biased our results. More specifically, trade liberalization could have resulted in overestimating the labor reallocation effect. To address this concern, we followed Erten and Leight (2021) and Khanna et al. (2020) to control for the NTR gap.

Prior to 2002, regular Congressional approval was required to maintain China’s Most Favored Nation (MFN) status in the U.S. Annual renewal generated considerable uncertainty. With China’s accession to the WTO, the U.S. permanently granted NTR status. We followed Khanna et al. (2020) to construct a city-level exposure measure—the average gap between NTR and non-NTR rates across products—weighted by the industry export share in each city in the baseline year. We controlled for the interaction of the city NTR gap and a post-WTO dummy. Results are presented in Appendix Table A8. Our results remained economically large and statistically significant.

4.2.3 Placebo Tests

To check the extent to which our main results were affected by omitted variables, we conducted a placebo test by randomly allocating provinces to each land reform wave. As this was a random process, the false treatment variable was expected to have no impact on the

outcome of interest. We did not expect gender-differentiated effects, which would indicate a misspecification of the DID estimation (Li et al., 2016). Using the same specification as in Equation (1), Appendix Table A9 shows that this false reform timing had no effect on off-farm employment for either men or women. This result suggests that unobservables do not drive the gender-differentiated effects of land reform on labor reallocation.

As an additional placebo test, we estimated the reform effects on the urban population sample. Our main findings hold that land reform leads to labor reallocation from farm to off-farm because land reallocation is allowed in rural areas, so the urban population should not have been affected by this reform. In addition, drawing on Equation (1), we show the estimation for urban populations in Appendix Table A10. As expected, land reform did not lead to more days of off-farm employment for the urban population, regardless of gender.

4.2.4 Event Study

To test the parallel trend assumption, we conducted an event study analysis using the following equation:

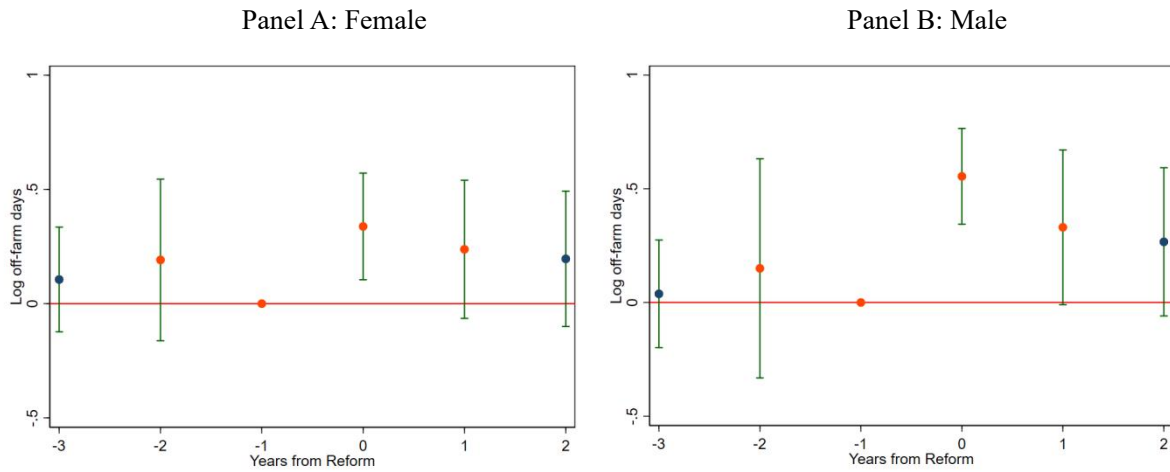
$$(2) \quad Y_{ihpt} = \sum_{k=-3}^2 \alpha_k \text{Reform}_{ptk} + \delta_t + \eta_h + \varepsilon_{ihpt},$$

where $\text{Reform}_{p,t,k}$ indicates the period relative to the reform year in province p . Thus, $\text{Reform}_{p,t,-2}$ represents two years before the province p implemented the reform and $\text{Reform}_{p,t,2}$ represents two years after implementation (Chari et al., 2021). We broke down the data by gender and separated estimates for males and females in Equation (2) to examine the gender-specific effects of RLCL on sectoral labor allocation. Equation (2) allowed us to test whether reform rollout was exogenous to our main outcomes of interest.

Figure 2 shows the estimated α_k values for the male and female subsamples. There

were no significant trends in the number of off-farm days before the reform (except for the case where $k=-3$ for men), followed by a shift in both the magnitude and significance trends after the implementation. However, the shift was larger for men than for women. This provides additional support for (i) the identification assumption that the timing of the reform is exogenous to the outcome of interest and (ii) gender heterogeneity, as men are more likely than women to be employed off-farm.

Figure 2: Leads and Lags of Reform Effects on Off-farm Days



Notes: The graphs plot the coefficients and associated 90% confidence intervals from estimating the leads and lags of land reform on log-off-farm days. All the effects are relative to the year prior to the reform ($k=-1$). Data were obtained from the *China Health and Nutrition Survey (CHNS)*.

In Appendix Figure A3, we plotted the coefficients and associated 90% confidence intervals by estimating the leads and lags of land reform on log farm hours. We found that the coefficients were insignificant before the reform but became negative and statistically significant for both men and women after the reform. This further confirmed the robustness of the findings shown in Table 4.

4.2.5 Issues of Staggered DID

Recent literature in econometrics has highlighted the “negative weight problem” in staggered DID design (Goodman-Bacon, 2021; de Chaisemartin and D’Haultfoeuille, 2020;

Baker et al., 2022). When treatment effects evolve, some units may receive negative weights when their parameters are aggregated to form average treatment effects (ATEs), which would bias the estimates. To check for this possibility, we took a weighted average of the policy implementing wave-specific point estimates with weights equal to each wave's share of treated observations (Callaway and Sant'Anna, 2021). The point estimates in Table A11 are very close in magnitude to our baseline results.

5. Mechanisms: Why Are Women Left Behind?

As the gender-differentiated effects have been identified, a remaining question is why land reform causes men to be off-farm employed to a more considerable extent. In this section, we discuss the mechanisms underlying the link between land reform and gender-differentiated labor reallocation responses. At least three potential mechanisms may be responsible for the empirical patterns. The first channel stems from disadvantaged labor market conditions for women, the second is about the human capital gap between women and men in rural China, and the third may correspond to gender identity norms. We examined whether each of these channels plays a role and found evidence for the first; that rural workers are primarily enrolled in blue-collar jobs that offer more advantages and higher salaries to men than farm work.

