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University of Southampton

Faculty of Social Science

School of Economic, Social and Political Sciences

Essays in Political and Labour Economics

by

Xiwen Luo

Thesis for the degree of Doctor of Philosophy

November 2024

University of Southampton

Abstract

Faculty of Social Science

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Doctor of Philosophy

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Xiwen Luo

This thesis aims to provide empirical evidence on the impact of female empowerment and explore the underlying barriers, and suggest practical methods to facilitate female empowerment within the Chinese economic and political system. Chapter 2 examines whether female leaders exhibit a distinct leadership style compared to their male counterparts and whether the proportion of female policymakers in decision-making bodies influences policy outcomes in China. The findings suggest that a balanced female share in the decision-making body of the CCP significantly enhances cities' green governance, making cities greener. Chapter 3 investigates the characteristics of public sector employees in China, highlighting that while these employees tend to be more pro-social, this inclination is primarily explained by personal characteristics rather than institutional factors. Chapter 4 explores whether temporary migration can facilitate female empowerment in rural China. While temporary migration significantly increases female migrants' income upon their return, there is no significant evidence that it influences their decision-making power within the family. Overall, the thesis provides valuable insights into the mechanisms and impacts of female empowerment in the context of China's unique political and economic landscape.

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Research Thesis: Declaration of Authorship

Print name: Xiwen Luo

Title of thesis: Essays in Political and Labour Economics

I declare that this thesis and the work presented in it are my own and has been generated by me as the result of my own original research.

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7. None of this work has been published before submission

Signature: Date:.....

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Definitions and Abbreviations

CCP	Chinese Communist Party
CFPS	China Family Panel Studies
CHARLS.....	China Health and Retirement Longitudinal Study
FDI.....	Foreign Direct Investment
LATE	Local Average Treatment Effect
OD.....	Organization Department
PSC	Politburo Standing Committee
PSM	Public Service Motivation
RDA	Regionally Decentralized Authoritarian
SRB.....	Sex Ratio at Birth

Chapter 1 Introduction

Women have been fighting for their rights for over a century since the suffrage movement. By the late nineteenth century, American women had achieved significant legal milestones, such as the right to own property, retain their earnings, enter into legal contracts, and manage businesses. The twentieth century brought even more advancements, including the right to vote in federal elections, equality in the workplace and educational institutions, and the ability to serve on juries (Goldin, 2023). These achievements have collectively contributed to narrowing the gender gap in areas such as education, economic participation, and health.

Historically, girls had very low levels of education, but they are now achieving far higher levels of education than ever before. From 1980 to 2024, there has been steady progress toward gender parity in primary and secondary school enrolment. By 2013, global gender parity in primary school enrolment was achieved. At the tertiary level, female enrolment has exceeded male enrolment for the past 20 years, with the gap continuing to widen. The gap in labor force participation has also narrowed over time. For example, in 1940, women aged 16 and over accounted for only 29% of the national civilian labor force in the United States. By 1975, this share had risen to 47% (Keyserling, 1976), and according to the United States Department of Labor, it reached 57.6% in 2024. Over the past fifty years, the life expectancy of women in developing countries has increased by 20-25 years, a significant improvement compared to the more modest gains in male life expectancy during the same period (World Bank, 2011).

However, persistent challenges and disparities remain. Although gender gaps in education are narrowing across all income groups, the completion rate for lower secondary education among girls in low-income countries continues to lag behind boys, with only 38% of girls completing this level compared to 43% of boys. Poverty remains a critical factor in determining whether girls can access and complete their education. Intersecting disadvantages such as low family income, residing in remote or underserved communities, disability, or minority status further hinder girls' educational access and completion (World Bank, 2014).

Although the gender gap in labor force participation has narrowed over the past fifty years, significant disparities persist, particularly in South Asia, East and North Africa, and notably in lower middle-income countries. In North America, East Asia and Pacific, Europe and Central Asia, Sub-Saharan Africa, and Latin America and the Caribbean, more than half of all women aged 15-64 participate in the labor market, whereas in South Asia and the Middle East and North Africa, the labor force participation rate is less than 25%. Generally, women are less likely to work in formal employment and have fewer opportunities for business expansion or career advancement. Working women in Sub-Saharan Africa, South Asia, and East Asia and the Pacific

regions are more likely to be vulnerable workers with lower labor income and job security compared to their male counterparts¹. Emerging studies consistently document that the COVID-19 crisis has exacerbated gender gaps in employment, with working women experiencing greater hardships from the crisis (Kugler et al, 2023).

According to the Women, Business and the Law report by the World Bank (2024), women globally only enjoy 64% of the legal protections afforded to men, with significant gaps in protections against issues such as domestic violence, sexual harassment, child marriage, and femicide. Moreover, gender disparities persist in political leadership. In 2013, women comprised only 18.7% of parliament members, a figure that increased to 22.9% by 2022. While there has been progress in the number of women in political decision-making roles, overall representation remains inadequate. The status of female empowerment in politics varies widely across regions: in Latin America and the Caribbean, women hold 36% of parliamentary seats, followed by Europe and North America at 33%, Sub-Saharan Africa at 27%, Eastern and Southeastern Asia at 23%, and Oceania at 20%. Central and Southern Asia, as well as Northern Africa and Western Asia, have the lowest representation, with women holding only 18% of parliamentary seats. Previous research underscores that women in local decision-making roles significantly influence community priorities, advocating for inclusivity, family-friendly policies, and gender equality in income, employment, and parental leave (Global Gender Gap Report, 2023).

In this thesis, I investigate the impact of female empowerment in politics in Chapter 2 and analyse how temporary migration influences female empowerment in rural China in Chapter 4. Considering the distinct cultural and institutional context of Chinese politics, I examine the characteristics of public sector employees in China in Chapter 3. To provide a comprehensive understanding of the institutional and research background of this thesis, I review the literature from three main strands in the introduction: the de facto federalism political system and tournament competition for local officer promotion, the unique Household Registration System (hukou system) in China, and the trajectories and consequences of female empowerment, including issues such as son preference and the phenomenon of missing women in China.

The concept of de facto federalism in China provides crucial institutional context for understanding the dynamics within the country's administrative structure, central-local relations, and the promotion system for local officials. This framework significantly informs the analyses conducted in Chapters 2 and 3 of the thesis. The hukou system which actually divides the Chinese labor force into two distinct groups based on their hukou status (Feng et al., 2024),

¹ <https://genderdata.worldbank.org/en/indicator/sl-tlf-acti-zs>

influencing job selections and related outcomes discussed in Chapter 3. In addition, the exploration of internal migration in Chapter 4 is intricately linked with the relaxation of restrictions and the evolution of China's hukou system. The hukou system plays a pivotal role in shaping migration patterns and socioeconomic opportunities for individuals, particularly impacting discrimination against women in rural areas. Moreover, the trajectories and consequences of female empowerment are intricately linked to the analyses presented in Chapters 2 and 4. These chapters provide essential background information on the barriers confronting Chinese women, particularly those in rural areas, and underscore the significance of empowering women in these regions. I also aim to understand whether female empowerment represents a "free lunch" of economic development within China's distinct political and economic environment. Since the implementation of the reform and open-up policy in 1978, China has experienced rapid and intensive economic growth over a relatively short period. This growth has occurred against the backdrop of a unique political system and ongoing cultural conflicts between traditional values and modern inputs. These factors underscore the complexities surrounding female empowerment amidst China's evolving political, economic, and social landscapes.

Governance and Social Regulation in China: De Facto Federalism and the Hukou System

The political system in China can be described as de facto federalism, distinct from the federalist systems seen in many other countries. Federalism typically involves a distribution of power between central and sub-national governments, separate branches of government, and division of legislative authority between national and regional bodies. China remains constitutionally a unitary state where all local governments are subordinate to the central government. This structure unchanged since the establishment of the People's Republic in 1949. For example, provincially, governments must adhere to unified leadership from the State Council, implementing administrative measures, regulations, and decisions issued by the central government. The State Council retains the authority to define the specific functions and powers of local governments, overturn their decisions, impose martial law locally, and direct financial audits through its agencies. While provincial people's congresses can enact local laws, the Standing Committee of the National People's Congress can nullify these laws if they conflict with national legislation. However, in practice, power in China is divided between the central and local governments. The central government exclusively controls foreign policy, national defence, and population planning, leaving no room for local government autonomy in these areas while local governments have significant jurisdiction over most economic issues. For instance, local governments decide on matters such as foreign and outward direct investment below a certain threshold, and they implement policies formulated by the central government. Additionally, the central government often seeks input from local authorities on

specific policies. In essence, China's de facto federalism grants substantial policy-making and implementation autonomy to local governments, despite a powerful central government. This arrangement mirrors aspects of federalism found in other countries, particularly in terms of the division of responsibilities between central and regional authorities. (Zheng, 2007)

The formal administrative structure of local governance in China is organized into four hierarchical levels under the central government, with the Politburo Standing Committee (PSC) of the Communist Party serving as the ultimate decision-making body. At the first level are 34 provincial-level governments. The second level comprises 333 prefectural-level administrative units, including 293 prefecture-level cities, 30 autonomous prefectures, 7 prefectures, and 3 leagues as of 2018. The third level encompasses nearly 3,000 counties and county-level cities, while the lowest tier includes approximately 40,000 townships and towns. Each level of government mirrors the structure of the central government, with both party and government organizations running in parallel. Each level operates with its own budget and revenue sources, either independent or shared (Yao and Zhang, 2015). The central government exerts influence over local governments primarily through personnel appointments.

At every administrative level, there are two key officials. One is the secretary of the local Communist Party Committee, and the other is the head of the executive branch, such as the governor at the provincial level or mayor at the city level. In China's single-party political system, the party secretary holds a higher rank than the head of the executive branch, who also serves as a member of the local party standing committee. Theoretically, the party secretary is elected by the local Party Congress, while the executive officer is elected by the local People's Congress, the legislative body. In practice, however, most officials are appointed by the Communist Party's Organization Department from one level higher in the hierarchy. The process of promotion within this government and party hierarchy can be described as a tournament. Lower-level government officials compete with each other, and those selected by the Organization Department advance to compete at higher levels. This process continues until the highest level, culminating in the Politburo Standing Committee (PSC) of the Communist Party, which consists of only seven members. The competition intensifies with each level of hierarchy, making it a rigorous and challenging process for advancement.

While political connections and loyalties play significant roles in China's promotion tournament, personal abilities measured by local economic growth records are equally crucial, especially at lower government levels (Landry et al., 2018). Despite efforts by the central government to diversify evaluation criteria, economic growth remains the predominant goal for most officials. A higher local economic growth rate often translates into better promotion prospects for leaders (Li and Zhou, 2005). Consequently, officials have strong incentives to

prioritize economic growth to achieve career advancement. The competitive nature of the promotion tournament among local officers has been shown to stimulate local economic growth (e.g., Xu, 2011). However, constrained budgets mean that allocating more resources to economic development often comes at the expense of environmental protection and the well-being of local residents. During periods of rapid economic growth, it is not uncommon for local governments to prioritize economic expansion over environmental conservation. This trade-off underscores the challenges faced by officials balancing economic imperatives with environmental sustainability and social welfare considerations.

The research context for this thesis is China, focusing on individuals typically born between 1950 and 1980. This cohort experienced the rapid and intense development and reforms that occurred in China. A fundamental socioeconomic institutional design which affects the fate of these generations is the Household Registration Regulation System, also known as hukou system. This system is closely related to the institutional background discussed in Chapter 3, which examines the pro-social behavior of public sector employees, and Chapter 4, which explores temporary migration experiences and female empowerment.

In summary, the hukou system in China creates a stark division between rural and urban areas, influencing people's perceptions of various types of employment. Non-agricultural jobs are generally preferred due to their better economic prospects and higher social status compared to rural agricultural work. This preference is rooted in the structural division between urban industries and the rural agricultural sector, perpetuated by the hukou system which privileges urban workers and residents (Song, 2017). The hukou system effectively categorizes the Chinese labor force into distinct groups based on urban or rural hukou status, resulting in differential opportunities and costs in the labor market (Feng et al., 2024). Internal migration within China operates within a framework of substantial state intervention, where labor mobility is regulated and social benefits are distributed across regions through the hukou system (Chan, 2021). A significant factor facilitating large-scale rural to urban migration has been the relaxation of hukou constraints over time.

The hukou system, established in 1958, continues to exert significant and multifaceted influence on the Chinese political economy. Widely criticized for its inherent inequalities, scholars have often called for its abolition (Chan and Zhang, 1999). Unlike conventional population registration systems seen in many other countries, China's hukou system directly regulates population distribution and serves as a pivotal mechanism for resource allocation and subsidy distribution (Chan and Zhang, 1999). Under this system, every Chinese citizen is mandated to register their presumed permanent residence (hukou suozaidi), which classifies individuals as either urban (non-agricultural) or rural (agricultural). The geographical location of

registration determines an individual's access to essential social welfare benefits, including but not limited to pensions, health insurance, children's education, social insurance subsidies for non-working individuals, and affordable housing benefits (Chen et al., 2019; Feng et al., 2024). Research by Chen et al. (2019) has estimated the market value of an urban hukou in Jinan, the capital of Shandong province, to be approximately 90,000-126,000 yuan in 2017. This valuation is notably higher than the average income of residents in Shandong province during that period, which stood at 36,789 yuan, while the Jinan is classified as a mid-tier city in China. Due to the widening inequality across the regions, the levels of social benefits are quite different. Even within the same cities, holders of urban hukou enjoy more extensive social welfare benefits. Hukou status is determined at birth and can only be changed under stringent conditions during an individual's lifetime. This system has fundamentally shaped a diverse labor market where individuals face distinct opportunities and constraints based on their hukou status. Only those with local-urban hukou enjoy comprehensive social benefits and employment protections provided by local governments, thereby leading to disparate labor market outcomes for different hukou holders (Feng et al., 2024).

In the chapter 3, when investigating the pro-social inclination of public sector employees, the gap in pro-social behavior between private sector workers and public sector workers is filled when controlling the hukou status and the education level. I find that the people with rural hukou are less likely to engage in pro-social activities. And in the subgroup analysis, I find that for urban hukou holders, the education level is significantly positive associated with the pro-social inclination but not for those with rural hukou. And in the subgroup divided by education level, I find that the agricultural hukou holders exhibit less pro-sociality inclination in both education groups.

While the official stance maintains that the hukou system aims at facilitating state administration rather than restricting rural-to-urban migration, historical regulations indeed prohibited individuals from moving away from their registered locales without official permits. The conversion of hukou status from agricultural to non-agricultural was highly restricted under the system's inception in 1958 (Chen et al., 2019; Jin and Zhang, 2023). With the demand for urban labour surging after the early 1980s reform and opening-up policy, restrictions on internal migration were gradually relaxed. Temporary work in other locations without registration became permissible, though applications for local hukou remained tightly controlled under an annual quota system set by the Ministry of Public Security, which unfortunately led to considerable corruption (Chen et al., 2019). In the late 1990s, a national hukou reform aimed to ease migrant access to local hukou in smaller cities and towns, but its impact was limited as most migrants sought opportunities in medium and large cities. Subsequently, starting in July 2014, the reform extended to these cities, yet excluded several megacities where migrants are

concentrated, as estimated by Chan (2013) to include about half of the populations in the four first-tier megacities (Beijing, Shanghai, Guangzhou, and Shenzhen). Despite gradual reforms and relaxations, it remains challenging for lower-skilled workers to acquire local hukou in their chosen destinations. The key feature of the 2014 hukou reform was the replacement of the annual quota system with a *de jure* quota-free approach, although eligibility requirements include stable accommodation with ownership and steady employment, typically defined as positions in government agencies, state-owned enterprises, collective enterprises, or private firms with formal labour contracts (Jin and Zhang, 2023). It does not change the temporary nature of Chinese internal migration, most of migrants eventually return to their hometowns after several years of urban migration.

Since the relaxation of hukou restrictions in the 1980s, internal migration in China has surged. By 2023, according to the Survey and Monitoring Report of Rural Migration Workers issued by the Chinese National Bureau of Statistics (NBS), 297.53 million migrants were living outside their hometowns, seeking opportunities and employment in urban areas. Among these migrants, female workers accounted for 37.3%, representing over 110 million women in the urban labour market. Despite extensive research on migrant workers and their labor market outcomes, relatively little attention has been devoted to female migrants (Amirapu et al., 2022). Female migrants are different from their male counterparts in terms of the independence and job selection. Traditional gender norms can restrict women's independent migration to developed areas (Thadani and Todaro, 1984; Amirapu et al., 2022). Literature on family migration decisions (e.g. Xing et al., 2022) often views women as a "tied-mover," suggesting they are bound to fathers and spouses. In some cultures, such as India, marital migration is prevalent, with women relocating to their husband's home after marriage (e.g. Rao and Finoff, 2015; Fulford, 2015). Unlike in India, female internal migration in China from rural to urban is primarily economically driven. Unmarried women migrate from rural area to mega cities to earn more money while married women often migrate with their husband after marriage. As a marginalized minority in urban China, female migrants face institutional discrimination due to their rural hukou and gender (Lu and Song, 2006; Chen and Zhang, 2018; Magnani and Zhu, 2012). Most are low-skilled and less educated, making them vulnerable during the rapid urbanization development. In 2023, a young female migrant from Sichuan Province tragically took her own life in Zhangjiajie, Hunan province. In addition, female migrants and male migrants work in the different industries, for example, compared to their male counterparts, female migrant workers are more likely to be employed in the service sector. Huang et al. (2023) found that while female migrants make up 11.64% of the overall urban labor market, they constitute a significant 62.03% of the labor force in household services, including housekeeping, childcare, elder care, and cleaning services. In contrast, male migrant workers account for only 3.04% of such positions.

Massive rural-to-urban migration, along with the shift in employment from agriculture to manufacturing and services, has been a cornerstone of development theory (Lewis 1954; Harris and Todaro, 1970) and is prevalent in countries experiencing economic development (Amirapu et al., 2024). In China, internal migration from rural to urban areas has played a pivotal role in economic growth since the introduction of the opening-up and reform policy in 1978. This migration reallocates surplus labor from rural to urban areas, thereby augmenting the urban workforce. The influx of low-cost migrant labor has significantly reduced production costs, enhancing the competitiveness of Chinese products in the global market (Chan, 2021). Migrant workers have been integral to China's export industry since the mid-1990s, with over 70% of the labor force in export hubs like Shenzhen and Dongguan in Guangzhou Province being migrants at the start of the 21st century (Chan, 2007). Concurrently, there has been a notable shift in employment from agriculture to manufacturing and services, which is a hallmark of economic development (Pan and Sun, 2024). Moreover, the substantial remittances sent from urban to rural areas and from coastal to central and western regions play a critical role in rural development. These remittances help bridge the rural-urban income gap, alleviate rural poverty, and enhance the well-being of those left behind by providing financial support for basic education and healthcare. They also stimulate local consumption and investment. Scholars have noted that rural households often use remittances for house construction and festivals. Additionally, remittances are invested in starting or expanding small businesses, thereby fostering entrepreneurship and local economic development (Huang and Zhang, 2008).

The impact of female empowerment in politics on environment governance (Chapter 2)

In Chapter 2, I explore the impact of gender composition within the standing committees of the Communist Party of China (CPC) at the prefecture level on the implementation of green governance policies in China. According to "The Regulations on the Work of Local Committees of the Communist Party of China," these committees serve as the local representatives of the CCP, acting as the leading core in their respective regions. They are responsible for overseeing and providing leadership in economic, political, cultural, social construction, and environmental matters. Since 2011, the prescribed size of these committees at the city level has been between 9 to 11 members, including one party secretary and two deputy secretaries. The party secretary functions as the head of the committee, akin to the CEO of a company. Committee members are typically re-elected every five years, although there is frequent turnover among officers at these levels.

To investigate this question, I manually collected biographical information of 9,786 local officers from 281 prefecture-level cities. The data covers the period from 2007 to 2017, encompassing

three terms of standing committee membership. Gaps in the data occur because standing committee members are reselected every five years. All the data for local officers are from the public resources while the city level information such as city's greenery coverage and gap are from the city statistical yearbook. Among all the 9,786 local officers, 9.96% (974) are female leaders, and 177 of these female leaders have served as standing committee secretaries, primarily as deputy secretaries. Of all the female leaders, 9.51% have a doctoral degree, compared to 11.46% of male leaders. Additionally, 3.87% of female leaders have a STEM background, which is lower than the mean of 8.11%. More than 35.6% of female leaders obtained their degrees from party schools, while this figure is 31.79% for male leaders. Ethnic minority female leaders account for 9.31% of all female leaders, whereas the proportion for male leaders is 6.12%. The eldest female leader was born in 1948, while the youngest was born in 1976. Female leaders tend to have a younger age distribution than their male counterparts. The 25th, 50th, and 75th percentile birth years for female leaders are 1959, 1963, and 1967, respectively, whereas for male leaders, these percentiles are 1957, 1962, and 1964. There is no significant evidence, at least in the database of this research, that female leaders are less qualified than their male counterparts.

The study reveals a positive correlation between the proportion of female members on CPC standing committees and the extent of green coverage in cities. Specifically, a one standard deviation increase in the female share leads to a 0.339 percentage point rise in greenery coverage, after accounting for city and time fixed effects. However, this gender composition effect becomes significant only when the female ratio reaches the traditional critical mass threshold of 15%. Additionally, the impact of gender composition varies by region and is more pronounced when a minority member is present. Similar positive associations are found in alternative analyses focused on recycling efforts, where a one standard deviation increase in female representation corresponds to a 0.97 percentage point increase in harmlessly treated domestic waste.

Placebo tests based on the timing of green coverage initiatives confirm the validity of these findings. To rule out the concern that committee size, rather than the number of female leaders, might influence environmental governance—since the key independent variable, the female ratio, is calculated by dividing the number of female leaders by committee size—I first control for committee size directly in the analysis, and the relationship remains unchanged. Then, by using the number of women instead of the percentage of women as the key independent variable and controlling for committee size, I find that the relationship still exists, while committee size is negatively and insignificantly associated with greenery coverage.

This chapter contributes to the ongoing discourse on the impact of women's political representation by supporting the gender difference model (Hyde, 2005), which posits that women bring unique leadership qualities to governances (e.g., Bhalotra and Clots-Figueras, 2014; Bruce et al., 2022; Clots-Figueras, 2012; Wang et al. 2024). China's party-state system provides a unique environment to explore this question. Unlike Western countries where local officers have incentives to align policies with median voter preferences to secure electoral success (Schumache, 2013), China's governance structure is not subject to partisan electoral dynamics thus allows for an exploration of how gender diversity within local party committees influences governance outcomes without the electoral pressures found in democratic systems. In addition, local government appointments at the prefecture-city level are typically determined by upper-tier authorities. This practice not only ensures continuity and stability in leadership appointments but also introduces a level of exogeneity to the composition of female representation within the committees (An et al., 2016; Wang et al., 2024). Compared to the limited but growing literature on gender composition in politics and its implications in China (e.g., Wang et al., 2024), this study benefits from a unique and meticulously collected database that allows me to control for various characteristics at the committee level. For instance, I include variables describing educational background, age, and party school experience of committee members. Moreover, unlike previous studies that often use binary indicators (presence vs. absence) of female leaders such as party secretaries or mayors; I employ a measure of female share within the committee. This approach enables an examination of the critical mass theory, which posits that women are unlikely to significantly influence policy outcomes until they constitute a substantial minority within decision-making bodies (e.g., Childs and Krook, 2008). Thus, my research provides empirical support for the critical mass theory in the Chinese political context by demonstrating that women's impact on policy outcomes becomes noticeable only after their share reaches a certain threshold. Finally, this study contributes to the strand of literature discussing the public goods provision (e.g. Zhou 2007; Fu 2010; Jia et al 2014) by providing perspective from gender composition.

The pro-sociality of public sector employees in China (Chapter 3)

In Chapter 3, I investigate the characteristics of public sector employees in China. While policies are determined by upper authorities, such as the local standing committees discussed in Chapter 2, their effectively implementation relies on public sector employees, including those working in government and public institutions. Unlike the local leaders in Chapter 2 whose promotions follow the nomenklatura system, positions such as civil servants and those in primary, secondary, and high schools are filled through national-level exams. Chinese public sector employees differ from their Western counterparts for several reasons. First, in China, all state-run public service units—including schools, universities, hospitals, and research

institutes—fall within the inside system (tizhinei), managed largely by the Communist Party (Naughton 2016; McGregor 2010). This system provides avenues for career advancement within the public sector that can culminate in government leadership roles, with many local officials commencing their careers in public service. Additionally, public sector positions are often considered more prestigious than private sector jobs due to Confucian traditions, especially in certain provinces (Ko and Han 2013). Given China's distinctive political and cultural context, alongside its impressive growth and transformation, concerns arise about the prevalence of agency problems highlighted in European public sectors potentially being more pronounced in China. Therefore, it is crucial to ascertain whether the government attracts covert pragmatists or effectively recruits public sector employees driven by public service motivation (PSM), which research has shown to be pivotal in public sector organizations (Perry, 1990; Francois, 2000; LeGrand, 2003; Francois and Vlassopoulos, 2008).

In Chapter 3, I explore the pro-social behaviours of Chinese public sector employees using data from the China Health and Retirement Longitudinal Study (CHARLS). CHARLS is a comprehensive survey that targets individuals aged 45 and above in China, featuring detailed inquiries into their social and economic status, physical and psychological health, and other demographic characteristics. The survey's design and questions are modelled after other longitudinal aging studies, such as the Health and Retirement Study (HRS) in the United States, the English Longitudinal Study of Aging (ELSA), and the Survey of Health, Aging and Retirement (SHARE) in Europe, enabling meaningful cross-country comparisons. Their approach assesses whether the public sector effectively attracts highly motivated workers by comparing retirees from the public and private sectors. This method helps to overcome potential limitations arising from differences in job security, working hours, required effort, and opportunities for engagement in volunteer work between current employees in the public and private sectors (Tonin and Vlassopoulos, 2015; Brewer, 2003).