5.1 Labor Market Conditions

Less Labor Market Opportunities? One potential factor contributing to the gender-differentiated effects of RLCL on labor reallocation could be the occupational differences between men and women (Blau and Kahn, 2017). As noted in many studies,

women's participation in the labor market is highly associated with the structural transformation of the industry since men and women might have differential endowments of “brawn” and “brain” (Olivetti and Petrongolo, 2014). Some studies have also shown that men are more concentrated in blue-collar occupations,⁹ typically heavy physical work in the manufacturing, construction, mining, or maintenance sectors; while women are more likely to be in administrative support and service occupations (Blau and Kahn, 2017; Goldin, 2014; Olivetti and Petrongolo, 2014, 2016).

The 2005 One-Percent Population Census of China provides detailed occupational classifications, which allowed us to explore the occupational distribution of men and women in China.¹⁰ Consistent with the literature, Table A12 shows the share of rural workers in different industries and indicates that rural workers are more likely to suit traditionally male-oriented occupations. Specifically, more than half of the workers in the mining, manufacturing, construction, retail, and education industries were from rural areas; rural workers account for 76% of the total number of construction workers. Figure A4 further provides evidence on this point: farmers with low human capital tend strongly to settle into blue-collar occupations with high strength requirements.

Based on the same specifications in Equation (1), we then empirically investigated whether RLCL increases rural workers' engagement in occupations with higher strength requirements. Results reported in panel A of Table 5 indicate that RLCL significantly increases rural workers' engagement in heavy physical work. In line with the results in Table 2, this effect is again gender-specific. However, we could not find any evidence for an

⁹ Men have advantages in these energy-intensive activities (Pitt et al., 2012).

¹⁰ We did not use these data throughout the study because they provide only limited variables.

increase in light physical work engagement after the RLCL (Panel B in Table 5). This suggests that, since the land reform started in 2003, when China's secondary sector was expanding rapidly, men have been more likely to be involved in industries such as manufacturing and construction, potentially because of the increased demand for heavy physical work.¹¹ These results indicate that gender-specific labor market opportunities are (at least partially) responsible for the gender-differentiated labor reallocation following the reform.

Table 5: Land Reform and Local Demand for Different Physical Work

	(1)	(2)	(3)	(4)
Panel A: Heavy Physical Work (=1)				
Land reform	0.0869*** (0.0238)	0.0869*** (0.0233)	0.0911*** (0.0251)	0.0866*** (0.0236)
Land reform × Female	-0.0627*** (0.00969)	-0.0563*** (0.0109)	-0.0586*** (0.0107)	-0.0570*** (0.0110)
Observations	20,907	20,907	20,907	20,907
Adjusted R-squared	0.392	0.417	0.417	0.418
Mean of the dependent variable	0.330	0.330	0.330	0.330
Panel B: Light Physical Work (=1)				
Land reform	-0.0260 (0.0413)	-0.0289 (0.0393)	-0.0256 (0.0404)	-0.0287 (0.0382)
Land reform × Female	-0.00605 (0.0100)	-0.00492 (0.00947)	-0.00347 (0.00969)	-0.00283 (0.00927)
Observations	20,907	20,907	20,907	20,907
Adjusted R-squared	0.247	0.250	0.251	0.253
Mean of the dependent variable	0.243	0.243	0.243	0.243
Demographics	No	No	Yes	Yes
Household FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Cohort FE	No	Yes	No	Yes

Notes: The dependent variable is an indicator of heavy physical work in Panel A, which corresponds to athletes, dancers, steelworkers, loggers, and builders. Further, the dependent variable in Panel B is an indicator of light physical work, including sedentary work, occasional standing and sitting work, office work, watchmakers, salespersons, and laboratory technicians. Demographics include age and indicators for educational attainment. Robust standard errors clustered at the

¹¹ This has been highlighted in some studies showing that favorable labor market shock is always associated with the increased demand for male-dominated occupations (Dorn and Hanson, 2019; Kotsadam and Tolonen, 2016).

provincial level are reported in parentheses. Data were obtained from the *China Health and Nutrition Survey (CHNS)*. *** significant at 1%; ** significant at 5%; * significant at 10%.

Gender Wage Discrimination within the Industry? Given fewer labor market opportunities, will rural women be treated equally when they enter male-dominated activities? Appendix Table A12 provides some preliminary evidence, showing that earnings are significantly higher for men than women in all industries, with the differences more prevalent in male-oriented industries. We also observed a large wage gap between male and female workers given the same *hukou* status, education attainments, work time, and occupation (See Appendix Table A13). Appendix Table A13 shows that, for the full sample, absorbing the effect of working time, education, and occupation decreases the coefficient on females by 10%, from -0.214 to -0.192. For the rural sample, the female coefficient was -0.257, with no additional variables. This coefficient drops to -0.252 when time and education effects are absorbed and to -0.240 when absorbing all occupations, representing a 7% decrease compared with the basic specifications. By further restricting the sample to rural people with low skill levels, the coefficient for females decreases from -0.263 to -0.252 (4%). Combining these results, the coefficient for females is larger for rural people with low skills, and absorbing the effect of education and occupation does not reduce the coefficient as much as in the full sample. The gender wage gap is the largest for rural unskilled workers.

We further adopted Oaxaca–Blinder decomposition¹² to better understand the source of the gender wage gap. Oaxaca–Blinder decomposition allowed us to quantify the relative contribution of each factor and distinguish the role of unexplained (how women and men with the same characteristics are treated differently) from explained (differences in observed

¹² The description of Oaxaca–Blinder decomposition is presented in Appendix B.

characteristics) factors (Chen and Crown, 2019; Jann, 2008). As shown in Table 6, while differences in the observed characteristics between men and women account for only 23% of the gender earnings gap, “unexplained factors” account for 77% of the gender gap because of differences in how men and women are compensated for the same characteristics.¹³ In Columns 3–4, we restricted the sample to those with low skills. The results show that the differences in observed characteristics only explain 20% of the gender gap, while discrimination factors account for 80%. Appendix Table A14 further shows that this type of discrimination is dominant in male-dominated occupations. This is consistent with the extensive existing literature on gender wage discrimination (Cortés and Pan, 2020; Jarrell and Stanley, 2004).