The results suggest previous public sector workers exhibit a greater tendency towards pro-social activities than private sector workers. This difference exists after controlling for various demographic features, such as age, gender, marital status, number of siblings, number of children, and maternal education level. However, when controlling for the hukou status and the education level, the observed difference disappeared. The subgroup analysis by gender, age, hukou status, region, and education level are consistent with the baseline findings that there is no distinguished difference between public sector-employees and private sector employees in pro-social behavior after controlling personal characteristics. Following robustness check support the baseline findings. I first change the scale of key independent variable, public sector employees. As aforementioned, the public sector employees in chapter 3 involved government employees (i.e. civil servant) and the public institution employees. The latter group includes

front-line service workers such as teachers, nurse, firefighters, and so on. There is no evidence that civil-servants are more pro-social than non-civil servants, even before controlling for confounders used in the baseline regression, while the previous public institution employees are more pro-social than the non-public sector employees before controlling the hukou status and the education level. When these two variables added, the significance disappeared. I then changed the value of the key dependent variables. In the baseline regression, it is a binary variable, equals one if the individual reported engaged in any of the four listed pro-social activities, otherwise equals zero. Considering the binary nature of outcome variable, in the robustness check, I change the binary variable to discrete variable scaled 0 to 4. The results are still in line with the baseline findings. Finally, I used logit regressions as an alternative functional form to enhance the reliability of these results. The logit regression results still consistent with the baseline results derived from the linear probability model estimations which suggests that the previous public sector employees are more pro-social than private sector employees but the difference is mainly explained by the education level and hukou status.

The findings in Chapter 3 add to the growing body of research on public service motivation (PSM) by providing empirical evidence from China. My findings are consistent with the previous European evidence (Tonin and Vlassopoulos, 2015) which suggests there is no significant evidence that public service motivation is specific to previous public sector employees while the public service motivation may be concentrated to certain industries (Dur and Zoutenbier, 2012; Tonin and Vlassopoulos, 2015). Compared with sparse studies focusing public service motivation in Chinese context (e.g. Liu et al. 2008; Liu and Tang, 2011; Schwarz et al., 2020), to the best of my knowledge, this study is the first to quantify the pro-social behavior of public sector in China using a nationally representative survey. This study also offers insights into the selection of public sector workers based on pro-social motivation. Despite reforms and improvements in the transparency and effectiveness of the public sector employee selection process since 1949, instances of corruption during recruitment persist (Burns and Wang, 2010). Currently, public sector recruitment in China is merit-based, although some positions still require positive vetting, which may not adequately ensure the selection of individuals with strong public service motivation.

The impact of temporary migration on female empowerment in rural China (Chapter 4)

In Chapter 4, I explore whether temporary migration could facilitate the female empowerment in rural China utilizing data from China Family Panel Studies (CFPS) spanning 2014-2018. China Family Panel Studies (CFPS) is a national representative biennial longitudinal survey providing a wealth of information regarding economic activities, educational outcomes, migration, and health. By reconstructing a database which limited to female aged 16-64 living in the rural China

and without migration experience initially, I find that the temporary migration experience significantly increases the income of female migrants upon their return. This income premium still exists and enlarges after employing instrumental variable strategy, which may suggest a negative selection. However, the findings also underscore that despite the additional economic gain, the temporary migration experience does not translate into increased decision-making power for female migrants within the household. In the following analysis of underlying channels, I find that this income premium is not driven by the upward job mobility from less lucrative jobs to more lucrative jobs but it varies by gender norms that the income premium is significant in groups with normal gender norms and progressive gender norms but not significant in group with conservative gender norms. In addition, unlike female migrants, male migrants do not experience a similar income premium form the temporary migration experience.

This chapter contributes to the limited but growing body of literature which investigates the wage premium of return migration by providing empirical evidence from China. China provides an interesting and ideal setting for investigating this question for the following reasons. First of all, according to the China's National Bureau of Statistics in 2022, 36.6% of rural migrants are female. That means compared with other countries, China has a substantial proportion of female migrants which allows the ample resources to explore. In comparison to females living in the urban China, the female living in the rural China usually with limited educational attainment and deeply influenced by conservative gender norms. The gap in gender norms between urban and rural China allows the variation to test whether the income premium driven by the gender norms. In addition, the temporary nature of Chinese internal migration mitigates the concern of selection bias often exists in return migration decision, since due to the restriction of household registration system, most migrants eventually return to their hometown after few years of migration (Giulietti et al.2013; Afridi et al 2015; Gu et al. 2020; Wen et al. 2022). Finally, the inadequate social security provision in rural China compels the majority of individuals to participate in the labor market, although some of them in the informal sector, which reduce the selection bias related to the labor force participation. The findings in Chapter 4 add to the studies (Co et al., 2000; Hazans, 2008; Barrett and Goggin, 2010; De Vreyer et al , 2010; Wahba, 2015; Wahba and Elmallakh, 2022) suggest the migration experience generate an income premium. Compared with previous studies, the unique method employing to reconstruct database in this study leave me abundant and detailed information for both migrants and non-migrants and thus I can use a hybrid approach similar to the fixed effect approach to rule out the time-invariant variation. To address the endogeneity of migration choice, I follow the classic network type instrumental variable in migration related studies but I improve network type instrumental variable composition by introducing the trust level into

migration decision-making. The instrumental variable used in this study exploiting two sources of exogenous variation, the number of migrants aged 16-64 from the village in 2014 and the share of most popular family name in the village. The latter variable captures the kinship and clan nexus, upon which trust between individuals in rural China is primarily based. My results suggest that the temporary migration experiences significantly influence the income for women migrants upon their return and the external validity of income premium from migration experiences could extend to women with limited education and predominately work in the informal sector.

Chapter 4 is also closely related to the studies on female empowerment. Previous literature has explored female empowerment through various lenses, including the impact of microfinance programs (Pitt et al., 2006; Kabeer, 2005; Kim et al., 2007; Swain and Wallentin, 2007; Brody et al., 2017; Kumar et al., 2021; Banerjee et al., 2015; Tarozzi and Desai, 2015; Garikipati, 2008), the effect of Gender and Entrepreneurship Together Ahead (GET Ahead) training program (Hansen, 2015; Huis et al., 2019), income growth and employment (e.g., Qian, 2008; Jensen, 2010; Rodriguez, 2022; Danquah et al., 2021), the importance of contraception (Field and Lee, 2014), marriage dowry (Thomas et al., 2002), and the long-term effect of colonialism (Guarnieri and Rainer, 2021). A limited but growing stream of literature starts to shed light on how migration affects the female empowerment. However, existing studies mainly focus on how migration experience impact the empowerment of left-behind women rather than the female migrants themselves (e.g., Tuccio and Wahba, 2018; Mitra et al., 2021; Alan et al., 2021). To the best of my knowledge, this study is the first to investigate how temporary migration experience influence female economic empowerment. The conclusion adds to the existing research suggesting the additional money gain by female has no impact on women's decision-making power within their household (e.g., Banerjee et al., 2015; Tarozzi and Desai, 2015).

The nexus of economic development and female empowerment

As discussed above, internal migration significantly contributes to economic development, with female migrants are deeply involved in this process in China. This raises another important research question about the nexus between economic development and female empowerment. As a country develops, does women's empowerment naturally follow, or are specific policies necessary to improve the condition of women? Female empowerment is defined as enhancing women's ability to access key components of development, particularly health, education, earning opportunities, rights, and political participation. Ideally, the relationship between women's empowerment and economic development is bidirectional. On one hand, development can help reduce gender inequality; on the other hand, empowering women can positively impact development (Duflo, 2012).

Gender inequality is often more pronounced among the poor, both within and across countries. Despite some progress, such as the narrowing gender gap in education, significant disparities remain. In low-income countries, the completion rate of lower secondary education for girls is only 38 percent, compared to 43 percent for boys, with poverty being a major determinant of whether girls can attend and complete their education (World Bank, 2024). Some literature suggests that gender inequality may diminish as poverty decreases, as females and males are treated differently during extreme situations. For instance, in impoverished areas of New Delhi, the mortality rate for girls with diarrhea is twice that of boys (Khanna et al., 2003). Additionally, during food shortages caused by natural disasters in Tanzania, the murder of "witches," predominantly elderly women, increases (Miguel, 2004). Economic development can alleviate poverty, thereby reducing marginal subsistence choices and enhancing the risk resilience of poor households. Consequently, women are better protected during crises, and the welfare of women of all ages can improve. Ali et al. (2011) demonstrate that in seven countries, including India, when health facilities are more accessible, parents tend to treat boys and girls equally in seeking medical care for them.

In addition to reducing the likelihood of subsistence-level decisions, economic development enhances women's welfare from a fertility perspective. Economic growth influences the timing of childbirth and decreases maternal mortality. For example, the availability of contraceptive pills to young, unmarried women in the 1960s in the US extended their educational pursuits (Goldin and Katz, 2002). Economic development also delays the age of first childbirth, which can reduce maternal mortality, as giving birth at a very young age poses higher risks. The introduction of sulfa drugs in the 1930s in the United States significantly reduced maternal mortality rates (Jayachandran et al. 2010).

Economic development creates more labor market opportunities for women, leading to better outcomes for them. For instance, Qian (2008) found that in tea-producing regions, the number of missing women decreased after the introduction of the Household Production Responsibility system, which allowed households to grow cash crops. Women have a comparative advantage in tea production due to their height and hand size. A 10 percent increase in female income translated into a 1 percentage point increase in the survival rate for girls. Similarly, in India, the rise of outsourcing industries following India's entry into the global economy and the economic returns to English education had significant impacts. Munshi and Rosenzweig (2006) observed that in Mumbai, low-caste families traditionally relied on caste networks for job hunting, which were based in Marathi, the local language. Consequently, parents chose Marathi for boys in primary and secondary school, while girls were educated in English as they traditionally did not participate in the labor market. However, with the opportunities arising from the development of

outsourcing, girls were able to take advantage of these new prospects, whereas boys could not. This shift improved gender equality and even reversed the relative fortunes of boys and girls.

However, economic growth alone is insufficient to ensure significant progress in overcoming discrimination against women and automatically empowering them. One example is the sex ratio at birth (SRB) in China, a basic indicator of the sex composition of births in a population, referring to the number of males born alive per 100 females born alive. Normally, this ratio fluctuates between 103 and 107. Despite rapid economic development in China since the reform and opening-up in 1978, the SRB worsened starting in the early 1980s. Although scattered historical statistics indicate that China has traditionally had a male-biased sex ratio, the SRB was relatively stable and only marginally higher than in Western countries from the founding of the People's Republic of China in 1949 until the beginning of the one-child policy in 1979 (Zhang et al., 2011). In 1982, the SRB was 107.63, increasing to 111.45 in 1990, 119.92 in 2000, peaking at 121.18 in 2004, and then beginning to decline. According to the 2020 population census, China's SRB stood at 111.30, still above the normal range, with significant regional disparities remaining. (Tang and Hou, 2024). The persisting imbalanced sex ratio at birth (SRB) results from a combination of son preference, the availability of sex-selective techniques, and the decrease in fertility induced by the one-child policy. Son preference, rooted in cultural background, is the fundamental reason. The availability of inexpensive sex-selective techniques provides a means to achieve the desired gender. Finally, the decrease in fertility rates, driven by the one-child policy that began in the late 1970s, exacerbated the SRB imbalance. The one-child policy generally stipulated that each couple was allowed only one child, with penalties for exceeding this quota. As a result, parents with a son preference were more likely to practice gender selection (Zhang et al., 2011).

This phenomenon is not limited to China; other countries with male-oriented patriarchal family systems, such as Korea and India (Das Gupta et al., 2003), and certain ethnic groups in the United States and Canada also exhibit persistent son preference and imbalanced SRBs. Almond and Edlund (2008) found that in the United States, among children born to Chinese, Korean, and Asian Indian families, boys outnumbered girls by 50% for third children if there were no boys already in the family. By contrast, the sex ratios of eldest and younger children with an older brother were within the biologically normal range. They interpret this deviation in favour of sons as evidence of sex selection, likely occurring at the prenatal stage. Abrevaya (2009) observed similar evidence in California, where Asian Indian mothers were more likely to terminate pregnancies and give birth to boys if they previously had only daughters. With the decreasing costs of sex identification and abortion due to new technologies, some parents with a son preference choose to abort female rather than raise them. These persistent differences in SRBs

illustrate that economic development and the availability of new technologies can negatively impact gender equality if they lower the cost of discriminating against women (Duflo, 2012).

Politics is another traditionally male-dominated domain that exhibits persistent discrimination against female leaders. A series of experiments has demonstrated that even in developed countries, women leaders are often underrated compared to their male counterparts, even when their performance is identical, particularly in roles traditionally viewed as male. In developing countries, similar biases are evident. For example, Beaman et al. (2012) found that in rural India, citizens, especially men, struggle to recognize women as competent policymakers and generally have negative attitudes toward women in politics.

Chapters 2 and 4 both address the theme of female empowerment, with Chapter 2 focusing on female leaders in politics in China. In Chapter 2, I investigate whether empowered women in politics make different choices regarding public goods compared to their male counterparts. The findings suggest that an increased share of female leaders in city decision-making bodies leads to greener cities. However, this impact only becomes significant when the proportion of women reaches the traditional critical mass threshold. This indicates that while women's perspectives matter, their voices can only be heard and make a difference if the proportion of women in the decision-making body reaches a certain level. In Chapter 4, I explore how temporary migration influences the income of female migrants upon their return and whether this experience affects their decision-making power within the family in rural China. The findings reveal that although temporary migration positively impacts the income of female migrants, there is no significant evidence that this experience enhances their decision-making power within the family. Additionally, the income premium from migration is only significant for women with normal and progressive gender norms—those whose preference for sons decreased or remained unchanged after migration. For female migrants whose preference for son increased post-migration, temporary migration has no impact on their income upon return.

In the following analysis, I briefly summarize the trajectories of female empowerment in rural China after the establishment of the People's Republic of China and examine how son preference influences female employment and empowerment in rural areas. I then summarize the consequences and importance of female empowerment as discussed in the existing literature.

Gender, employment and female empowerment in rural China

Historically, Chinese society has segregated men and women into distinct spheres: men working outside and women remaining inside, akin to the Western breadwinner-homemaker paradigm. However, unlike the Western model, the participation of rural women in agricultural

labor was deemed indispensable, albeit subordinate to that of men (Song, 2017). Traditional gender expectations were adapted to practical circumstances, and economic activities were portrayed in ways that reinforced gender roles. For instance, the conventional labor division in rural China, "men plowing, women weaving," categorized weaving as a supplementary household activity (Chen, 2004).

During the Maoist era, women's participation in the labor force was highly regarded, serving two primary objectives: emancipating them from the patriarchal feudal system and mitigating labor shortages. Both men and women were actively employed in state or collectively managed enterprises, marking a gradual decline in the traditional expectation of women staying at home. Gender equality policies implemented during China's planned economy period substantially increased the labor force participation rate from 1949 to 1978, reaching around 90% by the latter year (Yu and Liu, 2021). This historical influence persists today when comparing China with other East Asian nations like Japan and Korea. According to the International Labor Organization, the labor force participation rate in 2023 for Chinese women aged 15 and above was 61%, compared to 55% in Japan and 56% in Korea.

Despite the Maoist ideology advocating for gender equality, rural women in agricultural collectives consistently earned fewer "working points" than their male counterparts during this period. In urban areas, the socialist revolution made greater strides in achieving gender equality, with both men and women expected to work full-time and receive similar wages. However, the socialist regime failed to adequately address women's household responsibilities (Jacka, 1990). Women continued to shoulder the burden of homemaking while also working full-time outside the home (Chen, 2004), leading to the common phenomenon of overworked women during this era (Li and Li, 2008).

Since the reform era began in 1978, the dismantling of collective farms has pushed women back into family farms, reflecting a shift from public employment to economic activities more compatible with family responsibilities. Men disproportionately moved out of family farming into the wage sector, private businesses, or entrepreneurship, while women predominantly took over less valued farm work. Despite the overall decline in off-farm work for both genders in rural areas during this period, men remained overrepresented in the wage sector, whereas women continued to be primarily involved in agriculture. Some rural women sought opportunities through rural-to-urban migration, often ending up in low-paid manufacturing jobs where they faced discrimination, harsh working conditions, and sexual exploitation. As the rural and urban economies diverged, achievement and competition in the private sector became increasingly associated with masculinity (Rofel, 1999). Despite the changes during both the Maoist and reform eras, gender inequalities persisted (Song, 2017). There is no evidence to suggest that

economic reform policies and market competition have had any measurable impact on the gender wage gap in rural China (Rozelle et al., 2002). Additionally, Liu (2011) showed that the gender earnings gap has remained stable between 1997 and 2004.

The family coordination of economic activities has remained important in China's countryside, and house work and care work have been rarely outsourced in rural area (Song, 2017). In traditional gender roles, female is expected to take care of family. However, the persistent and prevalent son preference which is embedded in patrilineal social structure places the women in rural China in a vulnerable position. The strict patrilineal family system that has prevailed throughout most of Chinese history has fostered a strong preference for sons. This system grants men dominant status in property inheritance, living arrangements, family continuity, and family power structures. Within this male-dominated social structure, only men can continue the family lineage, and children derive their social status and integration into society solely through their father. A woman's value in traditional Chinese society is often measured by her fertility, especially her ability to bear male offspring. The custom of patrilocality dictates that when daughters marry, they become integrated into their husbands' families, maintaining only sentimental connections with their natal families. As a result, they receive no substantial benefits and bear no responsibilities toward their families of origin. Most material resources within a family are inherited by sons, while daughters typically receive movable property in the form of dowries or minor inheritances. Patriarchy in China restricts women's opportunities to engage in economic activities outside the family, thereby limiting their external communication and interactions. Consequently, women have historically depended on men, resulting in their low status both within the family and in broader society (Das Gupta and Li, 2002).

As previously discussed, the phenomenon of "missing women" in rural China refers to the significant number of females who are absent either before or after birth. The first category results from sex-selective induced abortions, leading to an imbalanced sex ratio at birth. The second category arises from infanticide, abandonment of girls, and insufficient healthcare for girls' illnesses, resulting in higher mortality rates among girls' post-birth (Li et al., 2011). It is estimated that over the past three decades, 163 million girls who should have been born according to biological averages have gone missing worldwide (Hvistendahl, 2011). In the first half of the twentieth century, due to war and famine, families with limited resources allocated more to their sons, resulting in higher survival rates for boys over girls. Starting in the 1980s, the implementation of the one-child policy further exacerbated this issue. This strict birth control policy reduced the number of children and decreased the probability of having a son for parents with a specific gender preference, leading to an increase in sex-selective abortions. The availability of sex selection technologies also contributed to the worsening imbalanced sex ratio at birth. The missing women phenomenon reflects the deep-rooted ideology of son preference

and discrimination against girls (Jiang et al., 2012), which may be one of the most significant cultural barriers to female empowerment in rural China.

In Chapter 4, I examine the impact of temporary migration on female empowerment in rural China. My findings reveal that migration experiences positively influence the income of female migrants upon their return. However, this income premium does not exist among those with conservative gender norms (i.e., those whose preference for boys increases even after migration). Furthermore, the findings in Chapter 4 indicate that the additional income generated by temporary migration does not translate into greater decision-making power within the family. The migration period covered in this chapter is nearly 40 years after the implementation of the open-up and reform policies. Despite four decades of rapid economic growth and exposure to relatively open gender norms in urban areas, female migrants from rural regions still lack sufficient decision-making power within their families upon their return, even though they earn more money after migration. This underscores the importance of empowering women in rural China. In the final section of the introduction, I summarize the positive effects and the importance of female empowerment, emphasizing its critical role in achieving broader socio-economic development goals in rural regions.

The consequence of female empowerment

Women play a fundamental role in development. A substantial body of literature has investigated how women's decision-making power within households can differently impact resource allocation within the family. When income or assets are in the hands of women, there are significant improvements in child health and an increase in the proportion of household expenditure on nutrition, health, and housing (Thomas, 1992). In Côte d'Ivoire, when the production of women's crops is high, households allocate more spending towards food. In contrast, high production of men's crops leads to increased spending on alcohol (Duflo and Udry, 2004). Same evidence found in Kenya, men increase their private consumption when given small transfers, while women do not exhibit the same behavior (Robinson, 2012). Even small changes that grant women modest control over financial resources can significantly influence spending patterns. Enhancing women's control over resources, even in the short term, can improve their welfare and the health and nutrition of their children. For instance, Benhassine et al. (2015) found that when women in Morocco received small cash transfers, it positively impacted the education of young children and girls. Women tend to invest money in goods and services that enhance the well-being of their families and contribute to overall development.

Women and men have different policy preferences. Women will prefer policies reflect their own priorities in child health and nutrition, as well as the policies improve their situations on divorces, and policies that increase their productivity in everyday work and the chances to access the labor market. Women are more likely to make women's issue a priority and more likely to sponsor women's issue bills. As female political participation increased in Greece, Portugal and Switzerland, these countries experience increased investment in education, in contrast, when proportion of female legislators in Ireland, Italy and Norway decreased in late 1990s, those countries' educational expenditures significantly dropped (Perez, 2019).

Chattopadhyay and Duflo (2004) provide evidence from India that the reservation policy, which required reserving a third of all council seats and council presidencies for women, influences the public goods provision. The village under the implements of reservation policies provides the public goods which better expressed the women's priorities, although the women in the reserved seats were less experienced, less ambitious and lower prospects in politics. The fact is that even in the area where women are with limited power, low literacy and women leader are believed simply implement their husbands wish. The gender of local leaders can significantly explain the difference in investment decisions.

In addition to providing a female perspective to policy-making, female leaders also enhance government transparency. A body of literature highlights the characteristics of female leadership as transformational (e.g., Post 2015), risk-averse (e.g., Huang and Kisgen, 2013; Watson and McNaughton, 2007), and adhering to higher ethical standards than their male counterparts. These traits can significantly improve governmental transparency. On average, female leaders are adept at communicating emotions and intentions, which help local firms to better understand government actions and policies (Wang et al., 2024). Their risk-averse nature prevents them from engaging in covert political dealings, and their higher ethical standards correlate with a low tolerance for corruption (Torgler and Valev, 2010). Existing literature suggests a negative correlation between the number of female legislators and the degree of corruption (e.g., Watson and Moreland, 2014).

Active female leaders also serve as role models, inspiring young girls to break free from traditional gender roles and envision a broader range of possibilities for their future. Beaman et al. (2011) found that in West Bengal, in areas where no women have attained leadership positions, over 80% of parents prefer their daughters to become housewives. Increasing female representation in leadership roles can alter these aspirations and open new opportunities for future generations.

Chapter 1

The relationship between female empowerment and economic development is deeply intertwined. While economic development alone may not suffice to eliminate discrimination against women and automatically empower them, particularly in decision-making roles, female empowerment can substantially contribute to economic growth. Empowered women are more likely to invest in education and health, which can lower child and maternal mortality rates and enhance educational attainment for the next generation. Educated girls are more likely to assume leadership positions, thereby increasing female representation in politics and other spheres. This, in turn, can improve policy-making by addressing the needs of vulnerable women and facilitating further female empowerment. As more women achieve leadership roles at all levels of society, the quality of decision-making improves, fostering sustainable economic development.

The remainder of this thesis is organized as follows: In Chapter 2, I investigate the impact of female political empowerment on environmental public goods provision. Chapter 3 explores the pro-social behavior of public sector employees in China. Chapter 4 expands the analysis to examine the impact of temporary migration experiences on female empowerment in rural China. Finally, Chapter 5 discusses the findings of this thesis and presents the conclusions drawn from the research.

Chapter 2 Do women leaders make cities greener?

2.1 Introduction

The share of women in political offices has increased considerably over the past three decades, with women now holding 26.9% of parliamentary seats worldwide in 2024, up from 11% in 1995. This increasing representation of female politicians has led economists and policymakers to intensively investigate the implications of female leadership (Wang et al., 2024). Current economic theories present contradictory predictions about whether female leaders differ from their male counterparts. One strand of literature suggests a gender difference model, where female leaders exhibit gender-specific leadership styles to distinguish themselves from their male counterparts (Eagly and Johnson, 1990; Hyde, 2005). Conversely, some studies support a gender similarities model, proposing that women may adopt leadership styles similar to men to demonstrate their ability to compete equally (Fang and Hang, 2017; Gu, 2020). Empirical studies on the consequences of women's political representation reflect mixed results (Hessami and da Fonseca, 2020). Some studies find no significant impact of increased female politicians on the size or composition of local expenditure (Ferreira and Gyourko, 2014; Geys and Sorensen, 2019; Bagues and Campa, 2021). However, other research indicates that women leaders influence policy decisions related to social welfare, childcare, and health (Chattopadhyay and Duflo, 2004; Beaman et al., 2007; Clots-Figueras, 2011, 2012). Despite these findings, current evidence is predominantly from the US, a few European countries, and India, with limited research on female leaders in China.

This study aims to empirically assess whether the proportion of women on the standing committee of the Communist Party of China (CPC) influences environmental outcomes, specifically greenery coverage, at the prefectural city level in China. The unique characteristics of China's political system present an ideal setting to examine this question. In many countries, local officials align their policies with median voter preferences to secure election victories (Pinggera, 2021). However, as the CPC is the sole ruling party in China, this context eliminates the influence of partisan electoral dynamics. Moreover, the appointment of local government officials is often determined by upper-tier authorities, providing a degree of exogeneity to the female representation on these committees (Wang et al., 2024). This study investigates whether the proportion of women on the CPC standing committee, the decision-making authority in Chinese cities, affects the extent of greenery coverage. Previous literature indicates that female

politicians prioritize differently than their male counterparts in public goods provision, often investing more in education, health, and childcare (e.g., Barnes and Burchard, 2012; Schwindt-Bayer, 2006; Bhalotra and Clots-Figueras, 2014). Greater greenery coverage leads to improved air quality and reduced pollution, which directly benefits public health and the well-being of children. Additionally, an increase in parks provides more recreational spaces for children. Therefore, it is hypothesized that higher female representation on the committee will be positively correlated with increased greenery coverage.

Identifying the effect of female leaders on policy outcomes is challenging due to omitted factors that may relate to both the presence of female leaders and the outcomes. The manually collected unique database allows me to directly control for the potential confounding factors at both the committee and at city levels. I include city fixed effects and time fixed effects to capture any time-invariant influences and external shocks. In addition, I adopt one year lead in the outcome variables, as the outcome in time $t+1$ is proximate to time t but not directly correlated with the error term in time t . As an alternative estimation for green governance, I test other green-related variables. Finally, I perform several falsification tests. I begin the falsification tests by exploiting the timing of the green coverage. If the relationship between the gender composition and the green outcome is attributable to an unobserved factor, I would also expect to observe this positive effect between the gender composition at time t and the green outcome at time $t-1$. However, I find no significant evidence between the female share and greenery coverage at time $t-1$, thus providing support for the positive relationship between gender composition and green outcomes. Next, I perform a simulation exercise where I use the baseline regression, each time replacing the female share in the committee with random values obtained by reshuffling the female share and repeating the process 1,000 times. Over these 1,000 runs, I find that the randomized female share generated a statistical and economically insignificant association with the greenery coverage. These falsification tests validate the interpretation of the results.