Table 6: Oaxaca–Blinder Decomposition

	All		Low skill	
	Explained	Unexplained	Explained	Unexplained
Age	0.503*** (0.0135)	3.357*** (0.768)	0.422*** (0.0125)	2.598*** (0.867)
Experience	-0.369*** (0.0122)	-1.198*** (0.284)	-0.320*** (0.0114)	-1.000*** (0.313)
Married	0.00667*** (0.00129)	0.355*** (0.0253)	0.0109*** (0.00115)	0.370*** (0.0257)
Occupation	0.117*** (0.00496)	1.037*** (0.0974)	0.125*** (0.00545)	0.829*** (0.109)
Education	0.0122*** (0.00157)	-0.0327*** (0.00903)		
Total	0.269*** (0.00596)	0.920*** (0.0119)	0.238*** (0.00588)	0.929*** (0.0121)

Notes: The results are for an Oaxaca–Blinder decomposition that decomposes the explained and unexplained variations in the gender wage gap into components explained by various covariates. The occupation categories include dummies for mining, manufacturing, construction, retail, transportation, service, education, public, and others. Age is included as the quadratic variable. Experience refers to working experience and is included as the quadratic. Marital status is a dummy

¹³ This finding, while denoting a large proportion, is consistent with the findings of other studies. For instance, Démurger et al. (2007) found that this type of discrimination explains 60.8%–78.8% of the gender pay gap, while Ng (2007) demonstrated that treating married women and those in disadvantaged occupations the same as their counterparts would shrink gender inequality.

variable for marital status. Education refers to completed school years. “All” includes rural workers aged 16–50 years with positive earnings and hours worked during the past year. “Low skill” refers to a lower level of education attainment (below senior high school). Data were obtained from the *2005 One-Percent Population Census of China*. *** significant at 1%; ** significant at 5%; * significant at 10%.

In summary, this sub-section provides evidence of the role of labor market conditions in the gender-differentiated effects. Rural female workers are less likely to move to the off-farm sector after the reform because they face fewer labor market opportunities. On the one hand, the reform is likely to result in more demand for labor in blue-collar occupations; on the other hand, rural workers are generally unskilled; therefore, they have no choice other than to enter male-dominated blue-collar occupations. In addition, even if they enter these occupations, their wage is discriminated against according to the gender they are born into. This appears to be one of the most important mechanisms explaining why women have lagged behind men since the land reform.

5.2 Other Mechanisms

Women Are Less Educated Than Men? Human capital is an important determinant of off-farm engagement. Workers with higher education attainments are more popular in job searching. The above analysis has shown that since most rural laborers at that time were unskilled, they were more likely to be employed in blue-collar occupations. Another related question is whether women lagged behind men because they are less educated than men? We found that, on average, rural women are less educated than rural men (Table A15). This finding echoes reports from related gender–human capital gap research (Brown and Park, 2002). One may expect that rural women remain in agriculture because they are less educated. However, this was shown not to be the case.

In Appendix Table A16, we interacted the gender-specific effect with an indicator for above junior middle school to study whether the gender human capital gap plays a role. The results show that this triple interaction term is insignificant, suggesting that educational attainment is not that important for both men and women. This helped to rule out the potential role of the gender human capital gap. This aligns with Molina (2021), who found that schooling and cognitive ability are less complementary in blue-collar jobs (favored by men).

Are Women Not Expected to Work Outside the Home? Influenced by Confucianism, China has long been a country with significant son preferences (Murphy et al., 2011) and a social norm in which the husband should be the breadwinner within the household (Ye and Zhao, 2018). If women are expected to be primarily responsible for child and family caretaking, they are less likely to enter the labor market after the reform. Temporal flexibility is generally the highest priority for women (Blau and Kahn, 2017); therefore, it is rational for women not to enter the off-farm sector. To test this hypothesis, we used the CWSS data to create a proxy for gender identity norms.¹⁴ Specifically, we interacted with gender identity norms with the land reform and gender dummy and showed how the interaction affects off-farm employment. Table A17 shows that gender identity norms do not play a role in the gender-specific effects of RLCL on the number of annual off-farm days.¹⁵

In sum, the disadvantaged labor market condition for women provides the most credible

¹⁴ We used principal component analysis (PCA) to take the principal component of the five questions for each province: “Men should focus on society, and women should focus on family” (Agree=1), “Men are inherently more capable than women” (Agree=1), “Women should marry well rather than do well in their careers” (Agree=1), “Women should avoid surpassing their husbands in social status” (Agree=1) and “Men should do less than half of the housework” (Agree=1). To avoid endogeneity, we used the proxy for gender identity norms at the provincial level in the baseline year of 2000.

¹⁵ This is potentially because, in rural China, most kids are likely to be cared for by grandparents (Chang et al., 2011). Mothers in these circumstances are likely less constrained by gender identity norms.

explanation for the gender-differentiated off-farm employment effect. Given the gender gaps in labor market conditions, women will likely lag behind when joining the non-farm sector.

6. Conclusions

Despite rapidly increasing evidence of the effects of property rights reform on the reallocation of factors (e.g., land and labor), few studies have examined how it differs by gender. This study exploited a quasi-natural experiment in China to explore the gender-differentiated effects of land property rights reforms on labor reallocation. The results show that the RLCL, which allows farmers to lease out their land, increases both off-farm labor participation and the number of days working in off-farm sectors for rural people, suggesting a relocation of labor from the primary (farm) sector to the secondary and tertiary sectors. Even though the positive effects on the off-farm labor supply are present for both men and women, women appear to lag behind when transiting into the off-farm sector. This situation is mainly driven by the disadvantaged labor market conditions toward women rather than the gender gap in human capital and gender identity norms. Unskilled rural workers are likely to engage in blue-collar occupations which are male-dominated. Even if women with the same qualifications and positions as men are employed, they receive less pay.

Our study is the first to highlight the role of gender in labor reallocation between sectors in response to improved land property rights. In most developing countries, where land remains the key source of livelihood, securing land property rights may lead to a more efficient allocation of labor, lifting many farmers out of agriculture. However, neglecting the differential effects between men and women, given the disadvantaged labor market

conditions toward women, may lead to increased gender inequality during the labor-shifting process. This study could be a helpful first step toward clarifying and understanding why women lag behind men when joining the non-agricultural sector post land reform. To maximize the positive effects of improved land rights, accompanying reforms should also focus on eliminating gender discrimination in the labor market. A deeper analysis of whether and how gender-differentiated responses would affect household welfare and what it means for agricultural transformation in a gender-specific framework is a worthwhile avenue for future research.