Another obstacle for the identification strategy is the origin of the variation. On average, each committee has nearly 10% women, while the average size of the committee is between 9 and 11 members. This raises the concern that the effect might be due to the size of the committee rather than the number of women in each committee. Additionally, it prompts the question of why having one woman in a committee of 9 members would lead to greener decisions compared to having one woman in a committee of 10 members. To address this issue, I first control for committee size directly in my analysis and find that the relationship remains unchanged. Next, I use the number of women rather than the percentage of women as the key independent variable and, controlling for committee size, find that the relationship is unaffected. The committee size is negatively associated with green decisions, although this

association is not statistically significant. Therefore, it is reasonable to conclude that the relationship between gender composition and green decisions is not primarily influenced by committee size. This finding aligns with previous experimental evidence suggesting that in mixed-gender discussions, women are more likely to speak in relatively smaller groups, particularly when decisions are made by majority rule.

There is a positive relationship between the female share of the committee and the cities' green coverage. After controlling for confounding factors and fixed effects, a one standard deviation increases in the female share results in a 0.34 percentage point increase in a city's greenery coverage. To test the critical theory, I use the values of the female ratio at the 25th, 50th, 75th, and 95th percentiles of the total female share distribution as well as the traditional critical mass threshold to create corresponding dummy variables. The gender composition effect becomes significant only when the female ratio reaches the traditional critical mass threshold of 15%. Additionally, the impact of gender composition varies by region and is more pronounced when a minority member is present. This positive relationship is also observed in alternative regressions for recycling. A one standard deviation increase in the proportion of female leaders results in a 0.97 percentage point increase in the share of domestic waste that is harmlessly treated. This evidence suggests that female members in the CPC committees indeed contribute to making cities cleaner and greener.

I try to interpret the possible mechanisms underlying the key findings through gender-specific leadership styles. It is well documented that female leaders present a higher ethical standard (Wang et al 2024). The political promotion of local officials in China can be viewed as a tournament competition based on regional economic performance. Political loyalty and connections are important for the promotion, while the personal ability, measured by local GDP growth is equally important. Thus, officials with strong promotion desires may sacrifice environmental protection or public service to compete for economic growth. Given that women are less inclined to prioritize personal gain over the common good (Dollar et al. 2001), a balanced gender representation in the committee could mitigate the excessive focus on economic growth and curb the growth bubble fuelled by officials' promotion ambitions. Indeed, the empirical evidence reveals that the female share is negatively related with FDI and total expenditure.

This study contributes to several strands of literature. First, it adds to the ongoing debate on the consequences of women's political representation. As discussed, previous literature offers conflicting views. This study enriches the strand of literature that argues female leaders have different policy preferences (e.g., Chattopadhyay and Duflo 2004; Olken, 2010) by providing empirical evidence from China, an underexplored setting. Compared to other research focused

on Chinese female leaders, such as Wang et al. (2024), this study examines the decision-making body of local authority, the standing committee of the CPC, rather than the local government. In addition, this study uses the share of female leaders instead of the commonly used binary variable, such as whether or not the mayor is female, which helps avoid biases driven by underrepresentation. The share of women in authority also allows for testing the Critical Mass Theory, which posits that women are unlikely to have a significant impact on policy outcomes until they constitute a considerable minority (e.g., Childs and Krook, 2008). This study supports this theory by showing that the gender composition effect becomes significant only when the share of female leaders reaches the traditional critical mass threshold. Finally, this study contributes to the literature on the provision of public goods in China (e.g., Zhou, 2007; Fu, 2010; Jia et al., 2014). Unlike the literature that examines this topic from the angles of decentralization and political promotion tournaments, this study explores the provision of public goods from the perspective of gender composition.

2.2 Literature Review

2.2.1 Women's political representation.

The identification of the policymaker could influence the decision-making process (Huster and Kenny, 1997). As Levitt (1996) found, the determinant of senators' utility function is their own ideology rather than the voter preference or the national party line.

A strand of literature suggests that gender differences exist across a broad range of policy choices and outcomes. For instance, Chattopadhyay and Duflo (2004) find that under the reservation policy for women in India, female politicians tend to invest in public goods that closely align with their gender-specific needs. Specifically, elected women leaders under this policy increased investment in drinking water, addressing frequent complaints from women in their regions. Clots-Figueras (2012) suggests the gender of politicians significantly impacts educational outcomes in India. Primary educational attainment being higher in urban districts with high rates of female representation. Bhalotra and Clots-Figueras (2014) suggest that women's political representation in Indian state legislatures improves public provision of antenatal and childhood services, finding that a 10 percentage point increase in women's representation results in a 2.1 percentage point reduction in neonatal mortality. This highlights women's political representation as a potentially underutilized tool for addressing health issues in developing countries. Brollo and Troiano (2016) document that female mayors lead to better prenatal care delivery and are less likely to engage in corruption. Bruce et al. (2022) find having a female mayor during the COVID-19 pandemic in Brazilian municipalities could significantly reduce the mortality rate and hospitalizations.

Existing literature consistently indicates a negative relationship between female representation and corruption. Dollar et al. (2001) identify a significant inverse correlation between female participation in government legislatures and perceived corruption levels in a sample of over 100 countries. Similarly, Swamy et al. (2001) utilize micro-data to demonstrate that women are less involved in bribery and bribe-taking. They find that corruption is less severe in government bureaucracies with a larger proportion of women in senior positions and in parliaments with more female legislators. Watson and Moreland (2014), through a time-series analysis of 140 countries from 1998 to 2011, conclude that women's descriptive and substantive representation correlates with lower perceptions of corruption. Torgler and Valev (2010) attribute this negative relationship to women's lower tolerance for corruption.

While some research finds no significant gender differences in policy preferences and outcomes, other studies suggest mixed results. For example, Ferreira and Gyourko (2014), analyzing a dataset of United States elections from 1950 to 2005, find no impact of a mayor's gender on policy outcomes concerning the size of local government, the composition of municipal spending and employment, or crime rates. Similarly, Bagues and Campa (2021) do not observe any significant effects of increased female politicians on the size and composition of public finance in Spain. The mixed evidence on gender differences could be explained by variations in the social environment (Gangadharan et al., 2019); for instance, politicians may have incentives to align with the preferences of the median voter (Pinggera, 2021). In such cases, electoral dynamics could overshadow a politician's leadership style and personal characteristics.

2.2.2 Critical Mass theory

Kanter (1997) introduces the idea that token women (those constituting less than 15% of a group) may downplay group differences due to constraints such as performance pressure, boundary heightening, and role entrapment in male-dominant cultures. While Kanter applies this theory in a business context, political scientists have adapted it to legislative settings to examine the relationship between the gender composition of legislatures and the representation of women's interests. This line of research has yielded mixed results. Several scholars argue that gender-based policy preferences are minimized in homogeneous legislatures until the female proportion reaches a certain threshold. Germain (1989) documents that gender differences in bill introductions are muted until women's membership reaches approximately 15%. Thomas (1994) contends that legislative priorities concerning women, children, and families are only emphasized in state legislatures with higher female representation. Grey (2002) finds consistent evidence in New Zealand, where female politicians more actively advocate for women's issues as their proportion approaches the critical mass

threshold of 15%. However, some scholars argue that increasing the proportion of women in an organization can invite backlash, suggesting that the impact of increasing women's numbers is not always positive (Yoder, 1991; Kathlene, 1994; Beckwith, 2007).

In contrast, other scholars present evidence that female politicians' voices can still be influential even if their proportion does not reach the 15% threshold (Welch, 1985; Bratton, 2005). One explanation for the mixed results in applying critical mass theory to empirical work is that, as Kanter (1997) notes, token groups may respond to their disadvantaged status in two ways: by highlighting differences with the dominant group or by minimizing those differences to mitigate disadvantage.

Following the logic of critical mass theory, several studies have explored the relationship between an organization's gender composition and its outcomes. Most of this research focuses on individual-level behavior in legislative settings, such as agenda-setting and bill sponsorship, with less emphasis on policy outcomes (Bratton, 2005). Furthermore, previous literature has predominantly concentrated on legislatures (Poggione, 2001; Bratton and Ray, 2002), with limited studies extending to other institutions. The research subject of this paper is the standing committee of the Chinese Communist Party (CCP) at the prefecture level. Although it is the leading core and highest decision-making body in the city, it does not possess legislative power. This study provides insights outside the legislative setting and sheds light on the female voice within one of the most fundamental and vital decision-making bodies in China's political landscape.

2.2.3 The provision of public goods in China

Local governments have an information advantage and could supply public goods more effectively than higher levels of government (Oates, 1985). In developed countries, due to the features of political and fiscal decentralization, research focused mainly on how partisan and voter influence the allocation of public financial resources (Zhou, 2007). However, the situation is more complex in China. The fundamental institution in China is regionally decentralized authoritarian (RDA) regime, characterized as a combination of political centralization and economic regional decentralization (Xu, 2011). The subnational institutions cover most local affairs, whereas the higher-level government or central government exerts influences through personnel. The assignment of local officials needs to be approved or directly appointed by the higher-level government. Suffering the impact of promotion tournaments (Zhou, 2007), the supply of public goods could easily be distorted due to the officials' strong political promotion incentives. Officials tend to invest in the economic public goods directly related to economic growth, which are also known as political achievement projects, at the expense of the social

public goods that are not related to short-term economic growth but are closely related to the residents' utility function (Fu, 2010; Jia et al., 2014).

2.3 Institutional Background and Data

2.3.1 Administration level and CCP standing committee

China operates under a one-party political system, with the Politburo Standing Committee (PSC) of the Communist Party serving as the highest decision-making authority. The formal administrative structure comprises four levels under the central government. The first level encompasses 34 provincial-level governments. The second level includes 333 prefectural-level administrative units, consisting of 293 prefecture-level cities, 30 autonomous prefectures, 7 prefectures, and 3 leagues post-2018. The third level encompasses nearly 3,000 counties and county-level cities, while the lowest tier comprises around 40,000 townships and towns. Each level of government mirrors the structure of the central government, with both party and government organizations running in parallel. At every administrative level, there are two key officials. One is the secretary of the local Communist Party Committee, and the other is the head of the executive branch, such as the governor at the provincial level or mayor at the city level. In China's single-party political system, the party secretary holds a higher rank than the head of the executive branch, who also serves as a member of the local party standing committee. The local party committee operates as the local representative of the CCP. It serves as the leading core of the region and plays a leading role in the region in overseeing the overall situation. It exercises overarching leadership in economic, political, cultural, social construction, and environmental issues. The prescribed size of the committee is 9-11 at the prefecture-level cities after 2011, including one party secretary and two deputy secretaries. I investigate how the composition of the standing party committee at prefecture-level cities impacts the cities' greenery coverage in this paper. As the hub of communication between the provincial party committee and the county-level party committee, the prefecture city committees have an essential role in China's political ecology.

Theoretically, the party secretary and other committee members are elected by the local Party Congress, while the executive officer is elected by the local People's Congress, the legislative body. In practice, however, most officials are appointed by the Communist Party's Organization Department from one level higher in the hierarchy. The process of promotion within this government and party hierarchy can be described as a tournament. Lower-level government officials compete with each other, and those selected by the Organization Department advance to compete at higher levels. This process continues until the highest level, culminating in the Politburo Standing Committee (PSC) of the Communist Party, which consists of only seven

members. The competition intensifies with each level of hierarchy, making it a rigorous and challenging process for advancement.

2.3.2 Data collection and construction of main variables

To examine the impact of gender composition on the provision of environmental public goods, I manually collected biographical data on 9,785 officials from 281 prefecture-level cities. This dataset spans from 2007 to 2017, encompassing three election cycles of standing committee membership, which are re-elected every five years. The election years are 2007, 2012, and 2017, despite some regional variations in renewal timing. For instance, some cities completed elections by the end of 2006, while others did so in early 2007; in these cases, the year was standardized to 2007. I sourced the standing committee name lists from government websites, local yearbooks, chronicles, and newspapers for the respective years. Subsequently, I traced the officials' biographical information, including gender, educational level, educational background, ethnicity, tenure, and age, using Baidubaike, the Chinese equivalent of Wikipedia. The resulting database covers nearly 96% of prefecture-level cities in China, including records from four provincial-level municipalities (Beijing, Shanghai, Tianjin, Chongqing).

In this dataset, 9.96% (974) of the local officials are female leaders, with 177 serving as standing committee secretaries, predominantly as deputy secretaries. Among female leaders, 9.51% hold a doctoral degree, compared to 11.46% of male leaders. Additionally, only 3.87% of female leaders have a STEM background, which is below the average of 8.11%. Over 35.6% of female leaders obtained their degrees from party schools, whereas this percentage is 31.79% for male leaders. Ethnic minority female leaders constitute 9.31% of all female leaders, while the proportion for male leaders is 6.12%. The oldest female leader was born in 1948, and the youngest in 1976. Female leaders generally have a younger age distribution than their male counterparts, with the 25th, 50th, and 75th percentile birth years being 1959, 1963, and 1967, respectively, compared to 1957, 1962, and 1964 for male leaders.

To measure the gender composition of the committee, I introduce the variable "female share," calculated by dividing the number of female members by the total committee size and expressing it as a percentage. To account for the effects of other committee characteristics, I include a set of binary variables: education level, educational background, and ethnicity. For education level, the variable "PhD" is set to 1 if any committee member holds a PhD degree; otherwise, it is 0. For educational background, the variable "background" is set to 1 if any committee member holds a degree in a STEM field (Science, Technology, Engineering, Mathematics); otherwise, it is 0. Lastly, the variable "ethnicity" denotes the presence of minority

ethnicity members. If there is at least one ethnic minority member on the committee, the variable "ethnicity" is set to 1; otherwise, it is 0.

I am interested in how the gender composition of the committee impacts the provision of environmental public goods. I use the greenery coverage in built-up areas (percentage, hereafter referred to as "greenery coverage") as the index for environmental public goods provision. Greenery coverage refers to the vertical projection area of all vegetation, such as trees, shrubs, and lawns, including green roof plants and scattered trees. I analyze the greenery coverage in year $t+1$, where t corresponds to the election years 2007, 2012, and 2017. This variable is collected from the respective year's city statistical yearbook.

Cities' socioeconomic conditions may correlate with greenery coverage. To control for this effect, the study includes variables such as GDP per capita, population, and local general public budget expenditure (hereafter referred to as "expenditure"). Both GDP per capita and population are logged to mitigate the impact of outliers. As an alternative estimation for green governance, we use the harmless treatment ratio of domestic waste and the discharge of sulphur dioxide (hereafter referred to as "recycling"). In this analysis, I also add the share of the secondary sector in GDP to the regression model. The variables used to control for cities' socioeconomic conditions and the alternative estimations are collected from the China City Statistical Yearbook.

Furthermore, to better understand the mechanisms by which gender composition influences resource allocation, I investigate how the proportion of females on the committee impacts GDP per capita, foreign direct investment (FDI), local general public budget expenditure, educational expenditure, and technology expenditure. All of these variables are sourced from the China City Statistical Yearbook, and the expenditure-related variables are logged.

2.3.3 Summary statistics

The summary statistics for the variables used in this paper are presented in Table 2.1. On average, the female share in prefecture-level committees is 9.95%, with a maximum female ratio of 30%, indicating that women are underrepresented. Regarding other committee characteristics, approximately 67% of committees have at least one member with a PhD degree, and nearly 50% have a member with a STEM educational background. Additionally, over 32.9% of committees have at least one minority member. The mean greenery coverage is 38.45%.

Table 2.1 Descriptive Statistics

	Obs.	Mean	Std. Dev.	Min	Max
Female ratio	855	9.956	4.547	0	30
Green	826	38.448	7.446	0.39	70.3
PhD	853	0.676	0.471	0	1
Background	853	0.506	0.5	0	1
Ethnicity	852	0.329	0.47	0	1
GDP per capita (logged)	832	10.64	0.711	8.252	15.675
Population (logged)	839	13.834	0.768	11.925	16.694
Expenditure (logged)	846	14.365	0.977	11.271	18.139

2.4 Empirical Design and Results

2.4.1 Baseline Results

I am interested in estimating how gender composition of the committee influences the greenery coverage of the city. The specification takes the following form:

$$Green_{i,t+1} = \alpha + \beta_1 Female_{i,t} + \gamma Comite_{i,t} + \theta X_{i,t} + \eta_i + T_t + \epsilon_{it} \quad (a)$$

The key explanatory variable Female (i,t) refers to the gender composition of the committee in city i time t (t=2007, 2012, 2017), while the green denotes the greenery coverage of the city i in year t+1. Comite (i,t) is a vector of committee characteristics, describing committee members' information, including education level, education background and ethnicity. X(i,t) is a vector of city-level control variables, which includes the GDP per capita, population size, and local public expenditure. For example, Female (Beijing, 2007) represents the female share of standing committee in Beijing in 2007, then the dependent variable is the greenery coverage in Beijing in 2008. The committee-related variables pertain to the characteristics of the 2007 Beijing standing committee, and the city-level control variables also correspond to those in 2007. η_i refers to the city fixed effect, while T_t is the year fixed effect. The standard errors are clustered at the prefecture city level.

In competitive elections, the gender of the elected leader is potentially endogenous, as more progressive electorates may be inclined to elect women, and the characteristics of these electorates can influence election outcomes (Bhalotra & Clots-Figueras, 2014). Politicians, in turn, often align their policies with voter preferences, which can result in policy outcomes that merely reflect these preferences (Pinggera, 2021). However, the party-state system in China eliminates the influence of partisan electoral dynamics. Local leaders at the prefecture-city level in China are not elected through competitive elections; instead, they are appointed by the organization department of higher-tier organizations, introducing a degree of exogeneity to the female representation on these committees (Wang et al., 2024). In contrast to other studies focusing on the Chinese context (e.g., Wang et al., 2024), which typically use binary variables to denote the gender of the mayor or party secretary, I measure gender composition by examining the share of female members in party committees. This method reduces potential bias, as some cities may not have female leaders serving as party secretaries or mayors. In my sample, the female share is zero in only 6.08% of the cases. The primary concern when estimating the impact of gender composition on cities' greenery coverage is the presence of omitted variables. Following previous research, I assume that the assignments of local officers at the prefecture level are exogenous. However, despite the CCP's transparent regulations regarding prefecture-level party committee elections, non-transparent rules and underlying elements in the election process could bias the estimation. My manually collected data allows for detailed control of committee-level characteristics. I incorporate city and time fixed effects to account for time-invariant factors. In addition, I adopt a one-year lead in the outcome variables because the outcome in time $t+1$ is close to time t but not directly correlated with the error term in time t . I analyze outcomes in year $t+1$ relative to the election years 2007, 2012, and 2017. As an alternative measure of green governance, I also examine other green-related variables. Finally, I conduct several falsification tests to validate both the outcome and the independent variable of female share.

Table 2.2 presents the baseline results. As shown in columns (1) and (2), the female share of the standing committee positively impacts the city's greenery coverage after controlling for city and time fixed effects. This significant impact persists after accounting for committee member features in column (3), including education level, educational background, and ethnic minority status. Finally, after controlling for socioeconomic conditions at the city level in column (4), a one standard deviation increase (0.036) in female share leads to a 0.339 percentage point increase in the city's greenery coverage at a 10% significance level. In addition, the population size significantly negatively affects the city's greenery coverage.

Table 2.2 Gender composition effects on the greenery coverage

	(1)	(2)	(3)	(4)
	green	green	green	green
Female Share	0.209*** (0.0511)	0.0994** (0.0447)	0.0884* (0.0519)	0.0943* (0.0549)
PhD			-0.0560 (0.556)	-0.0511 (0.568)
Background			-0.307 (0.607)	-0.322 (0.609)
Ethnicity			-0.729 (0.864)	-0.691 (0.837)
GDP				1.379* (0.835)
Population				-2.786* (1.594)
Constant	36.33*** (0.509)	35.07*** (0.553)	35.46*** (0.719)	59.67** (24.97)
Observations	825	822	820	806
R-squared	0.558	0.308	0.621	0.632
City FE	Y	Y	Y	Y
Time FE	N	Y	Y	Y

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Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note:

The standard error clustered at city-level. The dependent variable is the female share, calculated by dividing the number of the female member by the committee size and changed into percentage. PhD, defined as a dummy variable for whether there is a member with a Ph.D. degree in the committee. Background is defined as a dummy variable for whether there is a member with a STEM educational background. Ethnicity is defined as a dummy variable for whether there is ethnicity minority in the committee. GDP stands for GDP per capita (logged). Expenditure is denoted as the general public budget expenditure, which means how much the local government spends on the public issues.

Next, I test the critical mass theory in the context of the standing committee of the CCP. As presented in Table 2.3, I use the values of the female ratio at the 25th, 50th, 75th, and 95th percentiles of the total female share distribution, which are 8.33%, 9.09%, 10%, and 18.18%, respectively. I then create corresponding dummy variables. If the female share in the committee is greater than or equal to 8.33%, the variable `critical_1` is set to 1; otherwise, it is 0. If the female share is greater than or equal to 9.09%, the variable `critical_2` is set to 1; otherwise, it is 0. If the female share is greater than or equal to 10%, the variable `critical_3` is set to 1; otherwise, it is 0. If the female share is greater than or equal to 18.18%, the variable `critical_4` is set to 1; otherwise, it is 0. I also test the classic critical mass threshold of 15% in column (5). After controlling for committee features and city features, as in the baseline regression, the results suggest that the impact of gender composition is not significant until the female share in the committee reaches the traditional critical mass threshold of 15%.

Table 2.3 The Critical impact of gender composition on greenery coverage

	(1)	(2)	(3)	(4)	(5)
	Green	Green	Green	Green	Green
Critical_1	-0.0412				
	(0.582)				
Critical_2		0.490			
		(0.534)			
Critical_3			0.588		
			(0.662)		
Critical_4				2.311***	
				(0.763)	
Critical_traditional					1.714**
					(0.814)
Committee Features	Y	Y	Y	Y	Y
City Features	Y	Y	Y	Y	Y
City FE	Y	Y	Y	Y	Y
Time FE	Y	Y	Y	Y	Y
Observations	806	806	806	806	806

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

2.4.2 Heterogeneity Analysis

As shown in the previous analysis, the impact of female leaders does not become significant until their proportion in the committee reaches a certain threshold. In this part, I investigate whether the impact of gender composition differs in cities with an above-average female share

compared to those with a below-average female share. I divide all cities in this study into two groups: those with a below-median female share and those with an above median female share. The median proportion of female leaders is 9.09%. If female share is higher than 9.09%, the city is classified into the above-median group; if female share is less than 9.09% it is classified into the below-median group. As shown in Table 2.4, the impact of gender composition on the city's greenery governance is significantly positive in cities with above-median female leaders but insignificant in cities with below-median female leaders.

Table 2.4 Differential impact of gender composition based on female share

	Below	Above
Female share	-0.175 (0.232)	0.242** (0.117)
Committee Features	Y	Y
City Features	Y	Y
City FE	Y	Y
Time FE	Y	Y
Observations	162	154

Robust standard errors in parentheses

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

I then explore the impact of gender composition across different geographical regions in China, which can be categorized into East China, Central China, and Western China. These regions exhibit significant variations in resource endowment, potentially leading to differing impacts of gender composition. Additionally, I examine the heterogeneity among ethnic minorities. The Chinese political system upholds the principle of minority autonomy, resulting in the frequent appointment of minority leaders in regions with concentrated ethnic minority populations. Some ethnic minorities have historical or ongoing matriarchal societies, making them more assertive than Han-female members who grow up in traditional patriarchal societies, potentially leading to different impacts. The results, presented in Table 2.5, show that the impact of gender composition on greenery governance is positive across all three regions. However, this impact is significant only in Central China, as shown in column (2). To analyze the influence of ethnic

minorities, I divide the cities into two groups: those with a minority member on the city committee during any of the three terms, and those without. The results in columns (4) and (5) indicate that gender composition positively and significantly affects greenery governance in cities with a minority committee member, while it has a negative and insignificant effect in cities without minority members.

Table 2.5 The Heterogeneity of gender composition impact by region and minority

	Region			Ethnic minority	
	East	Central	West	Without	With
	(1)	(2)	(3)	(4)	(5)
Female share	0.0232	0.107*	0.182	-0.0514	0.191**
	(0.101)	(0.064)	(0.127)	(0.0761)	(0.0813)
Committee Features	Y	Y	Y	Y	Y
City Feature	Y	Y	Y	Y	Y
City FE	Y	Y	Y	Y	Y
Time FE	Y	Y	Y	Y	Y
Observations	280	310	216	406	403

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note:

1. The eastern region includes Beijing, Tianjin, Shanghai, and the cities in Hebei Province, Liaoning Province, Jiangsu Province, Zhejiang Province, Fujian Province, Shandong Province, Guangdong Province and Hainan Province. The central region includes the cities in Shanxi, Inner Mongolia, Jilin, Heilongjiang, Anhui, Jiangxi, Henan, Hubei, and Hunan. The western region includes the Chongqing, Sichuan, Guizhou, Yunnan, Tibet, Shaanxi, Gansu, Qinghai, Ningxia, Xinjiang, and Guangxi. The East China is the developed and richer part of China, while the central and west is the developing part of China. Meanwhile, the ethnic minority gathered in the west China. The average female share in east China is 10.02%, in central China is 9.87% and 9.98% in west China.

2. For minority, if there is a minority member on the city committee in any one of the three committee, this city would be gathered group, otherwise non-gather.

2.5 Robustness checks

To guarantee the robustness of the results, I conduct several robustness tests. First, I use other green governance variables to replace the greenery coverage and test whether the gender impact also exists in these alternative variables. I use the harmless treatment ratio of domestic waste (hereafter referred to as recycling) and the discharge of sulfur dioxide (SO₂). Harmless treatment of domestic waste refers to the use of advanced technology and scientific techniques in waste treatment to minimize environmental impact and achieve resource recycling. The three main methods of domestic waste disposal are sanitary landfill, incineration, and composting, all operated by local governments. The discharge of sulfur dioxide refers to the SO₂ emitted during industrial production. Unlike carbon emissions, sulfur dioxide is mainly generated from industrial activities and is a primary target for emission reduction in environmental protection efforts (Xie, 2022).

The results are reported in Table 6. The gender composition significantly improves the recycling process. As shown in column (1), a one standard deviation increase in the female ratio leads to a 0.968 percentage point increase in the harmless recycling rate. The presence of ethnic minority members also has a significant positive effect on recycling progress. Column (2) reports the impact of gender composition on sulfur dioxide emissions; the female share in the standing committee reduces sulfur dioxide emissions, although this effect is not significant. Since sulfur dioxide emissions are closely related to industrial production, in column (3), I further control for the share of the secondary industry in the cities. The magnitude of the coefficient increases, and the negative relationship between gender composition and sulfur dioxide emissions persists, although it remains insignificant.

Table 2.6 Gender composition effects on other green governance variables

	(1)	(2)	(3)
	Recycle	Sulfur dioxide	Sulfur dioxide
Female Share	0.267*	-0.00373	-0.00672

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	(0.156)	(0.00959)	(0.0125)
PhD	-2.111	0.106	0.114
	(1.921)	(0.0726)	(0.113)
Background	1.897	-0.0624	-0.149
	(1.926)	(0.0695)	(0.104)
Ethnicity	5.120**	-0.0329	0.00364
	(2.210)	(0.104)	(0.129)
GDP	7.410**	0.0577	-0.138
	(3.665)	(0.0906)	(0.243)
Population	2.168	-0.187	-1.071*
	(4.153)	(0.177)	(0.570)
Secondary industry			0.0322***
			(0.0121)
Constant	-30.23	12.66***	25.24***
	(72.98)	(2.651)	(8.430)
Observations	720	776	540
R-squared	0.546	0.808	0.822
City FE	Y	Y	Y
Time FE	Y	Y	Y

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Another concern that may bias the estimation is the average size of a CPC committee, which typically ranges between 9 and 11 members, with women comprising an average of 10% of each committee. This raises concerns that the observed variation in greenery coverage might be attributed to the overall size of the committee rather than the percentage of women on each committee. To address this concern, I first use the number of female leaders as the independent variable. The results in Table 2.7, column (1), indicate that the number of female leaders has a significantly positive influence on a city's greenery coverage. In column (2), I use the number of female leaders as the independent variable and further control for the committee size in the regression, and the significant relationship still exists, while the committee size is negatively correlated with the outcome variable, although it is not significant. Finally, in column (3), I directly control for the committee size in the regression. The impact of gender composition persists, while the committee size remains negatively correlated with the green governance outcome. This negative correlation is consistent with laboratory findings (e.g., Karpowitz et al., 2012) suggesting that the number of people in a discussion may affect the status of women.

Next, I perform placebo regressions using the timing of greenery coverage. If the relationship between the female share and the green outcome is driven by an unobserved factor, then we would also expect to observe this positive relationship between the female share at time t and the green outcome at time $t-1$. As presented in column 4, the placebo coefficient is not statistically significant in the specification. To further rule out the unobserved factors driven by female share, I perform the simulation using the baseline regression in Table 2, column (4). I replace the female share with random values obtained by reshuffling the female share. I repeat this process for 1000 times. Column (5) in Table 2.7 reports the mean coefficient and the standard errors from all regressions. As shown in column (5), over these 1000 runs, the randomized female share generates insignificant results. Figure 1 shows the distributions for randomized female share.

Table 2.7 Gender composition effects on the greenery coverage: Robustness

	(1)	(2)	(3)	(4)	(5)
	Green	Green	Green	Placebo	Falsification
Female number	0.883*	0.891*			
	(0.529)	(0.526)			

Chapter 2

Female share			0.0937*	-0.00881	
			(0.0561)	(0.0659)	
Randomized female share					0.0018
					(0.0617)
Size		-0.106	-0.0288		
		(0.247)	(0.256)		
Observations	806	806	806	813	1000
R-squared	0.633	0.633	0.632	0.635	
Controls	Y	Y	Y	Y	Y
City FE	Y	Y	Y	Y	Y
Time FE	Y	Y	Y	Y	Y

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note:

1. The size refers to committee size.
2. The outcome variable in column 4 is the city's green coverage in time t-1.

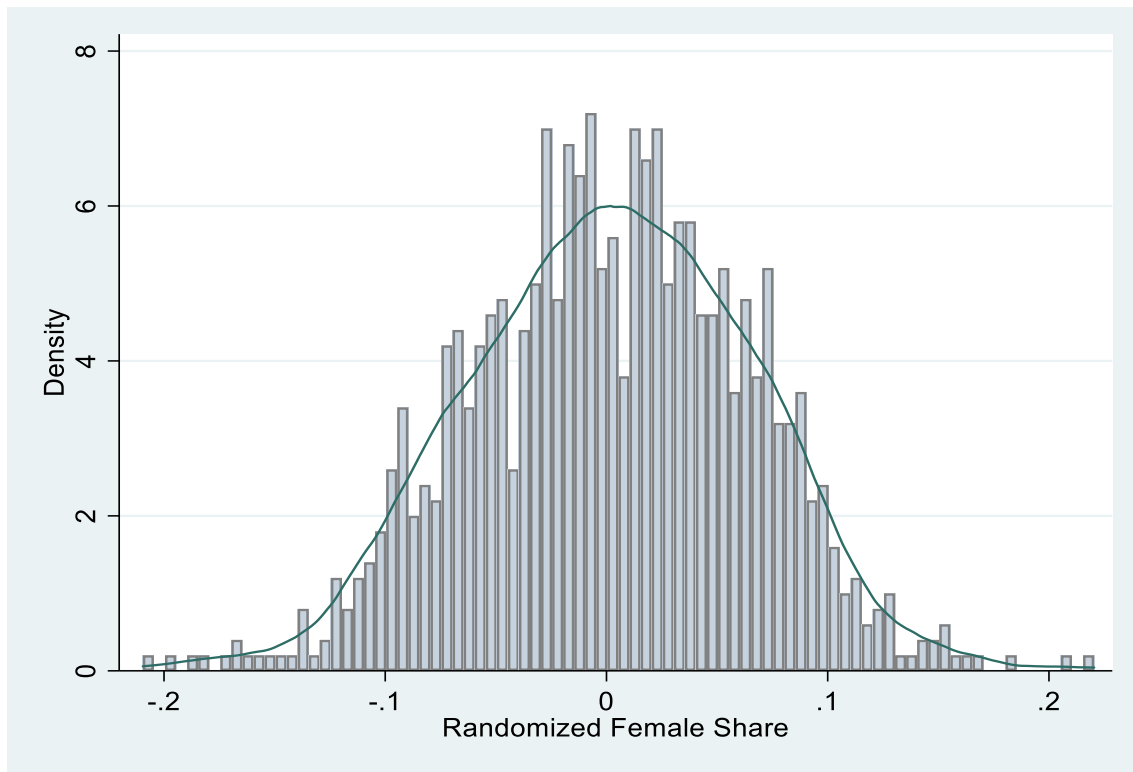


Figure 2.1 Simulation: Randomized Female Share

2.6 Mechanisms

So far, I have established that the gender composition of committees can enhance a city's greenery coverage. In this section, I investigate the underlying mechanism from the perspective of gender-specific leadership styles within the context of the Chinese tournament promotion system.

The process of promotion in the Chinese political system can be described as a tournament (Li and Zhou, 2005), where lower-level government officials compete with each other, and those selected by the Organization Department advance to higher levels. While political connections and loyalties are pivotal in China's promotion system, personal competencies, as evidenced by local economic growth records, are equally critical, especially at lower government levels (Landry et al., 2018). Despite central government efforts to diversify evaluation criteria, economic growth remains the primary objective for most officials. Higher local economic growth rates typically translate into better promotion prospects for leaders (Li and Zhou, 2005). Consequently, officials have strong incentives to prioritize economic growth to achieve career advancement. The competitive nature of the promotion tournament among local officers has been shown to spur local economic growth (e.g., Xu, 2011). However, constrained budgets often result in a trade-off where increased resources allocated to economic development come at the expense of environmental protection and the well-being of local residents. During periods of

rapid economic growth, it is common for local governments to prioritize economic expansion over environmental conservation.

Female leaders exhibit different policy preferences than their male counterparts and adhere to higher ethical standards. They tend to prioritize issues related to children and health.

Environmental public goods closely linked to air quality and the well-being of children, naturally align with the interests of female politicians. Consequently, it is reasonable to assume that female politicians emphasize and invest more in the local environment. Additionally, due to their higher ethical standards, female politicians are less likely to pursue career goals at the expense of environmental conservation and the welfare of local residents.

Column (1) in Table 2.8 suggests a correlation between the female share and the size of Foreign Direct Investment (FDI), which is often associated with heavily polluting industries. I then investigate how gender composition influences public expenditure allocation. The findings in columns (2) and (4) indicate that the female share is significantly negatively associated with total budget expenditure and expenditure on technology. Specifically, an increase of one standard deviation in the female ratio reduces total public expenditure by 0.031% and investment in technology expenditure by 0.098%. These variables are related to political achievements, suggesting that women leaders may be more cautious about investment, even in the context of tournament competition.

Table 2.8 Gender composition effects on the non-green variables

	(1)	(2)	(3)	(4)
	FDI	Expenditure	Education	Technology
Female Share	-2,447*	-0.00850**	0.00193	-0.0271***
	(1,412)	(0.00397)	(0.00498)	(0.00929)
PhD	-10,919	-0.0286	0.0177	-0.0823
	(13,610)	(0.0421)	(0.0537)	(0.0802)
Background	-670.1	-0.0185	-0.0181	-0.0487
	(13,837)	(0.0371)	(0.0458)	(0.0876)

Ethnicity	38,219	0.106*	0.0923	0.156
	(24,382)	(0.0543)	(0.0604)	(0.104)
GDP	-22,235	0.137**	0.330***	0.280
	(31,362)	(0.0662)	(0.0767)	(0.176)
Population	125,899**	0.258**	0.278*	0.910***
	(56,382)	(0.117)	(0.150)	(0.250)
Constant	-1.170e+06	8.862***	1.946	-2.990
	(984,431)	(1.780)	(2.173)	(4.056)
Observations	444	822	822	822
R-squared	0.720	0.861	0.946	0.845
City FE	Y	Y	Y	Y
Time FE	Y	Y	Y	Y

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

2.7 Conclusion

In this study, I investigate how the gender composition of the standing committee of CPC influences the city's green governance. Utilizing a unique manually collected dataset of over 9,000 local officials from 273 prefecture-level cities, I investigate the impact of gender composition on green governance. The findings indicate that a one standard deviation increase in the female ratio leads to a 0.336 percentage point increase in a city's greenery coverage. However, this impact does not become significant until the female share in the committee reaches the threshold suggested by traditional critical mass theory. The heterogeneity analysis reveals that the impact of gender composition varies by region and is more pronounced when a minority member is present.

To ensure the robustness of these findings, I use variables related to recycling and industrial SO₂ discharge for robustness checks, with results consistent with the baseline findings. In addition, I conduct a placebo test by altering the timing of greenery coverage from $t+1$ to $t-1$, finding no significant results for $t-1$, further illustrating the robustness of the results. To address concerns that committee size, rather than the number of female leaders, might influence environmental governance, I first control for committee size directly, finding that the relationship remains unchanged. Then, by using the number of women instead of the percentage as the key independent variable and controlling for committee size, I find that the relationship is unaffected. Interestingly, committee size is negatively associated with green decision-making, although this finding is not statistically significant. These robustness checks align with the baseline findings.

I interpret the mechanisms underlying my results through two channels: differences in gender policy preferences and the correction of overemphasis on economic public goods investment driven by tournament competition for promotion. Firstly, policymakers tend to invest in public goods relevant to their own gender. Given their nature-loving tendencies and priorities in children-related issues, as documented in previous literature, female leaders, when empowered, have incentives to invest more in green-related public goods. Secondly, the presence of female leaders in committees can mitigate the distorted emphasis on economic growth driven by officials' promotion desires, leading to more environmentally friendly decisions. I find a negative relationship between the female share and total expenditure, as well as foreign direct investment, which is often associated with heavily polluting industries.

One limitation of this study is the potential endogeneity of the key independent variable, the female share. Following existing research, I assume that local officers at the prefecture level are assigned by upper-tier authorities, making this assignment exogenous. However, despite the CCP's transparent regulations regarding prefecture-level party committee elections, non-transparent rules and underlying elements in the election process could bias the estimation. My unique manually collected database allows for the control of detailed personal characteristics. Additionally, I mitigate unobserved determinants by using outcomes one year later, adding time and city fixed effects, and exploring other variables as robustness checks and conducting placebo tests. These strategies ensure the robustness of the results to some extent. Another potential source of endogeneity may arise from the composition of upper-tier authorities, such as the female representation in provincial-level party committees. However, the election of party committee members follows a bottom-up process, with prefecture-level elections occurring before provincial-level elections. Additionally, the number of female leaders at the provincial level is limited. These two factors help mitigate potential biases in the analysis.

In terms of policy implications, my findings suggest that a balanced gender composition benefits a city's green governance, even though women are still underrepresented at the prefecture-level committee. The average female proportion in standing committees in China is just under 10%, far from typical reservation quotas, such as the 30% quota under India's reservation policy. The results indicate that female leaders' voices cannot make a significant impact until the female share reaches 15%, the traditional critical mass threshold. Given the current challenges in environmental protection and climate change, it is reasonable to advocate for increasing the female proportion in party standing committees.

Chapter 3 Are Chinese public employees different?

Evidence from elder workers

3.1 Introduction

Working in the public sector is a favored profession in China. According to the State Administration of the Civil Service, over 778,000 individuals enrolled for the national civil service examination in China in 2021 and competed for 31,200 positions. The competition ratio for the most desired position is approximately 2,245:1. Some scholars argue that the motivation to work for the government is deeply rooted in Confucianism (Han et al., 2010). Ko and Han (2013) explain that public service positions are considered more prestigious than private sector jobs due to the Confucian tradition that being appointed to a civil service position confers significant prestige upon both the individual and the family.

In addition to the cultural context, public sector employees in China work in a very different institutional context since the unique party-state system shares little with the political systems in Western countries (Yang and Wang, 2013). Unlike their impartial counterparts in other nations, public sector employees in China operate under the guidance of the Communist Party of China (CCP). Moreover, the past few decades have seen remarkable growth and transformation in China, resulting in a rapidly evolving socio-economic landscape that has made the working environment for public sector workers increasingly intricate. Due to the concentrated power structure and unique context, the agency problems highlighted in Europe's public sector, for example, corruption (Svensson, 2005) may be more prevalent in China. Dong et al. (2017) point out that rampant corruption has led to the incarcerations of several high-profile civil servants and thousands of their subordinates. Despite the Chinese government's recent efforts to conduct an anti-corruption campaign, the Corruption Perception Index (2022)² indicates that the corruption level, which has been proven to be associated with the individual's choice to enter the public sector (Clowley and Smith, 2014) remains at a moderate level.

Given the cultural and institutional background in China, as well as the government's increasingly important role in socioeconomic development (Burns and Bowornwathana, 2001), it is essential to comprehend the characteristics of government employees in China, a unique setting that shares limited similarities with Western countries. Specifically, it is important to

² [2022 Corruption Perceptions Index: Explore the... - Transparency.org](#)

investigate whether the government simply attracts covert pragmatists or effectively recruits public sector employees who possess intrinsic motivation to serve the public interest i.e., public service motivation (PSM), which has been identified as a significant factor in public organizations. For example, Francois (2000) and LeGrand (2003) support Perry's (1990) proposition that in public organisations, PSM is positively related to individual performance, while Francois and Vlassopoulos (2008) provide evidence that non-pecuniary rewards are optimal in public organizations and pro-social motivation has an effect on the delivery of public service.

In this study, I investigate the pro-sociality³ of public sector employees in China using a biennial nationwide household survey, the China Health and Retirement Longitudinal Study (CHARLS). CHARLS is a representative survey for people aged over 45 in China, including rich and detailed questions regarding social and economic status, physical and psychological health, and other demographic features. This survey follows the design of other longitudinal ageing surveys around the world, for example, the Health and Retirement Survey (HRS) in the United States (US), the English Longitudinal Study of Ageing (ELSA) and the Survey of Health, Aging and Retirement (SHARE) in Europe, making it possible and reliable to make cross-country comparisons. I follow the research design proposed by Tonin and Vlassopoulos (2015), which assesses whether the public sector is effectively attracting highly motivated workers by comparing retirees from the public sector and the private sector. This approach addresses the limitation that current public and private sector workers may encounter different constraints in their working environments. For instance, public sector workers may be motivated to volunteer out of self-interest to secure their employment. In some Canadian provinces, social service workers, including probation officers and children's welfare advocates, are expected to contribute additional time due to staffing shortages (Brewer, 2003). Moreover, public sector workers often have more opportunities to engage in volunteer work (Brewer, 2003). Additionally, private and public sector workers may differ in terms of job security, working hours, required effort, and other factors (Tonin and Vlassopoulos, 2015).

I find that individuals who were previously employed in the public sector exhibit a greater tendency towards pro-social activities compared to retirees from the private sector. The analysis indicates that former public sector workers are significantly 2.8% more likely to engage in pro-social activities. This difference persists when controlling for various demographic

³ PSM is a particular form of altruism or prosocial motivation. Prosocial motivation is most closely identified in the field of organizational behavior. As Walster and Piliavin (1972) documented, the definition of prosocial should specify that the act is voluntary and without expectation for return.

characteristics, such as age, gender, marital status, number of siblings, number of children and maternal education. However, when education level and hukou status, a special household registration system in China, are included, the observed gap disappears. I find that education level increases the probability of pro-sociality, while those with agricultural hukou are less likely to engage in pro-social activities.

The subgroup analysis explores heterogeneity by gender, age, hukou status, education level and region of residence. The results are consistent with the baseline findings that there is no significant difference in pro-sociality between public sector workers and private sector workers after controlling for personal characteristics. Notably, I observed a decline in pro-social motivation among female retirees as the number of children increases, which may be due to traditional gender roles in China where women are expected to take care of their grandchildren. Considering the age structure of the sample, this study also investigated whether there are cohort effects driven by the Cultural Revolution, which may have an impact on pro-social motivation; however, I did not find any evidence of such a cohort effect. The analysis of hukou status reveals a positive and significant relationship between education level and pro-social inclination for both urban and rural hukou holders. Maternal education exerts a significant influence on individuals' pro-social behavior, with a positive effect observed among urban hukou holders and a negative effect among rural hukou holders. For people with rural hukou who may also live in an urban area, I also conducted a heterogeneity analysis by region of residence, which produces results consistent with those for hukou status. Finally, in the subgroup divided by education level, I found that agricultural hukou holders exhibit less pro-social inclination in both educational groups.

To guarantee the robustness of findings, I conducted several tests, beginning with a change in the definition of public sector workers. The key independent variable, the public sector, consisted of two groups: civil servants and public institution employees. The former group is typically defined as government administrators, while public institution employees include front-line service workers such as teachers, nurses, fire fighters, and so on. The results remain consistent with the baseline regression, indicating that hukou status and education level account for most of the pro-sociality gap between the public and private sectors. Next, I changed the value of the key dependent variable, pro-sociality. In the baseline regression, the key dependent variable of pro-sociality is a binary variable. Individuals who reported engaging in any of the listed activities within the last month were considered pro-social and assigned a value of 1, while those who did not engage in these activities were assigned a value of 0. The listed activities were: providing help to family, friends, or neighbors who do not live with them; participating in a community-related organisation; doing voluntary or charity works; caring for a sick or disabled adult who does not live with them. In the robustness check, I created a new

outcome variable ranging from 0 to 4 to capture the degree of pro-sociality, with 0 indicating no pro-social activities and 4 indicating engagement in all four activities. The results are in line with the baseline regressions, showing that previous public sector workers are more likely to exhibit higher pro-social inclinations, and this difference is mainly explained by the education level and hukou status. Since the linear probability model used in the analysis above may be subject to bias due to the binary nature of the outcome variable, logit regressions were used as an alternative functional form to enhance the reliability of these results. The logit regression results are consistent with the baseline results derived from the linear probability model estimation, indicating that being previously employed in the public sector has a statistically significant 4.8 % marginal effect on the probability of engaging in pro-social activities. However, this difference diminishes to zero and becomes statistically insignificant when controlled for personal characteristics, especially education level and hukou status. Finally, I investigate whether pro-social inclination is influenced by tenure in the public sector. There is a possibility that pro-social behavior is driven by experience in the public sector rather than intrinsic altruistic motivation. However, as shown in Figure 3.1, the number of individuals engaging in pro-social behavior peaks among those with three years of experience in the public sector, after which it declines. The findings in this paper are mainly consistent with the previous European evidence from Tonin and Vlassopoulos (2015), which found that public sector workers tend to be more pro-social than private sector workers, but this is largely due to differences in education and occupation (in the case of the present study, education level and hukou status). There is no significant evidence that public service motivation is specific to public sector workers.

This study adds to the growing body of research on public service motivation (PSM) in economics by providing evidence from China, which is a relatively underexplored area compared to previous research conducted in the United States and Europe (e.g. Houston, 2005; Rotolo and Wilson, 2006; Gregg et al., 2011; Dur and Zoutenbier, 2012). Previous studies in China have focused mainly on the outcomes of PSM (e.g. Liu and Tang, 2011; Schwarz et al., 2020) and have been limited to certain cities or provinces, with little research that shedding light on the existing PSM in China. Only Liu et al. (2008) examine PSM assessment in China based on survey data of 191 public servants. To the best of my knowledge, this study is the first to quantify public sector employees' pro-social motivation in China using nationally representative data. Moreover, since the CHARLS data used in this study are designed to be comparable with other longitudinal aging surveys from around the world, this makes these findings comparable with previous European evidence, such as Tonin and Vlassopoulos (2015), who used SHARE.

The present study is also related to the existing literature regarding the selection of workers for the public sector (e.g. Serra et al., 2011; Dal Bo et al., 2013; Hanna and Wang, 2017). Since

1949, the process of selecting public sector workers in China has been gradually reformed, shifting from appointed positions within the party to open, competitive and, merit-based examinations. While there have been improvements in transparency, corruption during the recruitment process persists, as highlighted in studies such as Burns and Wang (2010). Our findings regarding pro-social motivation may offer some insights for policymaking in the recruitment process of public sector workers.

The rest of the paper proceeds as follows: Section 2 will discuss the related literature regarding preferences of public sector employees and public sector recruitment, as well as providing some institutional information relating to public sector recruitment in China. Section 3 describes the data and methodology used in this study and Section 4 shows the baseline results, the heterogeneity analysis, and the robustness check. Finally, Section 5 concludes the findings and outlines the limitations of this study.

3.2 Literature Review

3.2.1 Public Sector employee preference

A rich body of literature in public administration on public service motivation and a growing number of studies in economics have focused on the differences in preferences and motivation between the public and private sectors. According to Perry and Wise (1990), individuals with a stronger public service motivation are more likely to seek employment in a public organization.

Numerous studies in public administration have provided support for this proposition. For example, Lewis and Frank (2002) analyzed data from the US-based General Social Survey, finding a positive relationship between the desire to help others and the preference for a government job. Vandenabeele (2008) discovered a positive association between PSM and students' preference for potential public employment. In economic research, Rotolo and Wilson (2006) used the Current Population Survey and Volunteer Supplement in the US, suggested that employees in the non-profit sector and public sector are more likely to volunteer than those in the private sector. Likewise, Lee (2012) used the same survey (but from 2007) and found evidence supporting the claim that workers in the non-profit and government sectors are more likely to volunteer than those in the for-profit sector. Meanwhile, Houston (2005) used data from the General Social Survey in 2002 and found that government employees are more likely to volunteer for charities and donate blood than for-profit sector workers. These findings support the hypothesis that public service motivation is more prevalent in the public sector than in private organizations.

This stream of research was initially concentrated in the US but gradually diffused worldwide. Dohmen and Falk (2010) conducted a study in Germany using lab experiments and the German Socio-Economic Panel Study, providing causal evidence that teachers are more risk-averse, more trusting and less negatively reciprocal than other employees. Dur and Zoutenbier (2012) used the same survey and found that public sector employees are significantly more altruistic and less motivated than private sector workers, especially among higher educated workers, adding that the sorting of altruistic people to the public sector occurs only within caring industries. Gregg et al. (2011) used the British Household Panel Survey and found that individuals in the non-profit sector were more likely to donate their labour (i.e., do unpaid overtime) than those in the for-profit sector. The gap between the two sectors is not simply due to social norms but can be partly attributed to self-selection. Tonin and Vlassopoulos' (2015) study uses the Survey of Health, Aging and Retirement in Europe (SHARE), with the authors suggesting that public workers (both current and former) are more pro-social than private workers, while the difference in pro-sociality is mainly explained by the composition of the workforce; former public sector workers in the education industry are significantly more pro-social even after controlling for various characteristics. Both Clowley and Smith (2014) and Dur and Zoutenbier (2014) used the World Value Survey, providing an international comparison in motivation and mission alignment. Clowley and Smith found that the level of intrinsic motivation in public sectors differs across countries, which could be explained by the level of corruption since a more corrupt public administration is less likely to attract highly intrinsically motivated individuals. Meanwhile, Dur and Zoutenbier's paper emphasizes the mutually reinforcing role of altruism and mission alignment in determining a worker's likelihood of working in the public sector. Individuals who possess both a higher level of altruism and a strong confidence in political parties are more inclined to work in the public sector. and this tendency is especially apparent among highly educated workers and in less-developed countries (Dur and Zoutenbier, 2014).