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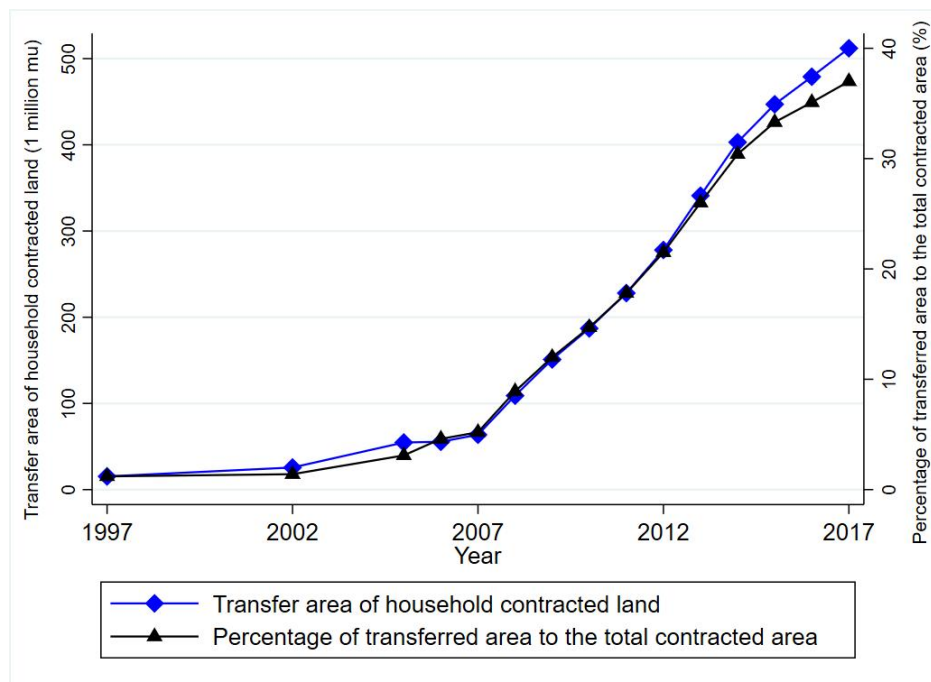
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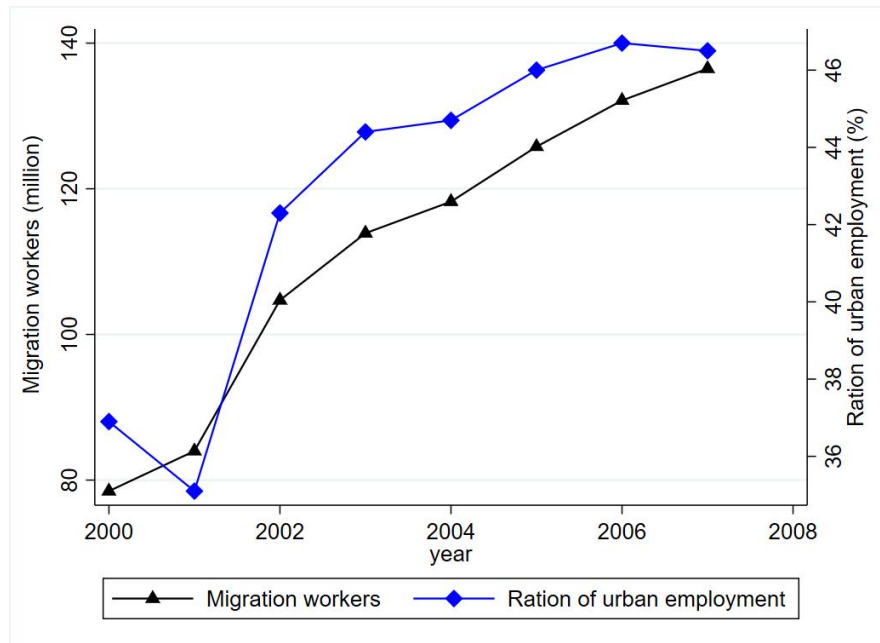
Appendix A: Additional Figures and Tables

Figure A1: Land Transfer in China (1997–2017)



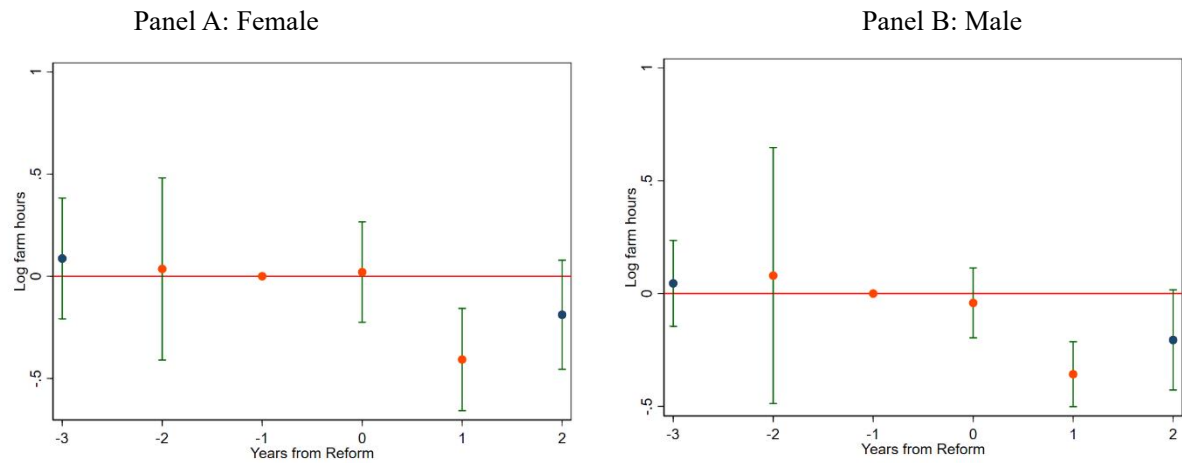
Notes: This figure shows rural land transfer in China between 1997 and 2017. The y-axis on the left represents the total transfer area of household contracted land each year, and the y-axis on the right represents the percentage of transferred area to the total contracted area each year. The data are from Zhou et al. (2020).

Figure A2: Migrant Workers and Urban Employment in China (2000-2007)



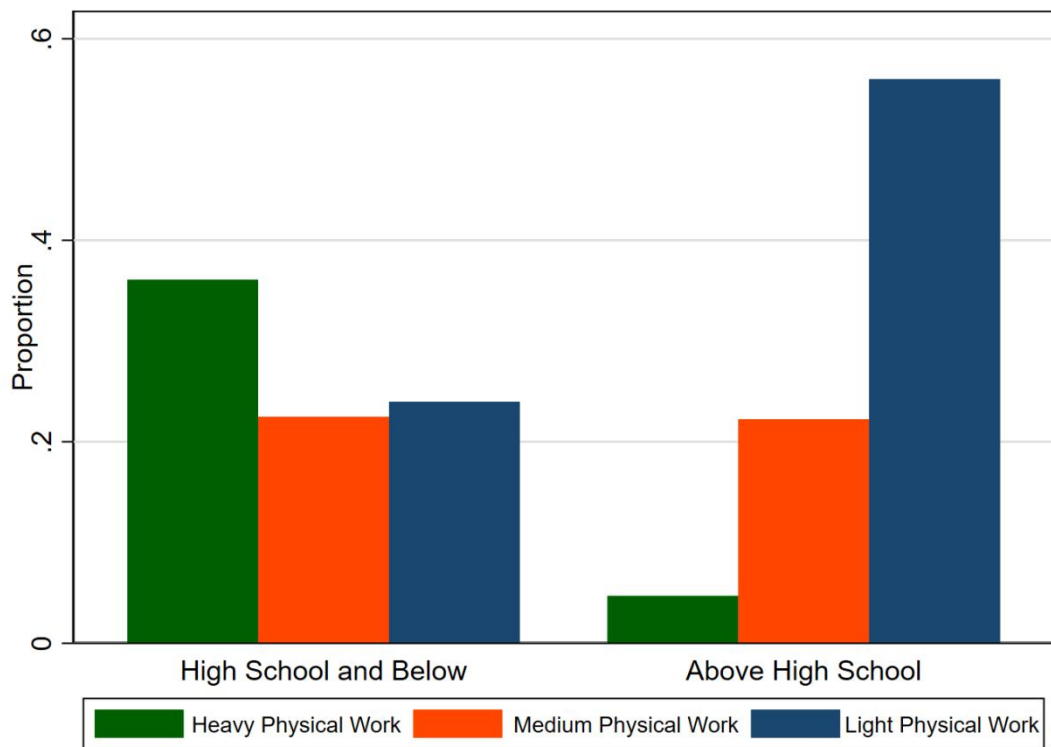
Notes: This figure shows migrant workers and urban employment in China from 2000 to 2007. The y-axis on the left represents the migrant workers each year, and the y-axis on the right represents the ratio of migrant workers to total urban employment. The data are from Cai et al. (2009).