However, there is limited research that seeks to shed light on PSM among public sector employees in China. Liu et al. (2008) examine the extent to which PSM assessment can be applied to China based on survey data from 191 public servants in China. They found that the public service motivation that can be observed in Western countries also exists in China, but the generalisability of the construct is limited. Another study by Liu and Tang (2011) collected data from 172 full-time professionals in the public sector who were also part-time students in a Master of Public Administration (MPA) programme in eastern China. They found that the love of money among public servants moderates the relationship between PSM and job stratification. Wal and Lee (2015) compared the value rankings of Chinese civil servants and Dutch civil servants by surveying professional MPA programme students and civil servants in China and the

Netherlands, finding that the similarities exceed the differences in value rankings among the two groups. They also indicated that ideal-type value rankings are more similar than real-life rankings, with only a few idiosyncratic differences reflecting administrative traditions. Schwarz et al. (2020) collected data from 300 civil servants and their 64 managers working in a water resources bureau and an environment bureau in a prefecture-level city in Shandong Province. Their study provides evidence that the leadership approach is positively related to public service motivation and increases job performance among public servants.

3.2.2 Government employee recruitment and selection

Although competitive exams with a merit system have been broadly applied in many countries for the recruitment and selection of public sector employees, such as the US, Australia, and Japan, nepotism and recruitment corruption are still common in Asian countries (Moon and Hwang, 2013). For example, in Cambodia, patronage politics often predominate despite the existence of open and competitive recruitment (Netra and Bandeth, 2010). Various researchers have conducted experiments to investigate worker selection in the public sector. Serra et al. (2011) provide evidence from Ethiopia suggesting that where the original mission of the public sector has been eroded, health professionals with pro-social and philanthropic values choose not to work in the public sector but instead prefer the non-profit sector. Meanwhile, Dal Bo et al. (2013) found that higher wages help to attract a better candidate pool in terms of both motivation and quality. Ashraf et al. (2014) designed an experiment based on nationwide recruitment of government positions in Zambia and found that individuals who are attracted by career performance were different from those who were motivated solely by the desire to do good. Hanna and Wang (2017) found that students in India who were more likely to cheat during a laboratory experiment were also inclined to prefer government jobs. Finally, Lagarde and Blaauw's (2014) study identified that nurses in Africa who were generous towards patients in the lab experiment were more likely to choose rural jobs.

The public sector in China comprises civil servants and public institution workers. Currently, recruitment for these two groups of workers in China shares the same scheme, which is mainly based on competitive merit-based examination. The examination includes written and oral components, and the written test comprises two sections. The first section is called the Administrative Aptitude Test, which consists of approximately 130 multiple-choice questions covering logic, mathematics, politics and philosophical concepts. In the second section, also known as *shenlun*, applicants are required to analyse and compose an article after reading given materials related to economics or policy. The entire examination process comprises multiple anonymous tests with double marking, which aims to enhance the transparency and reliability of the examination.

Although the civil service law states that party membership is not required for civil servant recruitment and similarly for public institutions, Burns and Wang (2010) pointed out that politically sensitive position in personnel, policy and regulation, planning, education and social security are only reserved for party members. The “neutrality” principle distinguishes the Chinese public service system from its Western counterparts, according to Yang et al. (2012); in contrast to the multi-party system of Western nations, the civil servant administration in China is embedded in the system of one-party rule where the Communist Party of China (CCP) plays the leading core in public personnel management. Under the direction of the Politburo, the CCP Organization Department (OD) formulates civil service management policies, while selection, appraisal and promotion decisions about civil service personnel are managed and approved by the party core group within the relevant bureau under the supervision of OD at the corresponding level (Burns and Wang, 2010). All public bodies in China follow the long-standing principle that “the party manages the cadre”.

Moreover, although the Chinese government is trying to make the recruitment of public sector employees transparent, effective and, fair, corruption during this process is still rampant. As Burns (2007) documented, recruitment corruption is prolific in local government in China. Not only have a large number of positions at the district or county level been filled with corrupt officials, but also leaders at the central or provincial levels have sold government posts, including Cheng Kejie, the former vice-chairman of the National People’s Congress who was accused of corruption in 2000 (Burns and Wang, 2010).

3.3 Data and Empirical Strategy

I use data from wave 1 (2011), wave 2 (2013) and Life History Survey (2014) of China Health and Retirement Longitudinal Study (CHARLS). CHARLS is a representative nationwide household survey that includes a rich set of questions regarding socio-economic standing, physical and psychological health, demographics of individual aged over 45 in China. This biennial survey is designed to ensure comparability with other longitudinal aging surveys such as Health and Retirement Survey (HRS) in the U.S., the English Longitudinal Study of Aging (ELSA) in England, and the Survey of Health, Aging and Retirement in Europe (SHARE) in Europe and Israel, which allows cross-country comparisons.

Based on CHARLS, I form a sample consisting only for the retirees, leaving me with 6902 observations. The key independent variable of interest is the sector of employment. This variable is from the Life History Survey (2014). Respondents who answered “government” and “public institutions” to the question “Which of the following best describe your employers?” are categorized as public employees, while the other options included NGO; firms (included State

Owed Enterprise); individual firms; farmer; individual households; rural collective economic organization; and other. In my sample, 15.39% of respondents are former public employees.

The main outcome variable is pro-sociality. I classify respondents who checked any of the following options in response to the question “Have you done any of these activities in the last month?” as pro-social: “provided help to family, friends, or neighbors who do not live with you”; “took part in a community-related organization”; “done voluntary or charity work”; “cared for a sick or disabled adult who does not live with you

I incorporate a rich set of control variables which may influence respondents’ pro-social decisions including demographic factors such as age, gender, marital status, number of siblings, number of children, parental socio-economic status, education, and hukou status. Additionally, the PSU information provided by CHARLS enables me to capture geographic differences by using province-level dummy.

Table3.1 Descriptive statistics of retirees

	Mean	Std. Dev.	Public	Public	Private	Private
Prosocial	0.1	0.301	0.143	0.35	0.092	0.289
Public	0.167	0.373				
Female	0.615	0.487	0.392	0.488	0.659	0.474
Married	0.756	0.43	0.82	0.385	0.743	0.437
Sibling	1.412	1.281	1.347	1.27	1.426	1.283
Children	3.241	1.804	2.921	1.663	3.305	1.824
Maternal	0.006	0.077	0.008	0.091	0.005	0.073
Edu	0.112	0.315	0.354	0.478	0.063	0.243
Hukou	0.64	0.48	0.246	0.431	0.19	0.45

Note:

1. Maternal education, and respondent education is coded 1 if they received secondary education or above, otherwise 0. The respondent education level is measured same.
2. Hukou is a special identifier in China, which affects many aspects in China such as health care, children’s education enrollment, and other welfare. The agricultural hukou is coded 1, the urban hukou is coded 0.

Table 3.1 reports the descriptive statistics results for the entire sample, as well as for the private and public sectors separately. For a rough comparison, public sector retirees are more pro-socially motivated. It is notable that former public sector retirees differ from previous private sector workers in terms of gender, education level, and hukou status. There are fewer former female public sector retirees, which, given the proportion of women in the total sample and the same retirement age in the two sectors, may suggest that, unlike the feminization of public sector in many other countries (Finan et al., 2015), the fraction of female employees in China's public sector is lower than in the private sector. Moreover, there is a higher concentration of former public workers with at least a secondary education level, while this fraction is lower in private sector. Finally, in terms of hukou status, a special identifier in China that captures the difference between urban and rural areas, most public sector retirees have an urban hukou, while most former private sector workers have a rural hukou.

The public sector retirees' pro-social motivations are estimated as follows:

$$Prosocal_{i,t} = \alpha + \beta Public_{i,t} + \gamma X_{i,t} + i.Prov + \epsilon_{i,t}$$

Where $Prosocal_{i,t}$ is a binary variable indicating whether individual i has engaged in pro-social work in time t where t equals 2011 or 2013. $Public_{i,t}$ is a dummy variable indicating whether the individual i retired from the public sector in time t . $X_{i,t}$ is a vector of control variables (age, gender, marital status, number of siblings, number of children, maternal education, respondent's education level, and hukou status), and $i.Prov$ are province dummies. The key coefficient is β , which captures the difference in pro-sociality between public sector workers and non-public sector workers.

3.4 Results

3.4.1 Baseline Results

Table 3.2 reports estimation results from a linear-probability model. Column (1) presents the basic model without control variables. Compared with non-public workers, individuals with previous public sector work experience are significantly more pro-social. Column (2) adds the demographic control variables such as gender, marital status, number of siblings, number of children, parental education level. After controlling for a rich set of variables, the significance

still exists. Column (3) incorporates the respondents' education level, measured by whether they completed secondary education or higher. This variable is positively associated with the likelihood of engaging in pro-social activities. Column (4) examines hukou status, a unique household registration system in China, and suggests it significantly impacts pro-social behavior. In China, the hukou system is not merely a residence recording system; it serves far more important functions relate to socio-economic eligibility. The hukou system comprises two classifications, “agricultural” and “non-agricultural”, the latter also commonly known as “urban hukou”. I use this variable to capture the difference between urban and rural areas. The empirical evidence indicates that respondents holding agricultural hukou are less inclined to engage in pro-social activities. Column (5) includes both variables simultaneously, and the effect of public sector experience diminishes to near zero. These two variables, rather than public sector experience, play a more prominent role in shaping pro-social tendencies. To account for regional differences, such as variations in pension levels across provinces and a possible concentration of public sector retirees in relatively developed regions, as well as the influence of the Confucian tradition on individuals' career choices (e.g., Han et al., 2010; Ko and Han, 2013), I include province dummies in the analysis.

The baseline results are consistent with earlier European evidence (Tonin and Vlassopoulos, 2015) obtained from the Survey of Health, Aging and Retirement in Europe (SHARE), which indicates that former public sector employees exhibit a significantly higher degree of pro-social behavior. However, the gap in pro-sociality narrows when the education level of respondent is taken into account.

Table 3.3 presents the baseline regression results across different waves. The findings are consistent with the pooled OLS results, indicating that education level and hukou status explain the pro-sociality gap between the private and public sectors. Individuals with higher education levels and urban hukou are more likely to engage in pro-social behavior, while public sector work experience plays a less significant role. Notably, in the 2011 wave, females are significantly less likely to exhibit pro-social behavior.

Table 3.2 Pro-sociality for public sector workers

	(1)	(2)	(3)	(4)	(5)
	Pro-social	Pro-social	Pro-social	Pro-social	Pro-social
Public	0.0559**	0.0541**	0.0199	0.0284	0.00599

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	(0.0226)	(0.0223)	(0.0231)	(0.0234)	(0.0240)
Age		-0.00312***	-0.00293***	-0.00368***	-0.00335***
		(0.000744)	(0.000676)	(0.000744)	(0.000670)
Female		-0.0133	-0.00369	-0.0118	-0.00382
		(0.0142)	(0.0117)	(0.0137)	(0.0116)
Married		-0.0103	-0.0144	-0.0196	-0.0205
		(0.0180)	(0.0164)	(0.0174)	(0.0163)
Sibling		0.00880*	0.00807*	0.00783	0.00747
		(0.00529)	(0.00476)	(0.00500)	(0.00465)
Children		-0.00862***	-0.00551**	-0.00234	-0.00144
		(0.00302)	(0.00274)	(0.00286)	(0.00280)
Maternal		0.173**	0.134	0.165*	0.133
		(0.0849)	(0.0871)	(0.0841)	(0.0862)
Education level			0.144***		0.126***
			(0.0391)		(0.0362)
Hukou				-0.0780***	-0.0555***
				(0.0193)	(0.0139)
Constant	0.0850***	0.328***	0.304***	0.409***	0.364***
	(0.0146)	(0.0637)	(0.0565)	(0.0673)	(0.0578)
Observations	6,902	6,902	6,902	6,902	6,902
R-squared	0.020	0.044	0.065	0.055	0.070
Province FE	YES	YES	YES	YES	YES

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Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note:

1. I classified people who answered “government” and “public institutions” in the type of employer as public sector employee. The option for this question are government (5.72%), Public institutions (9.67%), NGO(0.04%), Firm(12.45%), Individual Firm(3.96%), Farmer(0.26%), Individual household(0.37%), Rural collective economic organization(66.91%), other(0.62%).
2. The public institution in China is like non-departmental public body (NDPB) in UK. It refers to the social service organizations which organized by the state, using state asset to engaged in the education, science and technology, health, culture, and other activities. (State Council Decree No.252 and 411).
3. Hukou is a special identifier in China, which affects many aspects in China such as health care, children’s education enrollment, and other welfare. The agricultural hukou is coded 1, the urban hukou is coded 0.

Table 3.3 Pro-sociality for public sector workers in different waves

	(1)	(2)	(3)	(4)	(5)	(6)
	Wave2011	Wave2013	Wave2011	Wave2013	Wave2011	Wave2013
Public	-0.0134 (0.0311)	0.0478 (0.0319)	-0.00873 (0.0280)	0.0560* (0.0333)	-0.0243 (0.0333)	0.0286 (0.0328)
Age	-0.000513 (0.000665)	-0.00460*** (0.000935)	-0.000996 (0.000710)	-0.00566*** (0.00103)	-0.000784 (0.000655)	-0.00524*** (0.000926)
Female	-0.0289* (0.0161)	0.0157 (0.0158)	-0.0351* (0.0195)	0.00661 (0.0181)	-0.0289* (0.0160)	0.0155 (0.0157)
Married	0.00362 (0.0126)	-0.0292 (0.0237)	-4.99e-05 (0.0127)	-0.0374 (0.0253)	-0.00181 (0.0124)	-0.0372 (0.0232)
Sibling	0.0135** (0.00675)	0.00376 (0.00647)	0.0133* (0.00705)	0.00335 (0.00678)	0.0129** (0.00654)	0.00306 (0.00633)
Children	-0.00599* (0.00329)	-0.00572 (0.00387)	-0.00303 (0.00320)	-0.00157 (0.00409)	-0.00243 (0.00310)	-0.000414 (0.00407)
Maternal	0.127	0.131	0.150	0.165	0.128	0.127

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	(0.131)	(0.111)	(0.124)	(0.109)	(0.130)	(0.110)
Education	0.111*	0.169***			0.0957*	0.144***
	(0.0599)	(0.0504)			(0.0551)	(0.0465)
Hukou			-0.0650**	-0.0982***	-0.0475**	-0.0729***
			(0.0280)	(0.0262)	(0.0187)	(0.0199)
Constant	0.0932**	0.447***	0.168***	0.588***	0.138***	0.533***
	(0.0475)	(0.0807)	(0.0598)	(0.0952)	(0.0496)	(0.0818)
Observations	2,789	4,113	2,789	4,113	2,789	4,113
R-squared	0.083	0.084	0.075	0.076	0.088	0.091
Province FE	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

3.5 Heterogeneity Analysis

In this section, I conduct a heterogeneity analysis based on gender, age, hukou status and education level. Due to females retiring earlier than males, my sample is slightly overrepresented by females, who make up 61.5% of respondents. However, it is worth noting that the underrepresentation of females in China's public sector sets it apart from public sectors in other countries, which have experienced feminization. The findings, consistent with results presented in Table 3.2, indicate that the difference between public sector and non-public sector employees can be attributed to factors such as marital status, age, education level, and hukou status. Notably, I find that the pro-social motivation of female retirees declines as the number of children increases, potentially reflecting traditional gender roles in China, where females is typically expected to bear a greater burden in caring for their grandchildren.

I also investigated whether a cohort effect was responsible for the observed difference in pro-social inclinations. Specifically, after the Chinese Communist Party came to power in 1949, China underwent a series of political movements, including the Cultural Revolution, a period of political upheaval that occurred between 1966 and 1976. During this period, mutual denunciations and violent conflicts eroded people's trust and led to the separation of many families, causing significant harm. As a result, those who experienced the Cultural Revolution may have had their pro-social motivation negatively affected. To test this hypothesis, I divided the sample into two groups based on birth year: those born before 1956, who were strongly

impacted by the Cultural Revolution, and those born after 1956, who experienced less disruption. Columns (3) and (4) in Table 3.4 present the relationship between public sector experience and pro-sociality for these two cohorts. I find negative coefficients for the cohort born before 1956 and positive coefficients for the other cohort, but these results are not statistically significant and converge to zero. These results are very similar to those obtained from the entire sample, which reduces the likelihood that the findings were driven by a particular group. Column (5) and (6) explore the heterogeneity across different levels of education. Based on descriptive statistics, I observe that individuals who have completed secondary education or above are more prevalent in the public sector. However, I did not find any significant relationship between public sector employment and pro-social behavior in different education groups.

Table 3.4 Heterogeneity analysis of pro-sociality by gender age and education

	(1)	(2)	(3)	(4)	(5)	(6)
	Gender		Age		Education	
	Male	Female	CR	Non-CR	Below	Above
Public	-0.0204	0.0368	0.00326	-0.00944	0.0204	0.0258
	(0.0341)	(0.0236)	(0.0261)	(0.0473)	(0.0150)	(0.0399)
Age	-0.00367***	-0.00274***			-0.00256***	-0.00378
	(0.00115)	(0.000643)			(0.000495)	(0.00242)
Married	-0.0165	-0.0148	-0.00603	0.0163	-0.00942	0.00213
	(0.0320)	(0.0129)	(0.0155)	(0.0321)	(0.00984)	(0.0537)
Sibling	0.0137*	0.00217	0.0150***	-0.00184	0.00358	0.0160
	(0.00826)	(0.00441)	(0.00506)	(0.00967)	(0.00339)	(0.0139)
Children	-0.00145	-0.00126	-0.00830***	-0.0130	-0.000763	-0.0389**
	(0.00471)	(0.00319)	(0.00290)	(0.0109)	(0.00249)	(0.0155)
Maternal	0.237*	0.0444	0.0455	0.461***	0.161	0.141
	(0.139)	(0.0896)	(0.0907)	(0.163)	(0.113)	(0.138)
Education	0.160***	0.0670**	0.135***	0.123***		

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	(0.0462)	(0.0298)	(0.0444)	(0.0417)		
Hukou	-0.0750***	-0.0468***	-0.0564***	-0.00646	-0.0432***	0.0236
	(0.0257)	(0.0145)	(0.0141)	(0.0344)	(0.0105)	(0.0530)
Female			0.00187	-0.00818	0.00861	-0.0494
			(0.0119)	(0.0297)	(0.00877)	(0.0380)
Constant	0.386***	0.320***	0.124***	0.245***	0.285***	0.907***
	(0.0969)	(0.0518)	(0.0252)	(0.0742)	(0.0400)	(0.296)
Observations	2,669	4,233	5,755	1,147	6,138	764
R-squared	0.132	0.042	0.074	0.063	0.037	0.254
Province FE	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The hukou status in China differs from other residence recording systems as it serves as an entitlement determiner for public welfare and urban services such as medical care, children's education, and pension after retirement. While an urban hukou generally provides better public welfare, some areas offer financial benefits for agricultural hukou holders, such as extra birth allowances and annual dividends from the local "collective" enterprises (Chan and Buckingham, 2008). The results in columns (1) and (2) of Table 3.5 show that age have a negative association with the pro-social motivation in both groups. However, for individuals with an urban hukou, married status decreases the pro-social motivation, while it does not impact the pro-social motivation of urban hukou holders. Education level has positive and significant effects in both groups. In addition, maternal education influences pro-social behavior differently based on hukou status: it increases pro-social motivation among urban hukou holders but decreases it among rural hukou holders. Previous working experience as a public employee does not affect pro-social motivation in either group. Because people living in urban areas may also have a rural hukou, in columns (3) and (4) of Table 4, I use living region instead of hukou status and find similar results to those obtained using hukou status. In sum, the constitutional difference between urban and rural areas affects pro-social motivation.

Table 3.5 Heterogeneity analysis by hukou status and living region

	(1)	(2)	(3)	(4)
	Hukou		Living Regions	
	Urban	Rural	Urban	Rural
Public	0.0267 (0.0262)	0.00734 (0.0177)	0.0183 (0.0282)	0.0192 (0.0194)
Age	-0.00473*** (0.00156)	-0.00263*** (0.000481)	-0.00264** (0.00105)	-0.00318*** (0.000597)
Female	-0.0282 (0.0252)	0.00443 (0.00879)	0.00112 (0.0180)	-0.0114 (0.0107)
Married	-0.0603* (0.0356)	-0.00529 (0.00934)	-0.0216 (0.0286)	-0.00868 (0.0107)
Sibling	0.0113 (0.00813)	0.00280 (0.00349)	0.0112 (0.00725)	0.00369 (0.00429)
Children	-0.00627 (0.00880)	-0.000301 (0.00216)	-0.00774 (0.00521)	-0.00111 (0.00261)
Maternal	0.186* (0.102)	-0.101*** (0.0194)	0.167* (0.0998)	-0.105*** (0.0155)
Education	0.0966*** (0.0287)	0.142*** (0.0423)	0.147*** (0.0437)	0.0987** (0.0387)
Constant	0.526*** (0.125)	0.238*** (0.0387)	0.313*** (0.0922)	0.294*** (0.0482)
Observations	2,464	4,438	3,558	3,344

R-squared	0.099	0.041	0.073	0.044
Province FE	YES	YES	YES	YES

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

3.6 Robustness Check

In this section, I conduct a series of tests to ensure the robustness of the findings, starting by modifying the scope of public sector workers. The key independent variable, public sector, is composed of two distinct groups of public workers: civil servants and public institution employees. Civil servants are broadly defined as government administrators with permanent government appointments, while public institution employees primarily consist of front-line service providers such as teachers, nurses, and firefighters. There might be differences in the pro-social motivations between these two groups.

To investigate this, I compared civil servants with non-civil servants (including public sector employees) in Column (1) of Table 3.6. The results align with the baseline regression, showing no significant difference between civil servants and non-civil servants. Next, I excluded public institution employees from the sample and reported the results in Column (2), where the coefficient becomes negative. In Column (3), I compared public institution employees with non-public sector employees, and then excluded civil servants from the sample in Column (4). The results remain consistent with the baseline regressions, indicating that education level and hukou status explain most of the pro-sociality gap across different sectors.

Table 3.6 The pro-sociality of Civil servants and public institution employees

(1)	(2)	(3)	(4)
Civil-servant VS Non-civil servant	Civil-servant VS Non (exclude public institution employees)	Public institution employees VS non	Public institution employees VS non (exclude civil servant)

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Civil-servant	0.0136 (0.0330)	-0.0177 (0.0281)		
Public institution			0.0281 (0.0297)	0.00183 (0.0256)
Age	-0.00335*** (0.000667)	-0.00277*** (0.000547)	-0.00338*** (0.000670)	-0.00310*** (0.000570)
Female	-0.00305 (0.0113)	-0.00566 (0.0121)	-0.00382 (0.0111)	-0.00303 (0.0117)
Married	-0.0200 (0.0156)	-0.00910 (0.0104)	-0.0207 (0.0163)	-0.00713 (0.0102)
Sibling	0.00747 (0.00472)	0.00887* (0.00474)	0.00761 (0.00469)	0.00872** (0.00431)
Children	-0.00141 (0.00279)	-0.000723 (0.00286)	-0.00153 (0.00280)	-0.000926 (0.00281)
Maternal	0.133 (0.0863)	0.0991 (0.0924)	0.135 (0.0860)	0.179** (0.0874)
Education	0.126*** (0.0341)	0.127*** (0.0482)	0.121*** (0.0350)	0.117*** (0.0408)
Hukou	-0.0556*** (0.0127)	-0.0507*** (0.0139)	-0.0527*** (0.0131)	-0.0498*** (0.0138)
Constant	0.363*** (0.0559)	0.312*** (0.0435)	0.365*** (0.0579)	0.332*** (0.0451)
Observations	6,902	6,179	6,902	6,380
R-squared	0.070	0.056	0.070	0.063

Province FE	YES	YES	YES	YES
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Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Next, I modify the value of the key dependent variable, pro-sociality. In the baseline regressions, I categorize individuals as pro-social if they reported engaging in any of the following activities within the last month: providing help to family, friends, or neighbors who do not live with them, participating in a community-related organization, doing voluntary or charity work, and caring for a sick or disabled adult who does not live with them. In Table 3.7, I create a new outcome variable to capture the degree of pro-sociality. A value of 0 is assigned to individuals who did not engage in any of the above activities. A value of 1 is assigned to individuals who completed one of these activities, a value of 2 to those who completed two, a value of 3 to those who completed three, and a value of 4 to those who completed all of them. The results in Table 3.7 are consistent with the baseline regression and add greater reliability to the findings.

Table 3.7 Degree of pro-sociality

	(1)	(2)	(3)	(4)	(5)
	Pro-social	Pro-social	Pro-social	Pro-social	Pro-social
Public	0.0912** (0.0404)	0.0874** (0.0381)	0.0411 (0.0329)	0.0515 (0.0357)	0.0214 (0.0324)
Age		-0.00381*** (0.00125)	-0.00354*** (0.00114)	-0.00459*** (0.00129)	-0.00414*** (0.00115)
Female		-0.0184 (0.0192)	-0.00540 (0.0159)	-0.0163 (0.0185)	-0.00559 (0.0158)
Married		-0.0294 (0.0330)	-0.0348 (0.0314)	-0.0423 (0.0333)	-0.0435 (0.0317)

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Sibling		0.00718	0.00619	0.00583	0.00535
		(0.00649)	(0.00599)	(0.00625)	(0.00591)
Children		-0.0126***	-0.00841**	-0.00384	-0.00263
		(0.00415)	(0.00370)	(0.00379)	(0.00370)
Maternal		0.241*	0.188	0.229*	0.187
		(0.124)	(0.125)	(0.123)	(0.124)
Education			0.195***		0.169***
			(0.0539)		(0.0506)
Hukou				-0.109***	-0.0787***
				(0.0247)	(0.0179)
Constant	0.0997***	0.420***	0.387***	0.533***	0.473***
	(0.0203)	(0.112)	(0.0992)	(0.122)	(0.104)
Observations	6,902	6,902	6,902	6,902	6,902
R-squared	0.028	0.048	0.069	0.060	0.074
Province FE	YES	YES	YES	YES	YES

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note:

Respondents who checked any of the following activities in response to the question “Have you done any of these activities in the last month?” are classified as pro-social: “provided help to family, friends, or neighbors who do not live with you”; “took part in a community-related organization”; “done voluntary or charity work”; “cared for a sick or disabled adult who does not live with you.” If respondents do none of these activities, the degree of pro-sociality is 0 (91.76%). If they do one of the activities, the degree is 1 (7.11%). If they do two of the activities, the degree is 2 (0.92%). If they do three of the activities, the degree is 3 (0.17%). If they do all four activities, the degree is 4 (0.04%).

In the above analysis, I utilize the linear probability model, which may be subject to bias due to the binary nature of our outcome variable. To enhance the reliability of our results, I employ an

alternative functional form by utilizing logit regressions and presenting average marginal effects in Table 3.8. Column (1) of Table 3.9 displays the regressions without any control variables and indicates that being employed by the public sector has a statistically significant 4.8% marginal effect on the probability of engaging in pro-social activities. However, when I control for personal characteristics, particularly hukou status, the marginal effect of public sector experience diminishes to zero and becomes statistically insignificant. These outcomes are consistent with our baseline results derived from the linear probability model estimation.

Table 3.8 Logit-marginal effects of working in public sector on pro-sociality

	(1)	(2)	(3)	(4)	(5)
	Pro-social	Pro-social	Pro-social	Pro-social	Pro-social
Public	0.048***	0.047***	0.020	0.027*	0.009
Age		-0.003***	-0.003***	-0.004***	-0.004***
Female		-0.011	-0.003	-0.011	-0.004
Married		-0.006	-0.011	-0.017	-0.018
Sibling		0.005	0.004	0.005	0.004
Children		-0.010***	-0.008**	-0.004	-0.004
Maternal		0.090**	0.068*	0.085**	0.067*
Education			0.092***		0.077***
Hukou				-0.068***	-0.050***
<i>N</i>	6902	6984	6984	6984	6984
pseudo R^2	0.028	0.059	0.078	0.073	0.085

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Another potential endogeneity issue arises from the possibility that pro-social behavior is not driven by intrinsic motivation but rather by experience in the public sector. In other words, individuals may be trained to become more pro-social during their tenure in the public sector. To address this concern, I examined individuals with prior public sector experience and calculated the number of people engaging in pro-social behavior by tenure group. The results, presented in Figure 3.1, show no clear upward trend indicating that longer tenure consistently

leads to more pro-social behavior. Interestingly, the most pro-social individuals are those with three years of public sector experience, after which their pro-social inclination declines.

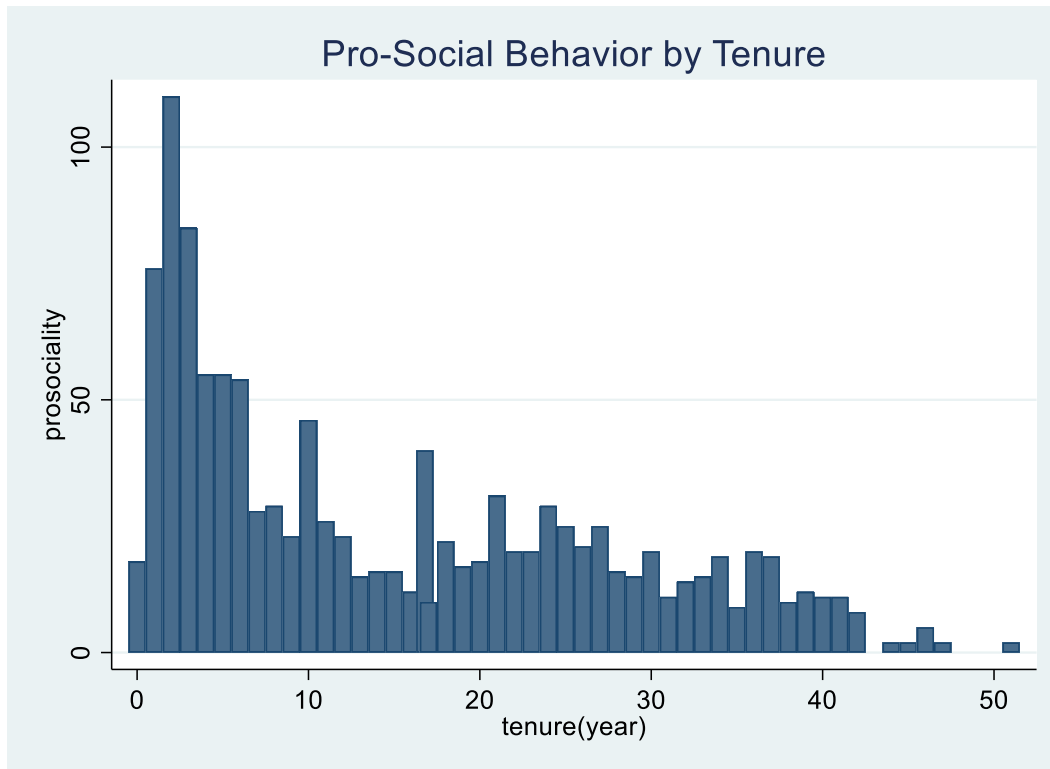


Figure 3.1 The pro-social behavior by tenure (year)

3.7 Discussion and Conclusion

In this study, I investigate whether public sector retirees differ from private sector employees in terms of pro-social motivation in China. Using a representative national longitudinal aging survey, I find that individuals who retired from the public sector show higher pro-social inclination, but this difference can be primarily attributed to their hukou status and level of education. In the subsequent analysis of hukou status, I find that maternal education level has a significant influence on pro-social behavior for both urban and rural hukou holders. The effect is positive for urban hukou holders but negative for rural hukou holders.

Despite conducting several robustness tests to ensure the reliability of our findings, there is still concern regarding the endogeneity issue as some respondents made their career choices during the Cultural Revolution, which occurred during the 1966-1976 and had a significant impact on the entire generation. During this period, entry into the public sector was restricted to individuals who exhibited a strong political stance and demonstrated loyalty to the party. People, or their parents, considered disloyal to the party were subject to severe political persecution. However, as previous literature documents, the confidence in the political party, which is used to measure the mission alignment, plays an important role in attracting altruism

worker to the public sector (Dur and Zoutenbier, 2014). The impact of this certain group is challenging to measure.

The findings in this chapter contribute to policy implications from two perspectives. First, they inform public employee selection processes. The results provide no significant evidence that public sector employees are more pro-social than their private sector counterparts, raising concerns about the public sector's ability to attract individuals with intrinsic altruism. This may be linked to potential corruption associated with the concentrated power structure in China's public sector. Second, the analysis highlights the significant role of maternal education for both urban and rural hukou holders. To foster pro-social behavior, focusing on improving maternal education could be an effective strategy.

Chapter 4 Temporary migration, income change, and female empowerment in rural China

4.1 Introduction

Female empowerment is intricately linked to sustained economic growth (Duflo, 2012). Over the past few decades, the gender gap in educational attainment and other forms of human capital accumulation has notably narrowed (2023). Concurrently, migration studies have underscored a rising trend of feminization within migration flows, signifying the growing autonomy and participation of women. International female migrants are increasingly pursuing employment opportunities independently rather than relying solely on marriage and familial ties (Zhao et al., 2023). However, there remains a dearth of literature addressing the impact of migration experience on female empowerment. From a conceptual standpoint, migrants might acquire updated human capital and skills through the migration experience, potentially leading to a wage premium upon their return (Elmallakh and Wahba, 2022). On the one hand, the migration experience might serve as a specialized training program, facilitating female economic empowerment. On the other hand, female migrants may be exposed to different practices and norms in the receiving area; thereby, the migration experience could act as a channel for gender norm transmission (Lodigiani and Salomone, 2020; Ferrant and Tuccio, 2015; Tuccio and Wahba, 2018). In this paper, I examine the causal relationship between temporary migration

experience and female economic empowerment and explore the underlying mechanisms using evidence from rural China.

China offers an ideal and interesting setting for investigating this question for several reasons. First of all, unlike other countries where migrants are predominantly male, China boasts a substantial proportion of female migrants, thereby furnishing ample resources for exploration. According to data from China's National Bureau of Statistics in 2022, of the 295.62 million rural migrants recorded, 36.6% were female. However, despite the growing number of female migrants and the narrowing gap in educational attainment, the education level of female migrants from rural China remains limited. For example, in this study, by using a nationally representative database, I find that the average years of schooling for female returnees is 5.01. The majority of them have completed only elementary education or less, a level lower than the majority of international migrants. The existing literature predominantly focuses on the income premium driven by the migration experience among wage workers, overlooking those engaged in the informal sector. This study indicates that over 60% of female migrants were engaged in family agricultural work before and after migration, suggesting an opportunity to explore whether such premiums persist for migrants with lower education levels working in the informal sector upon their return. In comparison to females residing in urban China, females in the rural areas may be subject to more conservative social norms, influenced by boy preference and restrictions on land inheritance rights. Finally, the temporary nature of internal migration in China must be considered. Due to the restriction of household registration, most migrants eventually return to their hometown (Giulietti et al., 2013; Afridi et al., 2015; Gu et al., 2020; Wen et al., 2022). This institutional barrier actually mitigates the selection bias often present in return migration decisions. Additionally, the inadequate social security provisions in rural China compel a majority of individuals to participate in the labor market, albeit in the informal sector, thereby reducing selection bias related to labor force participation.

In this paper, I examine the impact of temporary migration experiences on female empowerment in rural China by utilizing data from China Family Panel Studies (CFPS) spanning 2014 to 2018. I first keep females aged 16-64 at that time in rural area with no migration experience in 2014, then in 2016, some individuals migrate to urban areas, while others remain in their hometowns. Finally in 2018, some migrant return, with some opting to stay in the cities and others still remaining in their hometown. I exclude the current migrants from the analysis and only keep returnees and stayers. This approach offers several advantages. Firstly, it allows for control of various pre-migration characteristics, such as their occupation before migration. Secondly, this hybrid approach is similar to the fixed effect approach which captures the changes before and after the migration and could rule out time-invariant variations.

The baseline findings indicate that compared with females with no migration experience, the female migrants command significant economic empowerment upon their return. Specifically, returnees earn approximately 1560 Chinese yuan more annually, after controlling for personal characteristics, household variables and village-level variables. Moreover, this income premium varies according to educational attainment and region. The identification strategy mainly relies on the instrumental variable approach. As highlighted by Wahba (2015), estimating the wage of return migration entails addressing several selectivity biases related to whether to migrate or not, whether to return or not, whether to participate in the labor market and following occupational choice. As discussed previously, the restriction imposed by the hukou system on rural-to-urban migration mitigates the selection bias driven by return migration choice, while the inadequate social security compels the majority of individuals in rural China to participate in the labor market. The primary challenge in estimating the aforementioned effect lies in addressing the endogeneity of migration choice. To solve this issue, I implement the instrumental variable strategy, constructing an instrument that exploits two sources of exogenous variations: the number of migrants aged 16-64 from the village in 2014 and the share of most popular family name in the village. Existing literature suggests that individual migration decisions are influenced by family and community networks (Giulietti, Wahba and Zenou, 2018). For example, Giulietti, Wahba, and Zenou (2018) have suggested that weak tie, measured by the share of previous migrants from the village, matters in the migration decision by providing job information at the destination. Additionally, the level of trust among individuals affects decision-making; hence I introduce the share of the most popular family name in the village as a proxy for trust. The same family name in the village to some extent indicates kinship and clan connections, which is essential in rural China. The instrument is the interaction between the number of migrants aged 16-64 from the village in 2014 and the share of the most popular family name. This instrument is unlikely to be associated with individual-level income changes but is closely related to an individual's migration decision. The IV estimation further supports the finding that temporary migration experiences significantly influence female economic empowerment. Compared to non-migrants, returnees earn an income premium. The IV estimation yields a larger effect than the OLS, which may reveal the negative selection during the migration decision. Although the temporary migration experience increases the income of female returnees, it does not significantly enhance their decision-making power within the household.

I try to explore the several underlying mechanisms for the income premium. Previous studies (e.g. Carletto and Kilic, 2010; Piacha and Vadean, 2010; Demurger and Xu, 2011; Masso et al., 2013; El-Mallakh and Wahba, 2021; Bossavie et al., 2024) indicate that migrants experience upward job mobility upon their return, which could potentially alter their income levels. I first

examine whether temporary migration experiences facilitate female migrants in transitioning into more lucrative jobs, i.e. waged jobs or self-employment. However, the findings reveal that the income premium does not stem from upward job mobility. Subsequent analysis examines the impact on male migrants, who may engage in different occupations in urban settings compared to their female counterparts. This occupational divergence might lead to varied outcomes. Unlike female migrants, the temporary migration experience does not enhance the income of male migrants upon their return. Finally, I assess how these effects vary among groups with differing gender norms. Compared with stayers, female migrants are often exposed to more progressive gender norms, which may influence their income upon their return. The results indicate that the temporary migration experience significantly affects groups with unchanged and progressive gender norms, but its impact is insignificant in groups adhering to conservative gender norms.

This paper adds to the growing body of literature investigating the wage premium of return migration by providing empirical evidence from China's internal migration. Previous studies have examined this phenomenon in various countries and contexts, revealing mixed findings and attributing the wage premium to different sectors. Co et al. (2000) analyze data from Hungarian Household Panel Survey and found a wage premium for female returnees but not for male returnees. Hazans (2008) similarly identifies significant evidence of a wage premium for returnees from Latvia, while Barrett and Goggin (2010) observe the same phenomenon in Ireland. Lacuesta (2010) and Reinhold and Thom (2013) explore this impact by investigating the migrants from Mexico to United States and attribute the wage premium to pre-migration differences and occupation-specific work experience respectively. De Vreyer et al (2010) provide evidence from West Africa which suggests that the migration destinations matter for the wage premium for return migration. Furthermore, Wahba (2015) provides strong evidence from Egypt indicating that temporary migration results in wage premium for returnees after controlling for various selection biases. Wahba and Elmallakh (2022) further illustrate how the legal status of migrants affects the wage premium for returnees. However, the existing literature has primarily focused on wage workers with relatively higher education levels, primarily consisting of male migrants. This paper fills a gap in the literature by shedding light on female migrants in rural China who mainly work in the informal sector and have relatively lower education levels.

This paper is also closely related to the studies on the female empowerment. The literature regarding female empowerment has extensively examined how microfinance programs influence female empowerment and generated mixed results. Some studies (e.g. Pitt et al. ,2006; Kabeer,2005; Kim et al.,2007; Swain and Wallentin, 2007; Brody et al., 2017; Kumar et al., 2021) argue that microfinance programs empower female, while others suggest there is no

significant relationship between access to microcredit interventions and female empowerment (e.g. Banerjee et al., 2015; Tarozzi and Desai, 2015). Additionally, some studies (e.g. Garikipati, 2008) find that loans obtained by women may lead to disempowerment due to their lack of co-ownership of family assets. A growing stream of literature explores female empowerment from various perspectives. For example, Hansen (2015) and Huis et al. (2019) examine the effect of Gender and Entrepreneurship Together Ahead (GET Ahead) training program on female empowerment and find positive evidence. Other studies (e.g. Qian, 2008; Jensen, 2010; Rodriguez, 2022; Danquah et al., 2021) explore the impact of income growth and employment on female empowerment. Additionally, some studies investigate the importance of contraception (Field and Lee, 2014), marriage dowry (Thomas et al. 2002) and the long term effect of colonialism (Guarnieri and Rainer, 2021) on women empowerment. A limited but growing literature has also begun to examine how migration affects the female empowerment. For example, Tuccio and Wahba (2018) explore whether international return migration influences gender norm in the sending countries by utilizing data from Jordan; Mitra et al. (2021) investigate the relationship between remittance and women's acceptance of domestic violence in Pakistan. Alan et al. (2021) look at how out-migration influences female labor supply and employment outcomes in Bangladesh. However, existing studies mainly focus on how migration experiences impact the empowerment of left-behind women rather than female migrants themselves. To the best of my knowledge, this paper is the first to investigate how temporary migration experiences influence female economic empowerment in China. The conclusion adds to the existing research, which argues that the additional money gained by females has no impact on women's decision-making power within their household (e.g. Banerjee et al., 2015; Tarozzi and Desai, 2015).

The remainder of this paper is organized as follows: the following section reviews the literature regarding the relationship between temporary migration and labor market outcomes, as well as studies related to the female empowerment. Section 3 describes the data used in this study while Section 4 introduces the empirical strategy employed in this study. Section 5 presents the empirical results of analysis, and I explore the underlying channels in Section 6. Section 7 concludes this paper.

4.2 Literature Review

4.2.1 The effect of temporary migration

Temporary migration is prevalent and essential in developing countries (Djajic and Vinoradova, 2014), usually taking the form of return migration (Selod and Shilpi, 2021). Despite its importance, return migration remains insufficiently explored. The vast majority literature

regarding the impact of international migration sheds light on the remittances and savings of migrants (ElMallakh and Wahba, 2021), with a relatively scant focus on outcomes related to the labor market.

A strand of literature focuses on the wage premium for return migration compared with non-migrants. Co et al. (2000) utilize Hungarian Household Panel Survey and find there is a wage premium for female returnees but not for male returnees. The reason why overseas experience is significant for women but not as much for men may be attributed to the dichotomy in industry types. The results suggest the industries men entered, for example, construction and heavy industry, do not provide a wage premium, while the industries the women entered, for example, finance service, foreign experience matters. Hazans (2008) exploits the data from Latvia and finds compared with stayer, the returnees command a significant wage premium after controlling for endogeneity. On average, returnees earn 15% more, with men experiencing a premium of over 20% and women seeing a 6% increase. Lacuesta (2010) identifies a wage gap between migrants from Mexico to the United States but argues the wage premium is due to pre-migration differences. Reinhold and Thom (2013) also note a wage premium for Mexican returnees who previously worked in the United States and attribute this wage premium to the occupation-specific work experience. De Vreyer et al (2010) highlight the significance of migration destinations by using data from West Africa. The experience abroad leads to a substantial wage premium for migrants returning from OECD countries, but not for migrants returning from other destinations. Barrett and Goggin (2010) recognize a premium for returnees compared to stayers in Ireland. This premium is present for both males and females but higher for those with postgraduate degrees. Wahba (2015) uses Egyptian household-level survey data and provides strong evidence that temporary migration results in a wage premium for returnees after controlling for various selection biases. Wahba and Elmallakh (2022) further examine whether the legal status of the overseas migrants influences their income upon their return using unique data from Egypt and reveal that only the documented migrants witness a wage premium.

Another line of literature investigates the impact of temporary migration on job mobility and entrepreneurship and produces mixed results. Piacha and Vadean (2010) provide evidence from Albania that migrants are more likely to become entrepreneurs upon their return. Demurger and Xu (2011) suggest that compared with stayers, return migrants are more likely to be self-employed in rural China by using a survey conducted in a county in Anhui province. Bossavie et al. (2024) further examine how international temporary migration influences the entrepreneurship using the lifetime employment histories of return migrants from Bangladesh and provide empirical evidence on how temporary international migration is used as an intermediate step to overcome financial constraints. In addition to entrepreneurship, Carletto

and Kilic (2010) suggest that the migration experience acts as a ladder for migrants to achieve upward occupational mobility. In contrast, Masso et al. (2013) use an online job portal in Estonia and find no significant evidence of positive effect of temporary migration on occupational mobility. Using data from Egypt, El-Mallakh and Wahba (2021) also investigate whether temporary international migration assists returnees in advancing their occupational status by comparing the occupational mobility of returnees to that of stayers within the same cohort. The findings indicate that return migration enhances the probability of upward occupational mobility, particularly among well-educated returnees.

Despite the extensive research on Chinese internal migration, studies focusing on return migration using nationally representative data are scarce, yet a significant portion of migrants ultimately return to their hometowns, largely influenced by hukou registration constraints (Zhang et al., 2020). To the best of my knowledge, this paper is the first to investigate how temporary migration influences women's labor market outcomes using nationally representative data. This paper adds to existing literature regarding the wage premium for return migrants by providing empirical evidence from rural areas in China. Female migrants command a significant income premium upon their return. Compared with existing literature that mainly focuses on wage workers with relatively higher education levels, this paper sheds light on the females in rural China with relatively lower education levels and more than 60% of them work in the informal, i.e., agricultural sector. Furthermore, the unique database allows me to control for various pre-migration differences.

4.2.2 Patterns influence women's empowerment and welfare

The empirical literature on women's empowerment and welfare has predominantly focused on the role of microfinance, producing mixed results. Pitt et al. (2006) utilize a large household survey from 1998-1999 to assess the impact of micro-credit program participation in rural Bangladesh on female empowerment, finding that participation is an empowering experience for women. The credit program enhances women's empowerment in household decision-making, mobility, bargaining power, social networks, and access to financial and economic resources. Kabeer (2005) analyzes evidence from South Asia, suggesting that access to financial services boosts the economic productivity and social well-being of poor women. However, this study emphasizes that empowerment is facilitated, not guaranteed, by additional interventions such as education and political quotas. Similarly, Kim et al. (2007) provide evidence from South Africa that microfinance-based interventions improve women's financial security and self-confidence while reducing intimate partner violence. Research on India's Self-Help Groups (SHGs) further confirms these findings, showing significant empowerment among SHG members compared to controls, as noted by Swain and Wallentin (2007) and Brody et al.

(2017), who affirm SHGs' positive effects on women's economic and political empowerment. Kumar et al. (2021) use panel data from 1,470 rural Indian women to further illustrate the positive impact of women's groups on empowerment and reduction of the empowerment score gap. However, some researchers argue that there is no relation between access to microcredit interventions and women's decision-making power within their households. Banerjee et al. (2015) report results from a randomized evaluation of a group-lending microcredit program in India, finding no significant changes in health, education, or women's empowerment. Following this work in India, Tarozzi and Desai (2015) provide evidence from rural Ethiopia, drawing the same conclusion that for the majority of socioeconomic outcomes, such as income from agriculture, animal husbandry, self-employment, labor supply, schooling, and indicators of women's empowerment, the null hypothesis of no impact cannot be rejected. Finally, some literature, such as Garikipati (2008), finds that loans procured by women are often diverted into enhancing household assets and income, and due to women's lack of co-ownership of family assets, microfinance can lead to disempowerment.

A growing body of literature is shedding light on female empowerment from various perspectives. For example, some researchers explore how training influences female empowerment. Huis et al. (2019) investigate the effect of the Gender and Entrepreneurship Together Ahead (GET Ahead) training on the empowerment of female microfinance borrowers. The aim of the GET Ahead program is to help women develop their entrepreneurial skills and receive social support. This research finds that the GET Ahead training program increases women's control beliefs and intra-household decision-making power for larger expenditures and also reduces relational friction. In addition to entrepreneurial skills training, intensive technical and social awareness training programs are also positively related to intra-household decision-making power among female microfinance borrowers (Holvoet, 2005). Similar findings are observed in Sri Lanka, where female members of microfinance institutions who engage in soft skills and vocational training programs report higher levels of personal control beliefs and larger social networks (Hansen, 2015).

Some literature explores the impact of income growth and employment on female empowerment. Increased opportunities for women in the labor market lead to better outcomes for women and enhance their health, social, and economic status (Duflo, 2012). Qian (2008) shows that the number of missing women decreased in tea-producing regions compared to other regions due to women's comparative advantage over men in tea production. Jensen (2010) conducted an experiment in a region of India notorious for discrimination against women, where in some villages only women were recruited for jobs, and in others, both women and men were recruited. Three years after the recruiting started, girls aged five to eleven were 5 percentage points more likely to be enrolled in school in the villages where there was female recruiting. The

study also suggested that parents were taking better care of these girls. Rodriguez (2022) uses the Mahatma Gandhi National Rural Employment Guarantee Act of 2005, which offers guaranteed employment to rural households across districts in India, to investigate the effect of income growth on women's empowerment. Results show that the employment of women increases the demand for microfinance and decreases violence against women. Danquah et al. (2021) use a micro-level household dataset from Ghana to reveal that the convergence in the gender wage gap significantly bolsters women's empowerment and improves their welfare.

Exploratory studies have also ventured into the realms of contraception, marriage dowry, and the long-term effects of colonialism on women's empowerment. Ashraf, Field, and Lee (2014) conducted an experiment in Zambia, providing 749 married women with vouchers guaranteeing free and immediate access to contraceptives. In one treatment group, women received the voucher alone, requiring only their signature, while in the other group, the voucher was handed to the husband in the presence of his wife, requiring both signatures. The results show that women given contraceptive access alone were less likely to give birth in a context where fertility and unwanted pregnancies are high. This research provides empirical evidence that expanding women's choices regarding contraception can improve their welfare and that of their children. Thomas et al. (2002) explore how marriage dowry affects reproductive health decisions using the Indonesia Family Life Survey (IFLS). In the cultural context of Indonesia, resources brought to a marriage by women tend to remain under their control. Women with marriage dowries could influence reproductive health decisions compared to those without assets. Guarnieri and Rainer (2021) investigate the effect of colonialism on female empowerment through a historical natural experiment in Cameroon. From 1919 to 1961, the western territories of present-day Cameroon were divided between France and the United Kingdom, creating divergent economic opportunities for women. Women in British territories could earn cash wages comparable to their male counterparts, while women in French territories did not have this opportunity. Using a geographical regression design, this study shows that British colonial policy had a long-term effect of empowering women in employment but also made them more vulnerable to domestic violence.

A limited but growing body of literature is beginning to illuminate the nexus between migration and female empowerment. Tuccio and Wahba (2018) explore whether international return migration influences gender norms in the sending countries by analyzing data from Jordan, an Arab country with conservative gender norms and a high emigration rate. After controlling for selection bias, they find that women in households with return migrants are more likely to adhere to traditional gender norms than those in households without migration. The results are mainly driven by returnees from more conservative receiving countries, suggesting a transfer of conservative gender norms. Mitra et al. (2021) use survey data collected in Pakistan in 2014 to

investigate the relationship between remittances and women's acceptance of domestic violence. The results show that women in households with access to remittance income are less tolerant of domestic violence. Alan et al. (2021) examine migration and agriculture in Bangladesh, using panel data to test how out-migration influences female labor supply and employment outcomes. The results reveal that when a household experiences out-migration and perceives a labor shortage, female household labor increases while female hired labor decreases. Additionally, the reduced labor supply in sending households due to male out-migration is not significantly related to narrowing the gender wage gap or enhancing female empowerment. The aforementioned literature mainly focuses on how migration experiences influence the empowerment of left-behind women, rather than the female migrants themselves.