Figure A3: Leads and Lags of Reform Effects on Farm Hours



Notes: The figures plot the coefficients and associated 90% confidence intervals from estimating the leads and lags of land reform on log-farm hours. All the effects are relative to the year prior to the reform ($k=-1$). Data were obtained from the *China Health and Nutrition Survey (CHNS)*.

Figure A4: Woke Type and Education Attainment



Notes: The figure shows the proportion of rural laborers engaged in different types of work under different education levels. Only farmers enrolled in off-farm work were included in this study. Heavy physical work includes athletes, dancers, steelworkers, loggers, and builders. Medium physical work corresponds to drivers and electricians. Light physical work includes sedentary work, occasional standing and sitting work, office work, watchmakers, salespersons, and laboratory technicians. “High School and Below” indicates the education level is high school and below, and “Above High School” indicates the education level is above high school. Data were obtained from the *China Health and Nutrition Survey (CHNS)*.

Table A1: Rural Land Contracting Law Announcement by Province

Province	Year	Document Name	Issue Date	Effective Date
Shanghai	2003	Hu Fu Fa (2003) No. 29	04/25/2003	04/25/2003
Jiangsu	2004	Jiangsu Province Government Order (2003) No. 21	12/18/2003	02/01/2004
Heilongjiang	2004	Hei Zheng Ban Fa (2004) No.17	05/13/2004	05/13/2004
Beijing	2004	Jing Fa (2004) No.17	08/26/2004	08/26/2004
Henan	2004	Rules for the Transfers of Rural Land Contract and Management Rights in Henan Province	09/17/2004	09/17/2004
Hunan	2004	Hunan Province People's Congress Standing Committee (2004) No. 35	07/30/2004	10/01/2004
Shandong	2004	Shandong Province People's Congress Standing Committee (2004) No. 37	07/30/2004	10/01/2004
Liaoning	2005	Liaoning Province People's Congress Standing Committee (2005) No. 28	01/28/2005	04/01/2005
Guizhou	2005	Notice of the Guizhou Provincial Agriculture Committee on Issuing the Special Inspection Plan for the Implementation of the Province's Rural Land Contracting Laws and Policies	04/26/2005	04/26/2005
Guangxi	2006	Gui Zheng Ban Fa (2006) No. 141	11/14/2006	11/14/2006
Chongqing	2007	Chongqing Municipality People's Congress Standing Committee (2007) No. 6	04/02/2007	07/01/2007
Hubei	2012	Hubei Province People's Congress Standing Committee (2012) No. 138	07/27/2012	10/01/2012

Note: We selected only the 12 provinces with complete information from the China Health and Nutrition Survey (CHNS).

Table A2: Summary Statistics of Additional Data

Variable name	All sample		Male		Female	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Panel A: Education and Labor Market Outcomes from 2005 One-Percent Population Census of China, 2005						
Annual working hours	2723.275	629.558	2736.066	616.340	2704.947	647.591
Working experience (year)	20.103	8.309	20.829	8.020	19.051	8.603
Monthly wage (yuan)	871.098	527.679	973.578	572.988	724.581	413.117
Education attainment						
<i>High school</i> (=1)	0.140	0.347	0.153	0.360	0.123	0.328
<i>Above high school</i> (=1)	0.018	0.133	0.018	0.134	0.017	0.131
Age	35.187	7.844	35.977	7.615	34.059	8.025
Panel B: Social Norm Variables from China's Women Social Status Survey, 2000						
Men should focus on society, and women should focus on family (Agree=1)	0.474	0.499	0.502	0.500	0.451	0.498
Men are inherently more capable than women (Agree=1)	0.295	0.455	0.312	0.463	0.280	0.449
Women should marry well rather than do well in their careers (Agree=1)	0.336	0.472	0.308	0.462	0.360	0.480
Women should avoid surpassing their husbands in social status (Agree=1)	0.189	0.392	0.208	0.406	0.174	0.379
Men should do less than half of the housework (Agree=1)	0.131	0.338	0.184	0.387	0.087	0.282

Notes: Panel A reports the education and labor market outcomes from the 2005 census, and Panel B reports the variables about gender identity from the second wave of China's Women Social Status Survey (CWSS).

Table A3: Determinants of Provincial Reform Timing

	(1)	(2)	(3)
GDP	0.000235 (0.000252)	0.000139 (0.000367)	0.000101 (0.000505)
Manufacturing Employment	-0.00424 (0.00451)	-0.00229 (0.00659)	-0.00159 (0.00797)
Construction Employment	-0.000632 (0.00325)	-0.00231 (0.00498)	-0.00862 (0.00740)
Accommodation and Catering Employment	0.0257 (0.0228)	0.0222 (0.0288)	0.00898 (0.0350)
Rural Electricity Consumption	0.00154 (0.00493)	0.00484 (0.00687)	0.00960 (0.00961)
Rural Income		-0.000667 (0.00290)	-0.00302 (0.00432)
Rural Exp. Food		-0.00293 (0.00470)	-0.00640 (0.00851)
Rural Exp. Clothing		-0.00111 (0.0175)	-9.18e-05 (0.0272)
Rural Exp. Housing		0.00377 (0.00750)	0.00390 (0.00898)
No. of Health Institutions			-2.63e-05 (0.000434)
No. of Senior High Schools			-0.00990 (0.0150)
No. of Primary Schools			-0.000250 (0.000283)
Observations	32	32	32
Adj. R-squared	0.257	0.042	-0.181
Joint F-test	0.309	0.551	0.873
Province FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes

Notes: The dependent variable is provincial reform timing, which equals 1 in the reform year. Each observation is a provincial year. The sample is limited to the pre-reform years and the year of reform implementation. Manufacturing, construction, accommodation, and catering employment are the total number of workers employed in these sectors. Rural electricity consumption is the provincial-level electricity consumption in rural areas of a given province. Rural income is the income per capita in rural areas. Rural Exp. food, clothing, and housing are expenditures per capita in rural areas for each category. No. of health institutions, senior high schools, and primary schools are the number of those institutions in the given province. Robust standard errors clustered at the provincial level are reported in parentheses. Data were obtained from the *2000–2013 China City Statistical Yearbook*. *** significant at 1%; ** significant at 5%; * significant at 10%.