4.3 Data and institutional background

4.3.1 Chinese internal migration and Hukou system

Since the initiation of reform and opening policies at the end of 1970s, China has already been one of the countries recording the largest rural to urban migrant flows (Tombe and Zhu, 2019; Zhao, 2020). However, most of the migrants are temporary and will eventually return to their hometowns finally since the stringent restriction imposed on internal migration from rural to urban, and from small counties to metropolises through the hukou system (Afridi et al, 2015; Gu et al., 2020; Wen et al., 2022). The household registration system, commonly known as hukou system, was established during the era of China's planned economy and serves as crucial institution linking individuals to special social benefit and services based on their registration status. The hukou status, which is inherited from one's parents, delineates the allocation of various social welfare benefits and services to urban and rural citizens (Zhao and Meng, 2018). Consequently, the migrants moving from rural areas to urban areas for work usually have limited access to enjoy state-sponsored fundamental social welfare and services such as children's enrollment in public schools, social insurance, and public medical services in the city (Chen et al., 2015; Ngai et al, 2019).

4.3.2 Data construction

The analysis of this paper is based on the China Family Panel Studies (CFPS), which is a nationally representative biennial longitudinal survey launched by the Institute of Social Science Survey of Peking University from 2010. CFPS provides a wealth of information covering economic activities, education outcomes, family dynamics and relationships, migration and

health at individual, family and community level. Each wave consists four sections: (1) the individual questionnaire; (2) the family relationship questionnaire; (3) the family economic questionnaire and (4) children questionnaire. In this study, I use the waves in 2014, 2016 and 2018 to reconstruct a migration related database. To be specific, I use CFPS 2014 as a starting point, and retain female individuals aged 16-64 who lived in the rural China without migration experience in my sample. Then in 2016, a portion of this cohort migrated while others remained in their original locations. Finally in 2018, some individuals were still migrants, some remained in their initial locations and some had returned after migration. Individuals who migrated and subsequently returned between the 2014 and 2018 are defined as returnees, whereas those without any migrant experience during this period are classified as non-migrants. I excluded the current migrants, leaving 3061 observations, of which 301 are returnees. This approach offers a distinctive advantage by furnishing comprehensive pre-migration information for both returnees and non-migrants. This enables me to calculate difference between 2014 and 2018, helping to mitigate the influence of time-invariant variables.

4.3.3 Returnees versus non-migrants

In this paper, I mainly focus on females living in rural China aged 15-64 years old at the time of the survey (2014). Table 1 presents the descriptive statistics on the sample of return migrants and non-migrants. The returnees and the non-migrants exhibit variation in individual and household level characteristics. Compared with people with no migration experience, returnees exhibit a higher likelihood of attaining secondary education or above. In addition, they tend to be younger and less prone to experiencing divorce or altering their hukou status between 2014 and 2018. Regarding household-related variables, non-migrants are more likely to experience increases in family size and house value.

Table 4.1 Descriptive Statistics for returnees and non-migrants by gender

	Female		Male	
	Returnee	Non-migrant	Returnee	Non-migrant
Income change	-87.23 (561.51)	-1675.11 (197.29)	314 (817.54)	-510.32 (464.86)

Individual features

Chapter 4

Income (2014)	6522.14 (537.22)	7472.43 (222.23)	10164.1 (851.26)	11841.24 (453.69)
Income (2018)	6434.91 (575.30)	5791.32 (191.64)	10478.62 (853.55)	11330.92 (458.01)
Education (2014)	0.378 (0.026)	0.325 (0.009)	0.536 (0.012)	0.465 (0.027)
Age (2014)	40.24 (0.618)	43.61 (0.229)	45.14 (0.31)	42 (0.66)
Divorce	0.015 (0.007)	0.015 (0.034)	0.009 (0.003)	0.018 (0.007)
Hukou Status (2014-2018)	0.02 (0.008)	0.026 (0.003)	0.031 (0.004)	0.027 (0.009)
<i>Family features</i>				
Family size (2014-2018)	0.31 (0.025)	0.323 (0.009)	0.324 (0.012)	0.303 (0.025)
Children (2014-201)	0.015 (0.007)	0.024 (0.003)	0.026 (0.004)	0.018 (0.007)
House value (2014-2018)	4.11 (1.12)	5.13 (0.38)	5.70 (0.6)	3.93 (0.97)
<i>Village facilities</i>				
Kindergarten (2014)	0.41 (0.027)	0.37 (0.09)	0.352 (0.012)	0.402 (0.03)
Primary school (2014)	0.498 (0.03)	0.542 (0.01)	0.55 (0.012)	0.56 (0.027)

Observations	331	2730	1558
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4.3.4 Income in rural China.

The key independent variable in this research is income at the individual level. From 2014 onward, CFPS only asked wage income in the individual questionnaire. To calculate the individual-level income for non-wage workers, i.e. those engaged in family agricultural work and self-employed business, I employ the family income-related questions from the family economic questionnaire. To estimate the income of individuals engaged in family agricultural work, the following steps are undertaken. I initially take the sum of income derived from the sale of all agricultural and sideline products, along with the market value of agricultural/side-line products used or consumed by the family. If the answer to a related question is refused or unknown, it will be replaced by the soft-checked answer⁴. Subsequently, the resulting total is divided by the number of family members engaged in the agricultural work to derive individual-level income. For individuals involved in self-employment, their income is calculated by dividing the net profit of the business by the number of engaged family members (The profit could be a deficit). If the answer to the profit question is refused or unknown, the income will be replaced by the soft-check answer.

Table 4.2 The percentage distribution and income of job classification

	2014				2018			
	Returnee		Stayers		Returnee		Stayer	
	Income	%.	income	%	Income	%	Income	%
Family	6361.358	63.44	7983.01	67.77	6589.776	62.31	5593.424	71.23
agricultural	(575.2847)		(262.58)		(676.40)		(202.88)	
work								

⁴ For example, individuals were asked to answer “In the past 12 month, how much does your family get be selling agricultural products and other sideline products produced or raised by your family”, if the answer is unknown or refused, they would be asked if it is more/less than (1000/2500/5000/10000/25000).

Self-employment	6799.947 (1922.631)	5.74	10191.54 (1182.96)	5.42	10485.29 (3598.44)	5.3	11930.16 (1225.06)	6.25
Agricultural work for other	300	0.3	3133.33 (1113.79)	0.37	2500 (2500)	0.62	2910.55 (1333.23)	0.69
Waged job	12718.67 (2164.992)	15.41	14946.59 (1069.75)	7.95	6260.104 (1356.06)	24.92	8778.82 (786.16)	11.69
Non-agricultural casual workers	5933.333 (2822.14)	0.91	8403.375 (2682.35)	0.44	4566.67 (3902.78)	1.87	10444.44 (5276.68)	0.34
Not applicable		14.20		18.06		4.98		9.81

4.4 Empirical Strategy

4.4.1 The empirical model

In this paper, I am interested in estimating how temporary migration experience influences female empowerment, especially their income after they return. I formulate the baseline regression specification in the following manner:

$$Income_{i\ 2018-2014} = \beta_2 Return_i + \gamma_1 X_{i\ 2014} + \gamma_2 X_{i\ 2018-2014} + \epsilon_1$$

where income refers to the key dependent variable, the income change for individual i between 2014 and 2018, i.e. the income change before and after the migration at the individual level. The key independent variable is $Return_i$, which is a binary variable denoting whether the individual is a returnee or no-migrant. β_2 is the main parameter of interest. $X_{i\ 2014}$ refers to a vector of control variables in 2014 including whether the individual possessed secondary or above level education in 2014, whether the individual's living village has a kindergarten in 2014, and whether the individual's living village has a primary school in 2014. If the individual holds the secondary or above level education, the variable education equals one, otherwise zero. If the village has kindergarten or primary school, the related variable will equal one, otherwise zero. $X_{i\ 2014-2018}$ refers to a vector of variable capturing the difference between 2014 and 2018 including age, whether divorced during this period, hukou status, the change in family size (whether

decreased); the change in the number of children under age 6 (whether increased) and the change in house value (measured in Chinese yuan). Although the equation is written in the cross-section format, the variation in income and certain controls between 2014 and 2018 may contribute to mitigating the fixed effects to some extent.

4.4.2 Identification Strategy

Addressing selectivity biases is an important pursuit of migration-related literature. There are triple/quadruple potential selections that may bias the estimation of return migration impact: emigration choice, return choice, labor force participation choice and the following occupation choice (Wahba, 2015).

China may provide a unique setting to solve with the potential biases arising from the return choice and the labor force participating choice. Due to the restrictions of the hukou system, migrants from rural areas have difficulties obtaining urban hukou in the destination cities, and thus have limited access to public services such as education, medical insurance, and public housing (Liu, 2005; Song, 2014). As a result, most of migrants return to their hometown after a few years of migration. There is a plausible assumption of no selection bias in return migration since most rural-to-urban migrations in China are temporary (Giulietti, Wahba and Zimmermann, 2013). Previous return migration-related research mainly sheds light on the wage workers, while in this research wage workers only take up around 10% of the sample. I assume that the labor participation choice bias is not crucial in this research.

The selection bias that may mainly influence the estimation of this research is the migration choice, i.e., whether to migrate to the urban or not. Highly motivated female in rural China may choose to migrate, thus the reason for higher income for returnees may be the personal characteristics and unobserved abilities of the individual instead of the experience of migration. To address this concern, I utilize the instrumental variable strategy.

To solve the selection bias in migration decision, I constructed a social network type IV using the number of households with migration (exclude individual herself household) in the village where the individual lived in 2014 weighted by the share of the most popular surname in the village in 2014. Previous research has illustrated that weak ties in the social networks facilitate the migration decision (e.g. Munshi, 2003; McKenzie and Rapoport, 2007, 2010; Giulietti, Wahba and Zenou, 2018) by providing information for migration process, job opportunities, and financial support (Dolfin and Genicot, 2010). The number of households with migration in the village is positive associated with the migration decision. I also use the percentage of the most popular surname in the village as a weight to evaluate the trust level among residents since some literature in social network (e.g. Acemoglu and Ozdaglar, 2010) has pointed out during

information processing, individuals who follows the non-Bayesian approach will update their beliefs as a weighted average of the beliefs of her social neighbor, with weights given by the trust she has for those neighbors. Chinese village is a natural unit of the social network since many agricultural, governmental and social activities are organized by village (Hillman, 2014). The share of most popular surname in the same village in rural China signifies the power of clan, which is a good measurement of trust. This network type IV is positive associated with the migration decision but does not directly affect the individual level income change between 2014 and 2018 if the exclusion restriction holds.

A potential confounder that may impact both income level and migration rate is the natural disaster. For example, if a drought occurs in 2014, it could act as a catalyst for migration and simultaneously lead to a decline in income for that year at the first glance. However, the effect of a natural disaster might be delayed, not immediately affecting income in 2014 but manifesting in the following year like 2015, along with influencing migration decisions.

4.5 Empirical Findings

4.5.1 How does temporary migration influence the female's income

Table 4.3 reveals that temporary migration yields a positive impact on income upon the return of female migrants. Column (1) reports the OLS results after controlling for individual-level characteristics. Compared with stayers, returnees experience a premium of 1,495 Chinese Yuan. The addition of household-level features in Column (2) slightly augments the income premium. Introducing village-level facilities in Column (3) further increases the income premium to approximately 1558 Chinese Yuan. In addition to the temporary experience, the education level of the female also plays an important role in the income change. Females with secondary or above level education earns significantly more than those with primary or below education level. As Table 4.3 suggests, the temporary migration experience significantly increases female migrants' income upon their return.

Table 4.3 The effect of short migration on income of female migrants

(1)	(2)	(3)
Income	Income	Income

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Returnee	1,495.7672** (590.4371)	1,501.6915** (591.1113)	1,558.3237*** (589.2457)
Education	1,788.0988*** (411.8671)	1,755.9762*** (413.5270)	1,820.1131*** (415.3749)
Age	-1,913.6086 (1,967.7506)	-2,016.7547 (1,991.7205)	-1,836.4096 (1,989.1987)
Divorce	36.5271 (1,507.4937)	-6.0213 (1,499.9997)	-22.6007 (1,500.7571)
Hukou	719.6741 (1,245.7137)	804.1947 (1,244.4574)	939.8027 (1,245.1599)
Family size		-846.9777** (397.0863)	-856.5781** (397.1055)
Children		-134.5248 (1,005.3084)	-135.6886 (1,004.3530)
House value		13.5165 (10.3597)	13.8246 (10.3710)
Kindergarten			-682.4007 (423.0461)
Primary			742.8011* (393.1696)
Constant	5,357.2777 (7,852.4459)	5,983.7137 (7,958.1927)	5,094.9459 (7,946.8718)

Observations	3,027	3,027	3,027
R-squared	0.0096	0.0118	0.0133

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 4.4 presents the instrumental variable (IV) estimation, where the migration decision is instrumented by the number of households with migration at the village level weighted by the share of the most prevalent family name in the village. The sample encompasses a total of 353 villages. The results reported in Table 4 correspond with the OLS models in Table 3. As columns (1), (3) and (5) suggest, the instrumental variable (network IV) is a significantly strong predictor of the endogenous variable. In terms of the second stage, column (6) indicates that, compared with stayers, female migrants significantly earn an additional 14187 Chinese yuan upon their return, while the F-statistic in column (6) of Table 5 is 19.9, above the value of F-statistic for the 5% maximal IV size (16.85). The IV results are larger than the coefficient in the OLS estimation, which may hint at a negative selection. For example, individuals who cannot find a stable work in rural areas may choose to migrate. As shown in descriptive statistics, on average, the income of non-migrants exceeds that of returnees, which potentially indicating that individuals with relative limited skills, unable to generate sufficient income locally, choose to migrate. Since my model using the changes between 2014 and 2018 to eliminate time-invariant factors that may affect the estimation, one factor captured by the IV estimation but omitted in the OLS might be time-varying ability. In addition, the IV estimates the local average treatment effect (LATE) for the marginal subgroup influenced by the social network to migrate, rather than the average treatment effect. Since the primary interest in this research is the effect of temporary migration, and the IV suggests a positive effect of temporary migration on income for the marginal group driven by the network, I argue this coefficient is desirable.

Table 4.4 The effect of short migration on income of female migrants (IV)

	(1)	(2)	(3)	(4)	(5)	(6)
	First	2SLS	First	2SLS	First	2SLS
Network IV	0.005***		0.005***		0.005***	

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	(0.001)		(0.001)		(0.001)	
Returnee		11,552.818		12,145.767		14,187.744*
		(7,439.865)		(7,416.697)		(7,852.868)
Secondary	0.023*	1,553.243***	0.023*	1,506.462***	0.021*	1,552.650***
	(0.012)	(449.158)	(0.012)	(451.522)	(0.012)	(457.303)
Age	-0.020	-1,685.494	-0.021	-1,770.797	-0.027	-1,465.968
	(0.056)	(1,935.185)	(0.056)	(1,943.852)	(0.056)	(1,987.812)
Divorce	0.009	-51.617	0.008	-95.741	0.009	-135.875
	(0.047)	(1,608.796)	(0.047)	(1,615.855)	(0.047)	(1,646.204)
Hukou	-0.022	955.708	-0.022	1,050.535	-0.026	1,290.813
	(0.036)	(1,247.233)	(0.036)	(1,252.570)	(0.036)	(1,284.583)
Family Size			-0.007	-796.277*	-0.006	-800.562*
			(0.012)	(419.271)	(0.012)	(427.097)
Children			-0.038	228.359	-0.039	292.666
			(0.038)	(1,331.106)	(0.038)	(1,358.008)
House value			-0.000	16.348*	-0.000	17.319*
			(0.000)	(9.840)	(0.000)	(10.060)
Kindergarten					0.016	-990.589**
					(0.013)	(478.301)
Primary					-0.025**	1,066.313**
					(0.012)	(474.078)
Constant	0.161	3,420.705	0.168	3,877.686	0.199	2,215.464
	(0.224)	(7,822.666)	(0.224)	(7,866.479)	(0.225)	(8,091.252)

Observations	3,027	3,027	3,027	3,027	3,027	3,027
R-squared	0.008		0.009		0.011	
F-statistic		21.26		21.475		19.913

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

4.5.2 Temporary migration experience and family decision-making power

The previous section has demonstrated the temporary migration experience significantly increases female income upon their return. The migration experience and additional income may change the decision-making power of females. In this section, I investigate whether the temporary migration experience influences females' decision-making power within the family upon their return. In the CFPS family economic questionnaire, respondents were asked who is most familiar with the family's economic conditions, the agricultural income and expenditure, the self-employed business section and the family's living expenditure section. To measure the females' decision-making power, I utilized the respondent of each section, considered to be the person responsible for decision-making in that specific area. If the individual is not the respondent in 2014 but assumed that role in 2018, the corresponding variable will be 1, otherwise 0. Surprisingly, as the results suggest, although the temporary migration experience increases female income upon their return, it does not significantly enhance their decision-making power within the family. I find positive but insignificant results in decisions regarding economic, agricultural, and living expenses. In fact, it even significantly reduces females' voice in self-employed decisions.

Table 4.5 The effect of temporary migration on family decision-making power

	(1)	(2)	(3)	(4)
	Resp_econ	Resp_living	Resp_agri	Resp_selfemploy
Returnees	0.011	0.038	0.014	-0.083

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	(0.022)	(0.029)	(0.026)	(0.053)
Age	0.072	0.129*	0.138***	0.164***
	(0.051)	(0.077)	(0.036)	(0.049)
Secondary	0.035**	0.056***	0.006	0.034
	(0.015)	(0.019)	(0.018)	(0.046)
Divorce	0.096	0.191**	0.061	-0.183***
	(0.064)	(0.074)	(0.067)	(0.047)
Hukou	-0.008	-0.067	-0.044	0.050
	(0.043)	(0.055)	(0.053)	(0.131)
Family size	0.083***	0.062***	0.039**	-0.015
	(0.015)	(0.019)	(0.017)	(0.050)
Children size	-0.037	0.016	-0.055	0.128
	(0.039)	(0.060)	(0.047)	(0.139)
House value	-0.001**	-0.001**	-0.001***	-0.001*
	(0.000)	(0.000)	(0.000)	(0.001)
Kindergarten	-0.002	0.027	-0.002	-0.020
	(0.014)	(0.019)	(0.017)	(0.049)
Primary	-0.004	-0.041**	0.007	0.045
	(0.014)	(0.019)	(0.016)	(0.051)
Constant	-0.160	-0.155	-0.393***	-0.511**
	(0.202)	(0.307)	(0.145)	(0.203)
Observations	3,061	3,061	2,316	253
R-squared	0.016	0.014	0.009	0.028

4.6 Channels

4.6.1 Job mobility

The empirical results suggest the temporary migration experience increases women's income upon their return compared with stayers. However, this experience does not enhance females' decision-making power within the family, although they earn more money. In this section, I try to investigate several potential underlying mechanisms. I first explore whether the income premium is affected by job mobility across different sectors.

Table 6 displays that the income in self-employment and wage jobs outperform other job types. If the migration experiences enable female migrants to transition from unemployment or less lucrative jobs to more lucrative jobs, then the income premium may stem from upward job mobility. Figure 1 illustrates the flow of returnees before and after migration, indicating that some who were unemployed or engaged in family agricultural work in 2014 transitioned into waged jobs by 2018. Column (1) of Table 7 also suggests a correlation between temporary migration experiences and the likelihood of becoming a wage worker. However, there may be other factors, such as personality, that influence an individual's decision to migrate and their subsequent occupational choices. As shown in column (3) of Table 7, after employing the instrumental variable approach, the significance of the impact of temporary migration experience disappeared.

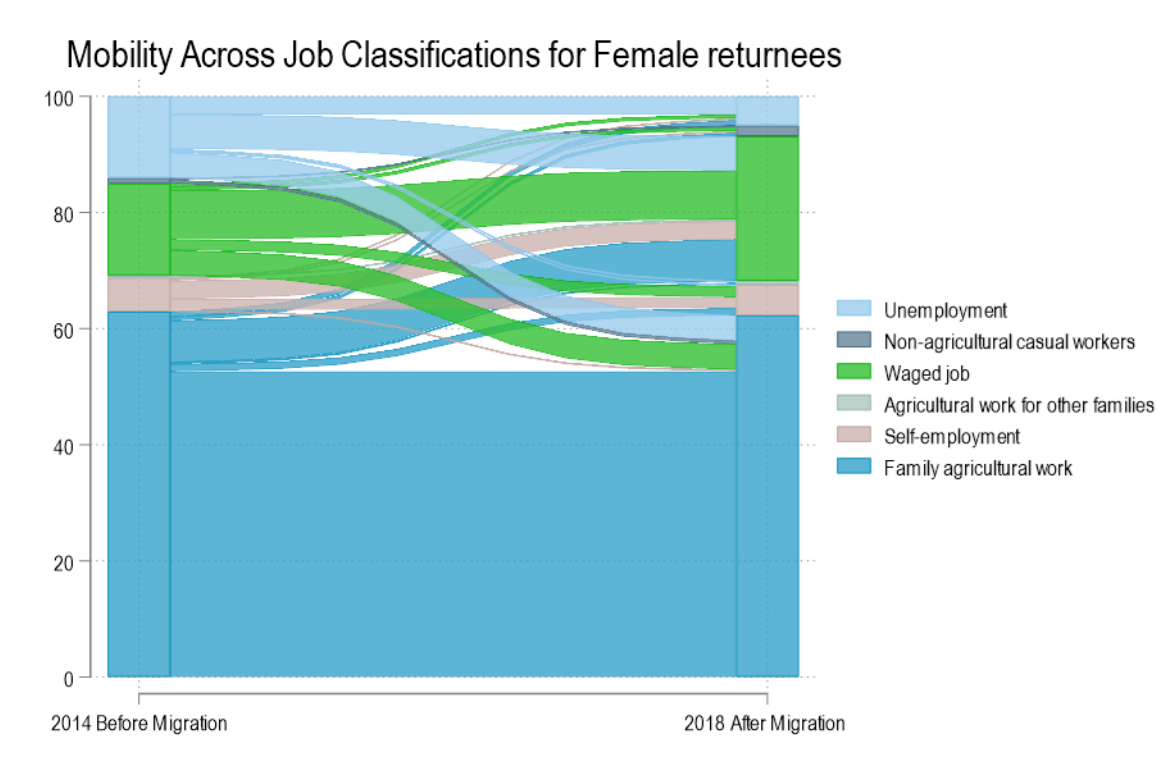


Figure 4.1 Job mobility for female returnees

For the occupation choice, as previous literature (e.g., McCormick and Wahba 2001; Demurger and Xu ,2011; Bossavie et al., 2024) points out, returnees are more likely to become entrepreneurs. I also examine this possibility in columns (4) ,(5), (6); however, it seems that the temporary migration experience does not encourage females' self-employment.

Table 4.6 Income and percentage distribution of job classification

	2014		2018	
	Income	percentage	Income	percentage
family agricultural work	7776.89 (243.17)	67.30	5690.20 (194.65)	70.25
Self-employment	9805.67 (1072.77)	5.46	11793.7 (1157.70)	6.14
agricultural work for other	2875.76 (1039.86)	0.36	2869.5 (1210.39)	0.68
waged job	14521.03	8.76	8255.45	13.14

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	(958.88)		(684.80)	
non-agricultural casual workers	7909.37	0.49	8093.33	0.51
	(2195.41)		(3509.12)	
Not applicable		17.64		9.28

Table 4.7 The impact of temporary migration experience on job mobility

	(1)	(2)	(3)	(4)	(5)	(6)
	Waged	first	Waged	Self- employ	first	Self- employ
	(OLS)	(2SLS)	(2SLS)	(OLS)	(2SLS)	(2SLS)
Returnee	0.093*** (0.020)		0.040 (0.186)	0.004 (0.010)		0.040 (0.121)
Network_iv		0.005*** (0.001)			0.005*** (0.001)	
Age	-0.035 (0.047)	-0.025 (0.055)	-0.036 (0.045)	-0.009 (0.030)	-0.025 (0.055)	-0.008 (0.030)
Secondary	0.103*** (0.012)	0.022* (0.012)	0.105*** (0.011)	0.029*** (0.007)	0.022* (0.012)	0.029*** (0.007)
Divorce	0.023 (0.037)	0.010 (0.047)	0.023 (0.038)	0.002 (0.022)	0.010 (0.047)	0.002 (0.025)
Hukou	0.051 (0.039)	-0.026 (0.036)	0.049* (0.030)	0.018 (0.025)	-0.026 (0.036)	0.019 (0.019)
Family Size	0.010	-0.007	0.010	-0.002	-0.007	-0.002

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	(0.010)	(0.012)	(0.010)	(0.006)	(0.012)	(0.006)
Children	-0.017	-0.039	-0.018	0.019	-0.039	0.020
	(0.023)	(0.038)	(0.031)	(0.024)	(0.038)	(0.020)
House value	0.001***	-0.000	0.001***	0.000	-0.000	0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Kindergarten	0.009	0.016	0.010	0.013*	0.016	0.012*
	(0.010)	(0.013)	(0.011)	(0.007)	(0.013)	(0.007)
Primary	-0.007	-0.024**	-0.008	-0.002	-0.024**	-0.001
	(0.009)	(0.012)	(0.011)	(0.007)	(0.012)	(0.007)
Constant	0.159	0.189	0.170	0.047	0.189	0.040
	(0.187)	(0.220)	(0.185)	(0.121)	(0.220)	(0.120)
Observations	3,061	3,061	3,061	3,061	3,061	3,061
R-squared	0.056	0.010	0.052	0.011	0.010	0.006

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note:

1. If the individual is not waged worker in 2014 but become waged work in 2018, the outcome variable “waged” equals 1, and otherwise 0.
2. If the individual is not self-employed in 2014 but become self-employed in 2018, the outcome variable “self-employ” equals 1, and otherwise 0.

4.6.2 Temporary migration experience impact for male migrants

In this section, I explore how the temporary migration experience influences male returnees. As suggested in Table 4.8, unlike female returnees, there is no significant evidence that the

temporary migration experience increases male migrants' income upon their return. One possible explanation could be the experience they acquired in the cities. Female migrant workers are more likely to be employed in wholesale, retail, hotel, and catering services, while male migrants are more likely to work in the construction industry. This divergence in occupational experience may lead to different gains in human capital and influence outcomes upon their return.