Table A4: Economic Condition, Amenity, and Government Expenditure Before and After Land Reform

	(1)	(2)
Panel A: Economic condition		
GDP	-1.535 (1.803)	2.992 (1.827)
Manufacturing Employment	1,347 (1,306)	934.9 (916.7)
Construction Employment	-459.5 (449.9)	-1,866 (2,028)
Accommodation and Catering Employment	-5.083 (13.02)	15.14 (10.55)
Rural Electricity Consumption	-0.0478 (0.0412)	0.0323 (0.0369)
Wage	-758.8 (2,946)	119.7 (1,912)
Panel B: Amenity		
No. of Health Institutions	-1.105 (3.392)	-0.172 (3.450)
No. of Senior High Schools	0.0161 (0.0251)	0.00513 (0.0166)
No. of Primary Schools	0.0650 (0.837)	-0.464 (0.777)
Panel C: Government Expenditure		
Government Budget Expenditure	-0.169 (0.221)	0.228 (0.152)
Province FE	Yes	Yes
Year FE	Yes	No
City-tier \times Year FE	No	Yes

Notes: Row names correspond to dependent variables. The independent variable is an indicator of whether the reform was implemented in a province. Robust standard errors clustered at the provincial level are reported in parentheses. Data were obtained from the 2000–2013 *China City Statistical Yearbook*. *** significant at 1%; ** significant at 5%; * significant at 10%.

Table A5: Additional Economic Controls

	Dependent variable: Log annual off-farm days			
	(1)	(2)	(3)	(4)
Land reform	0.241*** (0.0669)	0.243** (0.0792)	0.244*** (0.0674)	0.246** (0.0792)
Land reform × Female	-0.0885** (0.0390)	-0.0920* (0.0429)	-0.0895** (0.0393)	-0.0930* (0.0430)
Observations	11,466	11,466	11,466	11,466
Adjusted R-squared	0.215	0.215	0.215	0.215
Economic controls	Yes	Yes	Yes	Yes
Demographics	No	No	Yes	Yes
Household FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Cohort FE	Yes	No	Yes	No
Cohort × Province FE	No	Yes	No	Yes

Notes: The dependent variable is the natural log of annual off-farm days. Economic controls include GDP, the share of the secondary sector in GDP, and the share of tertiary industry in GDP. Demographics include age and indicators for educational attainment. Robust standard errors clustered at the provincial level are reported in parentheses. Data were obtained from the *China Health and Nutrition Survey (CHNS)*. *** significant at 1%; ** significant at 5%; * significant at 10%.

Table A6: Controlling for Local Salary Level

	Dependent variable: Log annual off-farm days			
	(1)	(2)	(3)	(4)
Land reform	0.286*** (0.0901)	0.285** (0.0988)	0.289*** (0.0902)	0.288** (0.0985)
Land reform × Female	-0.0889** (0.0386)	-0.0940* (0.0429)	-0.0899** (0.0389)	-0.0950** (0.0430)
Observations	11,466	11,466	11,466	11,466
Adjusted R-squared	0.215	0.215	0.215	0.215
Demographics	No	No	Yes	Yes
Household FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Cohort FE	Yes	No	Yes	No
Cohort × Province FE	No	Yes	No	Yes

Notes: The dependent variable is the natural log of annual off-farm days. We further controlled for the mean salary of each city. Demographics include age and indicators for educational attainment. Robust standard errors clustered at the provincial level are reported in parentheses. Data were obtained from the *China Health and Nutrition Survey (CHNS)*. *** significant at 1%; ** significant at 5%; * significant at 10%.

Table A7: Additional Agricultural Tax Abolition Indicator

	Dependent variable: Log annual off-farm days			
	(1)	(2)	(3)	(4)
Land reform	0.267** (0.0874)	0.281** (0.101)	0.270** (0.0871)	0.282** (0.101)
Land reform × Female	-0.0973** (0.0402)	-0.111** (0.0448)	-0.0981** (0.0403)	-0.111** (0.0448)
Observations	12,892	12,892	12,892	12,892
Adjusted R-squared	0.208	0.209	0.208	0.209
Demographics	No	No	Yes	Yes
Agricultural tax reform	Yes	Yes	Yes	Yes
Household FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Cohort FE	Yes	No	Yes	No
Cohort × Province FE	No	Yes	No	Yes

Notes: The dependent variable is the logarithm of annual off-farm days. All regressions control for household fixed effects and year fixed effects. We added a dummy variable for whether the province implemented the abolition of agricultural tax policy in the current year. Columns 3–4 also control for demographics, including age and indicators for educational attainment. Robust standard errors clustered at the provincial level are reported in parentheses. Data were obtained from the *China Health and Nutrition Survey (CHNS)*. *** significant at 1%; ** significant at 5%; * significant at 10%.

Table A8: Control for NTR Gap

Dependent variable: Log annual off-farm days				
	(1)	(2)	(3)	(4)
Land reform	0.239** (0.0801)	0.249** (0.0873)	0.242** (0.0809)	0.252** (0.0877)
Land reform \times Female	-0.0967** (0.0402)	-0.109** (0.0449)	-0.0975** (0.0403)	-0.110** (0.0449)
Observations	12,669	12,669	12,669	12,669
Adjusted R-squared	0.212	0.213	0.212	0.213
Demographics	No	No	Yes	Yes
Interaction of NTR gap and post-WTO	Yes	Yes	Yes	Yes
Household FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Cohort FE	Yes	No	Yes	No
Cohort \times Province FE	No	Yes	No	Yes

Notes: The dependent variable is the logarithm of annual off-farm days. All regressions control for household fixed effects and year fixed effects. We control for the interaction of the city NTR gap and a post-WTO dummy. Columns 3–4 also control for demographics, including age and indicators for educational attainment. Robust standard errors clustered at the provincial level are reported in parentheses. Data were obtained from the *China Health and Nutrition Survey (CHNS)*. *** significant at 1%; ** significant at 5%; * significant at 10%.