Table 4.8 The impact of temporary migration for male returnees

	(1)	(2)	(3)	(4)	(5)	(6)
	Income	Income	waged	waged	Self- employ	Self- employ
	(OLS)	(2SLS)	(OLS)	(2SLS)	(OLS)	(2SLS)
Returnee	984.554 (933.412)	162,955.856 (198,111.244)	0.055*** (0.019)	1.245 (1.861)	0.004 (0.010)	-0.310 (0.729)
Age	-113.102 (261.909)	-1,010.302 (2,227.711)	-0.001 (0.003)	-0.007 (0.019)	-0.001 (0.001)	0.001 (0.007)
Secondary	1,794.739** (828.578)	9,384.622 (9,732.024)	0.014 (0.012)	0.065 (0.083)	0.013* (0.007)	-0.001 (0.032)
Divorce	5,118.311 (4,056.658)	-13,944.533 (27,365.570)	-0.027 (0.050)	-0.170 (0.250)	-0.021*** (0.005)	0.017 (0.098)
Hukou	1,182.675 (3,190.096)	457.214 (8,920.555)	0.050 (0.044)	0.016 (0.071)	0.021 (0.030)	0.026 (0.028)
Family Size	-1,206.027 (821.406)	2,553.997 (5,598.037)	0.007 (0.013)	0.036 (0.048)	-0.010 (0.008)	-0.017 (0.019)
Children	860.372	9,434.420	-0.004	0.038	-0.005	-0.042

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	(1,919.765)	(14,251.307)	(0.036)	(0.121)	(0.021)	(0.047)
House value	43.283*	115.408	0.000	0.001	0.000	0.000
	(23.733)	(110.506)	(0.000)	(0.001)	(0.000)	(0.000)
Kindergarten	94.604	-6,981.094	0.010	-0.042	0.008	0.020
	(976.956)	(9,179.310)	(0.013)	(0.082)	(0.008)	(0.032)
Primary	-132.000	956.986	-0.008	-0.006	0.007	0.004
	(870.314)	(3,426.705)	(0.013)	(0.027)	(0.007)	(0.011)
Constant	-953.425	-29,492.268	0.051***	-0.150	0.020*	0.075
	(1,340.865)	(35,865.724)	(0.018)	(0.325)	(0.010)	(0.127)
Observations	1,866	1,848	1,891	1,873	1,891	1,873
R-squared	0.009		0.010		0.006	

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note:

The data construction for male migrants and the definition of job mobility are the same as that for female migrants, as described in the data construction section.

4.6.3 Shift in gender norms and income change

The effect of temporary migration may vary for females with different perspectives on gender norms. Typically, migration destinations are major cities, considered to have progressive gender norms. Exposure to such environments may lead to more liberal attitudes towards gender roles and thus generate different outcomes upon their return. Table 4.9 presents the effect of temporary migration on groups with varying perspectives on gender norms. The gender norms are assessed based on responses to the question regarding the importance of continuing the family line. An increase in importance between 2014 and 2018 categorizes the gender norm as

conservative, while no change indicates a status of unchanged, and a decrease signifies a positive change in gender norms. The income premium exists among women with unchanged and positively changing gender norms.

Table 4.9 The impact of temporary migration on income across different gender norms

	(1)	(2)	(3)
	Conservative	Not change	Positive change
Returnee	589.177 (822.008)	2,398.674** (1,114.022)	3,503.991** (1,373.462)
Age	-3,122.974 (2,433.167)	-1,715.633 (3,592.416)	5,708.228 (5,772.989)
Secondary	2,198.468*** (584.541)	1,052.975 (727.214)	1,480.096 (1,053.034)
Divorce	-495.689 (2,286.828)	1,193.361 (2,358.589)	-2,981.161 (4,184.901)
Hukou	2,100.045 (1,645.811)	-608.980 (2,121.355)	-1,906.912 (2,705.355)
Family size	-1,553.250*** (593.347)	571.395 (589.760)	-1,400.302 (1,075.421)
Children	-167.471 (1,305.191)	-2,015.597 (2,122.559)	3,642.837** (1,516.186)
House value	12.121 (15.151)	15.565 (15.470)	27.262 (31.066)
Kindergarten	-735.655	-60.173	-2,930.308***

	(662.016)	(604.314)	(1,112.261)
Primary	909.219	758.684	514.229
	(592.610)	(630.679)	(1,009.873)
Constant	10,619.263	4,015.212	-25,259.461
	(9,709.369)	(14,341.138)	(23,104.954)
Observations	1,528	1,039	447
R-squared	0.018	0.013	0.048

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

4.7 Conclusion

In this study, I explore the impact of temporary migration on female empowerment in rural China through analysis of nationally representative survey data. Using data from the China Family Panel Studies (CFPS) from 2014-2018 and reconstructing the target sample, I found that the temporary migration experience makes female migrants earn approximately 1,560 Chinese yuan more upon their return than their non-migrant counterparts. This income premium still exists and increases when I employ the instrumental variable approach, which may hint at a negative selection. However, the temporary migration experience does not increase female returnees' within household decision-making power.

I aim to understand the underlying mechanisms from the following perspective. First, I examine whether the income premium is driven by upward job mobility. However, the income premium is not propelled by upward mobility. Next, I explore how the temporary migration experience impacts male migrants. In contrast to female migrants, the temporary migration experience does not yield an income premium to the male migrants. Finally, I investigate whether the income premium varies according to gender norms. The results indicate that this impact is only significant in groups with normal or progressive gender norms.

Due to data limitations and the large proportion of family agricultural workers in the sample, income is measured as income per capita. For families with current migrants who send

remittances, this income measure may be overestimated. Regarding women's decision-making power, I use respondent for different parts e.g. the respondent of family economic condition. According to the CFPS documentation, the respondent for each part is the individual most familiar with that aspect of the household. However, it is possible that women assume responsibility for certain decisions because their husbands have migrated. In such cases, women's decision-making power could be overestimated, although the current results already indicate that temporary migration experience has no significant impact on women's decision-making power within the family.

To reduce selection bias, I employ an instrumental variable approach. The instrument is the interaction between the number of migrants aged 16–64 from the village in 2014 and the share of the most popular family name as a proxy for trust. This instrument may be associated with individual-level income changes, particularly for self-employment. Finally, the data used in this chapter is limited to a relatively short time period. Given that the average migration period is seven years, individuals who choose to return to their hometowns within two years may introduce potential sample selection bias. For instance, women who aspire to start their own businesses might migrate to gain experience and accumulate startup capital. In such cases, the income premium may not be driven by migration experience in cities but by their intrinsic motivation. However, individuals engaged in self-employment constitute only about 5% of the total sample in this chapter.

Understanding how return migration experience influences the female migrants' empowerment is essential in rural China. This significance is underscored by the large and growing number of female migrants, whose experiences not only enhance their own socio-economic standing but also have the potential to positively influence young girls in rural areas. The insights in this paper offer potential implications for understanding the internal migration policies, advocating for governmental support to encourage and facilitate women's migration from rural areas to urban centers, and implementing strategies aimed at changing traditional gender norms and promoting gender equality.

Chapter 5 Conclusion

This thesis aims to provide empirical evidence on the impact of female empowerment and explore the underlying barriers, as well as practical methods to facilitate female empowerment within the Chinese economic and political system. In Chapter 2, I investigate whether female leaders exhibit a distinct leadership style compared to their male counterparts, and whether the proportion of female policymakers in decision-making bodies influences policy outcomes in China, the largest developing country with a unique political system characterized by the state-party system led by the Communist Party of China and de facto federalism in central-local relationships. The findings in Chapter 2 suggest the balanced female share of the decision-making body of CCP significantly influences cities' green governance and making cities greener. Considering the institutional and cultural background of the Chinese political landscape, in Chapter 3, I investigate the characteristics of public sector employees in China. While policies are formulated by the decision-making bodies discussed in Chapter 2, they are implemented and delivered by public sector employees. Many of these employees are selected through national-level examinations, which do not necessarily ensure their public service motivation. Given the institutional and cultural background, as well as the rapid economic development, the agency problems highlighted in public sectors of European countries may be more prevalent in China's public sector. The findings in Chapter 3 show that although the public sector employees are more inclined to pro-social behavior, this is mainly explained by the personal characteristics. In Chapter 4, I explore whether temporary migration could serve as an effective method to facilitate female empowerment in rural China. Female migrants are expected to acquire new skills and exposure to more progressive environments in urban areas, and this experience may have a distinct impact upon their return. The results in Chapter 4 suggest that although the temporary migration experience significantly increases female migrants' income upon their return, there is no significant evidence that the temporary migration experience influences female decision-making power within the family.

To be specific, in Chapter 2, I shed light on the standing committee for the Communist Party of China (CPC) at the prefecture level, one of the most important decision-making institutions in China's political landscape. Using a manually collected unique dataset of over 9,000 local officials and 273 prefecture-level cities, I investigate the impact of the gender composition of the standing committee on green governance. I find that a one standard deviation increase in the female ratio leads to a 0.339 percentage point increase in a city's greenery coverage. However, the results in this chapter suggest that this impact does not become significant until the female share in the committee reaches the threshold of the traditional critical mass theory.

In the following heterogeneity analysis, I find that the impact of gender composition varies by region and is more pronounced when a minority member is present. To guarantee the robustness of the findings, I first use variables related to recycling and industrial SO₂ discharge for robustness checks; the results are consistent with the baseline findings. Then, I conduct a placebo test by changing the timing of greenery coverage from $t+1$ to $t-1$, and I find no significant results for time $t-1$, which further illustrates the robustness of the results. Finally, I test the variation of female leaders. The female share in Chapter 2 is calculated by dividing the number of female leaders in the committee by the total number of committee members, raising a concern that the committee size, rather than the number of female leaders, might influence environmental governance. To rule out this concern, I first control for committee size directly in the analysis, and the relationship remains unchanged. Then, by using the number of women instead of the percentage of women as the key independent variable and controlling for committee size, I find that the relationship is unaffected. Moreover, the committee size is negatively associated with green decision-making, although this is not statistically significant. The results in the robustness checks align with the baseline findings.

I interpret the mechanism underlying my results through two channels: difference in gender policy preference priorities and the correction of overemphasis on economic public goods investment driven by the tournament competition for promotion. Firstly, policymakers tend to invest in public goods relevant to their own gender. Due to their nature-loving tendencies and priorities in child-related issues, as demonstrated in previous literature, female leaders, when empowered, have incentives to invest more in green-related public goods. Secondly, the presence of female leaders on the committee may counteract the distorted emphasis on economic growth motivated by officials' promotion desires, leading to more environmentally friendly decisions. I find a negative relationship between the female share and all expenditures, as well as foreign direct investment, which is always associated with heavily and polluted industries.

One limitation of this study is the potential endogeneity of the key independent variable, the female share. Following the assumption in existing research that local officers at the prefecture level are assigned by upper-tier authorities, this assignment could be considered exogenous. However, although the CCP has transparent regulations regarding the prefecture-level party committee elections, as previously discussed, there may be some non-transparent rules and underlying black box elements in the election process that could bias the estimation. My unique manually collected database allows for direct control for detailed personal characteristics. Additionally, I address unobserved determinants by using outcomes one year later, adding time and city fixed effects, and exploring other variables as robustness checks and, conducting placebo tests. These strategies ensure the robustness of the results to some extent. In terms of

policy implications, the findings suggest that a balanced gender composition benefits a city's green governance, even though women are still underrepresented at the prefecture-level committee. The average female proportion in standing committees in China is slightly less than 10%, far from typical reservation quotas. For example, in India, the quota under the reservation policy is about 30%, and it is even higher in educational institutions. The results in Chapter 2 also indicate that female leaders' voices cannot make a significant impact until the female share reaches 15%, the traditional critical mass threshold. Given the current challenges in environmental protection and climate change, it is reasonable to advocate for increasing the female proportion in party standing committees.

In Chapter 3, I investigate whether public sector retirees differ from private sector employees in terms of pro-social motivation in China. Using the China Health and Retirement Longitudinal Study (CHARLS), a representative national longitudinal aging survey, I find that individuals who retired from the public sector exhibit higher pro-social inclinations. However, this difference can be primarily attributed to their hukou status and level of education. My findings align with previous findings by Tonin and Vlassopoulos (2015) in the European public sector, which suggest that public sector employees are more pro-social than private sector employees, largely due to differences in personal characteristics. Subgroup analysis by gender, age, hukou status, region, and education level is consistent with the baseline findings, indicating no significant difference in pro-social behavior between public and private sector employees after controlling for personal characteristics. To ensure the robustness of the results, I conduct several robustness checks. These include changing the definition of public sector employee by separating civil servants and public institution employees, transforming the independent variable from a binary to a discrete variable valued 0 to 4 to describe the degree of pro-social behavior, and changing the estimation method from a linear probability model to logit regressions. The results remain consistent with the baseline findings, showing that former public sector employees exhibit higher pro-social inclinations, but the gap between public and private sector workers is primarily explained by education level and hukou status. Interestingly, when running the regression separately for civil servants and public institution employees, I find that the latter group, which includes front-line service workers, exhibits higher pro-social inclinations. This finding is consistent with previous research suggesting that pro-social inclinations are concentrated in specific occupations. Despite conducting several robustness tests to ensure the reliability of our findings, there is still concern regarding endogeneity issues, as some respondents made their career choices during the Cultural Revolution (1966-1976), which had a significant impact on the entire generation. During this period, entry into the public sector was restricted to individuals who exhibited a strong political stance and demonstrated loyalty to the party. People, or their parents, considered disloyal to the party were subject to

severe political persecution. As previous literature documents, confidence in the political party, used to measure mission alignment, plays an important role in attracting altruistic workers to the public sector (Dur and Zoutenbier 2014). Additionally, mutual betrayal and denunciation between neighbors, classmates, and friends during this period may have disrupted trust levels and influenced pro-social inclinations. Therefore, the impact on this particular group may be challenging to measure. However, in the subgroup analysis for this cohort in this chapter, I did not find any significant evidence of a cohort effect. The findings in Chapter 3 provide insights for public sector worker selection in the Chinese context, where working in the public sector is considered more prestigious than working in the private sector and can serve as a starting point for further career advancement in politics. If the difference in pro-social behavior is mainly driven by personal characteristics, more efficient methods may be needed during public sector selection processes.

In Chapter 4, I investigate the impact of temporary migration on female empowerment in the rural areas through analysis of China Family Panel Studies (CFPS), a nationally representative survey data. Using data from CFPS from 2014-2018 and reconstructing the target sample, I find that temporary migration experience makes female migrants earn approximately 1,560 Chinese yuan more than upon their return than their non-migrant counterparts. This income premium still exists and enlarges when I employed the instrumental variable approach, which may indicate a negative selection. However, the temporary migration experience does not increase female returnees' decision-making power within the household regarding economic activities, living expense, agriculture and self-employment, despite earning additional income upon their return. I use an instrumental approach in this chapter to address the endogeneity issue driven by the migration choice. I construct the instrumental variable by exploiting two exogenous sources; the number of migrants aged 16-64 from the village in 2014 and the share of the most popular family name in the village. The former variable follow the strategy of the network type variables usually used in the migration researches while the latter variable captures the kinship and clan nexus, upon which trust between individuals in rural China is primarily based. I use the latter variable to introduce the trust level into migration decisions.

In this chapter, I explore the underlying mechanisms from the several perspectives. First, I examine whether the income premium is driven by upward job mobility from less lucrative jobs to more lucrative ones, specifically toward waged work and self-employment. However, the income premium is not propelled by upward mobility. Next, I explore how temporary migration experiences impact male migrants. In contrast to female migrants, temporary migration experiences do not yield an income premium for male migrants. Finally, I investigate whether the income premium varies according to gender norms, specifically attitudes towards son preference. If attitudes toward son preference increase between 2014 and 2018 (before and

after migration), the gender norm is considered conservative. If attitudes remain unchanged, the gender norm is considered neutral. If attitudes towards son preference decrease, the gender norm is considered progressive. The results indicate that the impact is significant only in groups with neutral or progressive gender norms.

Understanding how the experience of return migration influences female migrant empowerment is crucial in rural China. This importance is underscored by the growing number of female migrants whose experiences enhance their socio-economic status and have the potential to positively impact young girls in rural areas, where females are relatively vulnerable due to patriarchal social structures and a preference for boys. Unfortunately, in this chapter, despite female migrants gaining additional income upon their return, there is no significant evidence that their decision-making power within the family increased in rural China. As previous literature suggests, even small resources in women's hands could lead to changes in family resource allocation, benefiting the education and health conditions of children, especially for girls. There is also concern whether the additional income is controlled by male members of the family, potentially worsening the situation for women. The insights in this paper provide implications for understanding internal migration policies, advocating for governmental support not only to encourage and facilitate women's migration from rural to urban areas, but also to implement strategies aimed at changing traditional gender norms and promoting gender equality.

This thesis involves three critical institutional designs in the Chinese political economy system: de facto federalism defining the relationship between the central and local governments, the promotion system characterized by tournament competition, and the household registration system (hukou). The federalism in Chinese politics is different from the other western countries. Constitutionally, all local governments in China are subordinate to the central government, but in practice, power is divided between the central and local governments. Local governments manage most economic issues and share power with the central government on matters other than foreign policy, population control, and national defense. The central government retains control over local governments primarily through personnel power. The administrative structure is hierarchical, with the promotion of local leaders ultimately decided by the Organization Department of the higher-level government. While political connections and loyalty are important, personal ability, as measured by local economic growth, is equally crucial.

The promotion process, measured by economic growth, is characterized as tournament competition where local officials compete with each other to advance to higher levels of authority. This competition intensifies as officials vie for positions in higher levels of government. Local economic growth, as measured by GDP, plays a crucial role in this process.

Driven by career concerns, officials have incentives to prioritize investments in economic public goods, sometimes at the expense of environmental considerations. This de facto federalism and tournament competition are related to the mechanisms analyzed in Chapter 2, where I argue that female leaders can counterbalance the trend of overemphasizing economic development and promote greener cities. Integrating gender perspectives into local governance could mitigate the adverse environmental impacts driven by intense economic competition among local officials.

Another fundamental institutional design that affects the Chinese political economy system and the fate of generations involved in this thesis is the hukou system. Established in 1958, the hukou is a special household registration system in China. Unlike household systems in other countries, such as Japan and Korea, which function as statistical methods for household registration, hukou system in China is deeply intertwined with basic social welfare, including but not limited to the child education, health insurance, and pensions. Only people with local urban hukou can fully enjoy the benefits provided by the local government. Although the official interpretation argues that the hukou system was not established to control internal mobility from rural to urban areas, it initially imposed strict controls on such mobility. The hukou system effectively divides the Chinese labor force into two distinct groups based on hukou status, leading to different job selections and outcomes in the labor market. In Chapter 3, when investigating the pro-social inclinations of public sector employees, I find that the gap in pro-social behavior between private sector workers and public sector workers disappears when controlling for hukou status and education level. Specifically, people with rural hukou are less likely to engage in pro-social activities. In the subgroup analysis, I find that for urban hukou holders, education level is significantly and positively associated with pro-social inclinations, but this is not the case for those with rural hukou. Additionally, when dividing the subgroup by education level, agricultural hukou holders exhibit less pro-social inclination in both education groups. One potential explanation for why hukou status could explain the difference in pro-social inclination is that people with rural hukou usually have limited access to social insurance and pensions after retirement. Without financial security, it may be difficult for rural hukou holders to engage in pro-social behavior.

The disparities between rural and urban areas, as well as between developing and developed regions, facilitated labor force movement when hukou restrictions relaxed after the 1980s, generating the largest internal migration flow in human history, which relates to the topic in Chapter 4. After the early 1980s, the hukou system underwent several reforms. In the late 1990s, a national hukou reform was implemented to help migrants obtain hukou in small cities. In July 2014, the reform was extended to medium and large cities. However, both reforms excluded mega-cities, where migrants are heavily concentrated. Although the restrictions for

entry requirements were relaxed after these reforms—for example, the 2014 reform replaced the original annual quota system and removed the cap on the number of migrants eligible to obtain local hukou—it remains difficult for rural migrants to acquire urban hukou and access the associated social welfare benefits. The entry requirements differ by city but usually include local house ownership and stable jobs, which are challenging for migrants from rural areas to fulfill. Previous research (e.g., Chen et al. 2019) estimated the market valuation of urban hukou, finding that residents' willingness to pay for urban hukou in Jinan city, the capital of Shandong province, was approximately 90,000-126,000 Chinese yuan in 2017, more than three times the average income of people living in Shandong Province that year. Most migrants return to their hometowns after a few years of migration, indicating the temporary nature of internal migration discussed in Chapter 4.

By 2023, there are more than 297 million migrants living outside their hometowns and seeking opportunities in urban areas, with 37.3% of them being female migrants. This means there are more than 110 million female migrants in the urban labor market. Despite this substantial number, there is still limited research shed light on them (Amirapu et al. 2022). Unlike marital migration, which is prevalent in India and other Asian countries, female migration in China is primarily economically driven. Most female migrants work in the service sector (Huang et al. 2023), including occupations in housekeeping, childcare, elder care, and cleaning services, with only a small portion of male migrants working in these jobs. The findings in Chapter 4 suggest that temporary migration experiences produce an income premium for female migrants upon their return, while this impact is not significant for male migrants. The different work experiences acquired in the cities may contribute to this difference.

There is no doubt that internal migrants in China, moving from rural to urban areas, have significantly contributed to the country's economic development since the open-up and reform in 1978. On one hand, the low-cost migrant labor force has turned China into the world's industrial hub and driven the growth of its export industries. On the other hand, the large flow of remittances from migrants has supported the development of local economies. Female migrants are deeply involved in this process, raising an interesting and important research question about the nexus between economic development and female empowerment: Does economic development automatically empower women? Regrettably, in the context of Chinese female migrants and women living in rural areas, the answer may be no.

One example related to this issue is the imbalanced sex ratio at birth (SRB) and the phenomenon of missing women in China. Historical statistics indicate that while China has traditionally had a male-biased sex ratio, the SRB was relatively stable and only marginally higher than in Western countries from the foundation of the People's Republic of China in 1949

until the beginning of the one-child policy in 1979 (Zhang et al., 2011). However, the SRB increased significantly, peaking at 121.18 in 2004, and was around 111.3 in 2020, with large regional disparities. The persistent imbalanced SRB is the result of a combination of son preference, the availability of sex-selective techniques, and the decrease in fertility induced by the one-child policy, with son preference as the cultural and fundamental reason. The pervasive son preference places women in rural China in a vulnerable position. The patrilineal family system confers dominant status on men in terms of property inheritance, as only men can continue family lines. Daughters are considered part of their husband's family after marriage and thus inherit limited resources from their original family. Additionally, a woman's value is traditionally assessed based on her ability to give birth to male offspring, leading to the phenomenon of missing women, which refers to the femicide either before or after birth. In rural China, women suffer from son preference, placing them at a disadvantage in living rights, educational attainment, and access to sufficient healthcare. When women migrate to urban areas, they face institutional discrimination due to their rural hukou and gender (Lu and Song 2006; Chen and Zhang 2018; Magnani and Zhu 2012). Most are low-skilled and less educated, making them vulnerable during the rapid urbanization process. Upon returning to rural areas, as discussed in Chapter 4, the skills acquired in urban areas bring additional income but do not increase their decision-making power within the family, despite their earnings.

As analyzed above, economic growth and income increases may not automatically lead to female empowerment. While these factors may improve the welfare of women in rural areas to some extent, they have limited influence on reducing discrimination against women and enhancing their decision-making power within the family. Without improvements in decision-making power, the benefits of female empowerment cannot fully impact women and their children, particularly girls. Previous literature on microfinance programs has shown that even small resources, such as modest cash transfers to women, can significantly improve the health and educational attainment of children. Furthermore, as the results in Chapter 4 indicate, the income premium from temporary migration experiences is significant for individuals with normal and progressive attitudes towards son preference but is absent in groups with conservative son preferences. Therefore, specific strategies that can enhance women's decision-making power and transform persistent son preferences and gender norms maybe necessary.

Both of the Chapter 2 and Chapter 4 discussed the female empowerment issue. The existing literature has proved the policy preference differs by gender. Both male and female leaders emphasize the priorities of their own gender. In India, during the reservation policies, female leaders improved the access to the clean water which usually complained by female. Existing literature also have proved, female perspective matters. Female leaders emphasize the

importance of policies related to the children, education and female issues. The chapter 2 in this thesis provides evidence from China that the share of female leaders in the decision-making body is positively related with the cities green governance. The sample in Chapter 2 consists of more than 9,000 CPC officers, of which less than 10% are female. The number of female secretaries or deputy secretaries is even more limited. There is no significant evidence that female leaders in China are less qualified than their male counterparts based on personal characteristics, at least in the context of this chapter. Despite the underrepresentation of women in prefecture-level leadership, they do make a significant difference in the traditionally male-dominated political arena.

The process of female empowerment in China since the establishment of the People's Republic has gone through several stages. Gender equality policies during the planned economy period pushed the labor force participation rate for women in China to around 90% by the end of 1978, a level of participation that continues to influence current rates when compared to other Asian countries. However, disparities in female empowerment persist between urban and rural China. During the Maoist era, rural women working in agricultural collectives systematically earned fewer "work points" than their male counterparts, while in urban areas, both men and women were expected to work full-time and receive comparable wages. Today, son preference has largely diminished in urban China, and the university enrollment rate for women in urban areas has surpassed that of men. However, son preference remains deeply rooted in rural China.

A traditionally male-dominated government may lack the incentives or perspectives necessary to implement policies that improve the situation of women. If all government leaders are men, their policies are likely to be skewed toward male interests and neglect the needs of women. Despite the rapid growth and significant numbers of female migrants, there is still limited attention and few specific policies addressing their needs. Increasing the representation of female leaders and improving leadership diversity could break the cycle of disadvantage faced by women in rural areas.

Active female leaders in government could not only narrow the gender gap in policymaking but also inspire young girls to break free from traditional gender roles, revealing more possibilities for their future. As Beaman et al. (2011) suggest, in West Bengal, in places where no women have risen to leadership, more than 80% of parents want their daughters to become housewives. Increasing female representation in leadership roles could change these aspirations and open up new opportunities for future generations. This shift would not only promote gender equality but also harness the full potential of half the population, driving social and economic progress.

Female empowerment and economic development are closely related. While economic development alone may not suffice to overcome discrimination against women and automatically empower them, especially in decision-making, female empowerment can significantly contribute to economic growth. When women are empowered, they tend to invest more in education and health, which can lower child and maternal mortality rates and improve educational attainment for the next generation. Educated girls are more likely to assume leadership positions, thereby increasing female representation in politics and other spheres. This, in turn, can enhance policy-making by addressing the needs of vulnerable women and facilitating further female empowerment. As more women attain leadership roles at all levels of society, the quality of decision-making improves, contributing to sustainable economic development.

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