Table A9: Placebo Reform Rollout Sequence

Dependent variable:	Have work (=1)			Log off-farm days		
	(1)	(2)	(3)	(4)	(5)	(6)
Land reform	0.0134 (0.0530)	0.0107 (0.0522)	0.0142 (0.0523)	-0.0501 (0.155)	-0.0561 (0.158)	-0.0680 (0.156)
Land reform × Female	-0.0326 (0.0212)	-0.0320 (0.0217)	-0.0296 (0.0214)	0.0417 (0.0528)	0.0377 (0.0568)	0.0415 (0.0513)
Observations	20,907	20,907	20,907	12,892	12,892	12,892
Adjusted R-squared	0.340	0.344	0.349	0.202	0.207	0.208
Demographics	Yes	Yes	Yes	Yes	Yes	Yes
Household FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Cohort FE	No	Yes	No	No	Yes	No
Cohort × Province FE	No	No	Yes	No	No	Yes

Notes: The dependent variable is an indicator of off-farm employment in Columns 1–3 and the natural log of annual off-farm days in Columns 4–6. We randomly allocated provinces to each wave of land reform. Demographics include age and indicators for educational attainment. Robust standard errors clustered at the provincial level are reported in parentheses. Data were obtained from the *China Health and Nutrition Survey (CHNS)*. *** significant at 1%; ** significant at 5%; * significant at 10%.

Table A10: Placebo Sample

Dependent variable:	Have work (=1)			Log off-farm days		
	(1)	(2)	(3)	(4)	(5)	(6)
Land reform	-0.0330 (0.0353)	-0.0428 (0.0365)	-0.0509 (0.0339)	-0.113 (0.114)	-0.134 (0.134)	-0.128 (0.110)
Land reform × Female	0.0213 (0.0253)	0.0233 (0.0242)	0.0179 (0.0252)	-0.0240 (0.127)	-0.0205 (0.128)	-0.0250 (0.131)
Observations	15,626	15,626	15,626	11,299	11,299	11,299
Adjusted R-squared	0.308	0.345	0.346	0.424	0.432	0.436
Demographics	Yes	Yes	Yes	Yes	Yes	Yes
Household FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Cohort FE	No	Yes	No	No	Yes	No
Cohort × Province FE	No	No	Yes	No	No	Yes

Notes: The dependent variable is an indicator of off-farm employment in Columns 1–2, the natural log of annual off-farm days in Columns 3–4, and the natural log of annual off-farm earnings in Columns 5–6. Urban residents were included in this study. Demographics include age and indicators for educational attainment. Robust standard errors clustered at the provincial level are reported in parentheses. Data were obtained from the *China Health and Nutrition Survey (CHNS)*. *** significant at 1%; ** significant at 5%; * significant at 10%.

Table A11: Robustness of Two-way Fixed Effects (TWFE) Estimates

Dependent variable: Log annual off-farm days				
	(1)	(2)	(3)	(4)
Panel A: TWFE estimates				
Land reform \times Female	-0.0750** (0.0339)	-0.0942** (0.0385)	-0.0891** (0.0340)	-0.0958** (0.0378)
Panel B: Re-weighted estimates				
Land reform \times Female	-0.0652* (0.0339)	-0.0904** (0.0404)	-0.0801** (0.0351)	-0.0911** (0.0405)
Demographics	No	No	Yes	Yes
Household FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Cohort FE	No	Yes	No	Yes

Notes: Panel A repeats the point estimates for the coefficients of interest from the baseline regressions in the main text (Table 2). Panel B reports the results obtained by estimating the difference-in-differences model wave by wave (the last treated provinces were used as the control group) and reweighting the estimated treatment effects by the sample shares in each wave of RLCL implementation (in the spirit of Callaway and Sant'Anna, 2021). Data were obtained from the *China Health and Nutrition Survey (CHNS)*. *** significant at 1%; ** significant at 5%; * significant at 10%.

Table A12: Gender Differences in Earnings by Occupation

	All workers	Rural workers			
	Share of rural	Share of male	Monthly wage		
			Male	Female	Difference
Mining	0.516	0.903	1005.116	604.089	401.027***
Manufact.	0.673	0.497	957.390	741.193	216.197***
Constr.	0.759	0.900	930.735	696.744	233.991***
Retail	0.584	0.926	1160.617	813.774	346.843***
Trans.	0.372	0.815	1066.394	849.286	217.108***
Service	0.485	0.485	984.943	706.950	277.984***
Educ.	0.675	0.774	827.714	592.459	235.255***
Public	0.142	0.401	851.025	633.081	217.943***
Other	0.150	0.658	786.549	750.814	35.735**

Notes: “All workers” include workers aged 16–50 years with positive earnings and positive hours worked during the past year. “Rural workers” are only workers with rural *hukou*. Data were obtained from the 2005 One-Percent Population Census of China. *** significant at 1%; ** significant at 5%; * significant at 10%.

Table A13: Gender Inequality in Earnings

Sample	Variables included	Coefficient of females	Standard error	Adj. R-squared
Panel A				
All	Basic	-0.214	0.00162	0.1953
All	Basic, time	-0.211	0.00161	0.2010
All	Basic, time, education	-0.213	0.00161	0.2052
All	Basic, time, education, occupation	-0.192	0.00169	0.2421
Panel B				
Rural	Basic	-0.257	0.00220	0.1097
Rural	Basic, time	-0.252	0.00218	0.1317
Rural	Basic, time, education	-0.252	0.00218	0.1320
Rural	Basic, time, education, occupation	-0.240	0.00236	0.1804
Panel C				
Rural, low skill	Basic	-0.263	0.00237	0.0962
Rural, low skill	Basic, time	-0.258	0.00233	0.1237
Rural, low skill	Basic, time, occupation	-0.252	0.00257	0.1701

Notes: “Basic” regression is the log of annual earnings regressed on the female dummy, age as a quadratic, working experience (proxied by years since graduation), and rural *hukou* dummy. “Time” refers to the log of annual working hours. “Education” refers to completed school years. “Occupation” refers to occupation dummies for mining, manufacturing, construction, retail, transportation, service, education, public, and others. “All” includes workers aged 16–50 years with positive earnings and positive hours worked during the past year. “Rural” only denotes workers with rural *hukou*. “Low skill” refers to a lower level of education attainment (below senior high school). All regressions include the female dummy and age as a quadratic. We successively added measures of time worked (log hours), years of schooling, and occupation dummies. Data were obtained from the *2005 One-Percent Population Census of China*. *** significant at 1%; ** significant at 5%; * significant at 10%.

Table A14: Oaxaca–Blinder Decomposition by Occupation

	Explained	Unexplained
Mining	0.0850*** (0.0270)	1.841*** (0.113)
Manufact.	0.194*** (0.00529)	0.830*** (0.0142)
Constr.	0.0379** (0.0169)	0.737*** (0.0571)
Retail	0.0716*** (0.0213)	1.494*** (0.108)
Trans.	-0.0723* (0.0400)	0.686*** (0.102)
Service	0.194*** (0.00798)	1.124*** (0.0243)
Educ.	0.0154 (0.0257)	0.887*** (0.0745)
Public	0.233*** (0.0301)	0.764*** (0.0819)
Other	0.0739** (0.0320)	0.0342 (0.0978)

Notes: The results are for an Oaxaca–Blinder decomposition that decomposes the explained and unexplained variations in the gender wage gap into components explained by various covariates. Rural workers are those aged 16–50 years with positive earnings and hours worked in the past year. Data were obtained from the *2005 One-Percent Population Census of China*. *** significant at 1%; ** significant at 5%; * significant at 10%.

Table A15: Gender Human Capital Gap

	Dependent variable: Years of schooling			
	(1)	(2)	(3)	(4)
Female	-1.224*** (0.183)	-1.182*** (0.182)	-1.175*** (0.182)	-1.182*** (0.182)
Observations	20,373	20,373	20,373	20,373
Adjusted R-squared	0.405	0.496	0.494	0.496
Mean of the dependent variable	5.570	5.570	5.570	5.570
Demographic	No	No	Yes	Yes
Household FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Cohort FE	No	Yes	No	Yes

Notes: The dependent variable is years of schooling. Demographics include age. Robust standard errors clustered at the provincial level are reported in parentheses. Data were obtained from the *China Health and Nutrition Survey (CHNS)*. *** significant at 1%; ** significant at 5%; * significant at 10%.

Table A16: Land Reform and Education Attainment

	Dependent variable: Log annual off-farm days			
	(1)	(2)	(3)	(4)
Land reform	0.229** (0.0846)	0.237** (0.0992)	0.229** (0.0846)	0.237** (0.0992)
Land reform × Female	-0.0834* (0.0447)	-0.0931* (0.0451)	-0.0834* (0.0447)	-0.0931* (0.0451)
Land reform × Female × Above Junior Middle school	-0.0802 (0.148)	-0.0629 (0.132)	-0.0802 (0.148)	-0.0629 (0.132)
Observations	12,771	12,771	12,771	12,771
Adjusted R-squared	0.211	0.212	0.211	0.212
Mean of the dependent variable	5.570	5.570	5.570	5.570
Demographic	No	No	Yes	Yes
Household FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Cohort FE	Yes	No	Yes	No
Cohort × Province FE	No	Yes	No	Yes

Notes: The dependent variable is the natural log of annual off-farm days. We add a dummy indicating whether the educational attainment of an individual is above junior middle school. Demographic includes age. Robust standard errors clustered at the provincial level are reported in parentheses. Data were obtained from the *China Health and Nutrition Survey (CHNS)*. *** significant at 1%; ** significant at 5%; * significant at 10%.

Table A17: Gender Identity Norms

	Dependent variable: Log annual off-farm days			
	(1)	(2)	(3)	(4)
Land reform	0.362** (0.161)	0.391** (0.155)	0.392** (0.155)	0.393** (0.156)
Land reform × Female	-0.0858* (0.0463)	-0.111* (0.0559)	-0.103* (0.0479)	-0.112* (0.0565)
Land reform × Female × Social norm	0.194 (0.241)	0.138 (0.293)	0.158 (0.248)	0.126 (0.295)
Observations	12,892	12,892	12,892	12,892
Adjusted R-squared	0.200	0.209	0.205	0.209
Demographics	No	No	Yes	Yes
Household FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Cohort FE	No	Yes	No	Yes

Notes: This table shows the role of gender identity norms, which are calculated using principal component analysis based on five indicators: “Men should focus on society, and women should focus on family (Agree=1),” “Men are inherently more capable than women (Agree=1),” “Women should marry well rather than do well in their careers (Agree=1),” “Women should avoid surpassing her husband in social status (Agree=1),” and “Men should do less than half of the housework (Agree=1).” The data for this information are from the second wave of *China’s Women Social Status Survey (CWSS)*, conducted jointly by the All-China Women’s Federation and the National Statistics Bureau of China in 2000. We calculated the mean value of gender role norms for each province and combined it with CHNS data. Demographics include age and indicators for educational attainment. Robust standard errors clustered at the provincial level are reported in parentheses. *** significant at 1%; ** significant at 5%; * significant at 10%.

Appendix B: Oaxaca–Blinder Decomposition

Following Jann (2008) and Piazzalunga and Di Tommaso (2018), we first estimated the linear wage equation for men and women separately using Equation (A1):

$$(A1) \quad \ln W_g = X_g \gamma_g + \mu_g, g \in \{f, m\},$$

where g denotes the gender group, $g=m$ indicates male, and $g=f$ indicates female. $\ln W_g$ is the natural logarithm of hourly wages. X_g is the vector containing the observable characteristics, including age, age squared, level of education, experience, experience squared, and occupation sector; γ_g are the coefficients to be estimated; and ϵ_g is the error term.

Next, we used standard Oaxaca–Blinder decomposition (Blinder, 1973; Oaxaca, 1973) to divide the gender wage gap into an “explained” part of group differences by observed characteristics and an “unexplained” part that captures all potential effects of differences in unobserved variables:

$$(A2) \quad \text{Wage Gap} = \overline{\ln W_m} - \overline{\ln W_f} = (\overline{X_m} - \overline{X_f})\widehat{\gamma_m} + \overline{X_f}(\widehat{\gamma_m} - \widehat{\gamma_f}).$$

The first term, called the “explained” part, captures the differences in characteristics, while the second part, the “unexplained” part, captures differences in how women and men with the same characteristics are treated differently. The latter is always considered labor market discrimination (Chen and Crown, 2019; Piazzalunga and Di Tommaso, 2018).

As shown in the bottom row in Columns 1–2 of Table 5, differences in the observed characteristics between men and women account for only 23% of the gender earnings gap. In addition to age, occupation, which accounts for 10% of the gap, played the largest role, followed by education and marital status. This is consistent with the analysis above, which shows how industry structure matters for the gender gap. However, experience had a relatively modest negative effect, suggesting that the gender gap would be enlarged if women had the same experience as men. This is in line with the literature showing that men have more experience than women and that

the returns to experience are negative (Chen and Crown, 2019).

Interestingly, “unexplained factors” account for 77% of the gender gap because of differences in how men and women are compensated for the same characteristics. This finding, while denoting a large proportion, is consistent with the findings of other studies. For instance, Démurger et al. (2007) found that this type of discrimination explains 60.8-78.8% of the gender pay gap, while Ng (2007) demonstrated that treating married women and those in disadvantaged occupations the same as their counterparts would shrink gender inequality. In Columns 3–4, we restricted the sample to those with low skills. The results show that the differences in observed characteristics only explain 20% of the gender gap, while discrimination factors account for 80%. Appendix Table A14 further shows that this type of discrimination is dominant in occupations with different magnitudes. Given the discrimination in the off-farm labor market, one may expect a widening intra-household gender income gap after the reform.