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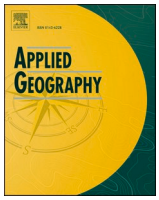

Understanding the relationships between the family structures and destinations of married migrants with children in China

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ABSTRACT

As China transforms and experiences massive rural-to-urban migration, the destination decisions and family structures of internal migrants have become increasingly diverse. This study investigates how the family structures of married migrants with children relate to the geography of their migration destinations. Our analysis reveals that the family structures of married migrant workers are systematically related to the geography of their migration destinations, with couple migrants relatively more likely to be located in mega cities while entire family migrants are more likely to locate in less developed regions. Furthermore, this study found that migrant workers with different migration paths have distinct preferences for their destinations. Migrant workers who initially migrate with their whole families tend to avoid economically developed areas, whereas those transitioning from lone to couple migration are more inclined to move to developed eastern regions and mega cities. Those finding highlights the importance of family dynamics and social factors in shaping migration decisions, providing a more comprehensive perspective on the factors that influence destination beyond purely economic considerations.

1. Introduction

China's Reform and Opening-up policy, introduced in 1978, has resulted in extensive rural-to-urban migration. The number of migrant workers in China has increased from 2 million in 1983 to 290 million in 2019, representing 32.4% of the total Chinese labour force (National Bureau of Statistics in China, 2020). Prior to the 2000s, the majority of migrant workers migrated individually, while their family members, particularly women and children, remained in rural areas (Jia & Tian, 2010). This migration strategy allowed the family to access urban income streams while maintaining their agricultural activities, in accordance with New Economics of Labour Migration (NELM) models (Stark & Bloom, 1985). Moreover, prior to the 1990s, the *hukou* system – China's household registration mechanism – severely limited migrants' access to urban public services, including healthcare and education, thereby deterring whole families from permanently relocating to cities (Hu et al., 2011).

This gendered solo migration pattern had negative social consequences, with over 30 million women classed as 'left-behind' in 2015 (National Bureau of Statistics China, 2015) along with 33 million children, nearly 10 million of whom lived with neither parent (All-China Women's Federation, 2017). The physical or emotional disconnection resulting from this migration pattern hindered the fulfilment of sexual and emotional needs, destabilized marriages, and exacerbated disparities in living conditions and lifestyles (Mucci et al., 2019; Zheng et al., 2001). Additionally, left-behind children in China experienced worse health and educational outcomes compared to their urban counterparts (Chen & Zhao, 2012; Hu & Li, 2009; Li & Zang, 2010). The lack of parental cohesion is known to negatively impact children's development, increasing externalizing and internalizing problems (Bean et al., 2006; Lamborn & Felbab, 2003; Parke & Buriel, 2006).

Following the implementation of *hukou* system relaxation during the 2010s, there has been a marked shift in Chinese migration patterns from individual-oriented to family-centric behavior (Fan & Li, 2020). Census data show that the percentage of migrant households containing both the head of the family and their spouse rose from 7.4% in 1990 to 46.1% in 2000 (Yu, 2005). The 2017 China Floating Population Development Report by the National Health Commission of the People's Republic of China (2017) indicates that by 2016, households comprising two or more individuals constituted over 81% of migrant households. These findings suggest that China is experiencing a "migration transition" as it undergoes development and institutional change, with families

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increasingly opting to migrate collectively or to reunify after the primary migrant has established themselves in the destination. However, extant research on Chinese family migration predominantly concentrates on the determinants and settlement intentions (Fan, 2011; Fan & Li, 2019; Wang et al., 2019), while paying less attention to understanding the variations in family migration structures that now exist across the nation.

At the same time, the geography of internal migration in China has diversified in recent decades. While southern China constituted the primary migration destination during the 1990s, the north and east had emerged as significant recipient areas by the 2010s. Furthermore, the sources of migrant workers have expanded from the southwest to include central China. Recent trends reveal decreasing migration distances in the eastern and central regions, while migrants from western areas are traveling farther (Yan et al., 2015). These alterations in migration patterns are indicative of China's evolving economic geography, particularly in relation to growing regional economic disparities. In 2019, per capita GDP in central and western regions accounted for less than 61% of that in the eastern region, leading to substantial discrepancies in housing and living costs (Gao, 2018; Yan et al., 2015).

Traditional migration theories emphasize economic factors, adopt individual-centric perspectives, and make assumptions of rational utility maximising decision-making (Bogue, 1969; Stark & Bloom, 1985). While valuable, such perspectives are insufficient for conceptualising the highly complex and heterogeneous migration decisions that married adults with children are making in the contemporary Chinese context, which is marked by a changing *hukou* system and stark spatial disparities in labour market opportunities, amenities and services. For these individuals, migration calculus involves considering the expected economic gains of multiple individuals in different places, the value of different amenities for household members (for instance school quality and housing costs), and the relative cost, stress and practicality involved in either uprooting the entire family or splitting the household unit through individual outmigration. Shifts in the geography of economic opportunities and *hukou* policy in recent years have essentially amplified the range of choices available to potential migrants, ultimately enabling a spectrum of family arrangements to emerge across China.

Therefore, this paper investigates the relationship between family structures and the geography of destinations among married migrants in contemporary China. We ask the following research question: *how do family structures relate to the geography of migration destinations in contemporary China?* The next section of the article, Section 2, reviews relevant literature, before Section 3 describes our empirical approach. Section 4 reports and interprets the results before Section 5 concludes.

2. Literature review

2.1. Migration in China

Late 20th century internal migration in China was primarily individual or couple-based, as opposed to the entire family-based migration patterns common in most developed capitalist countries (Démurger & Xu, 2015). This distinction can be attributed to several factors including economic conditions, government policies and the unique cultural context. During China's early stages of economic transformation in the late 1970s, there was a significant demand for rural-to-urban migration. This was driven by the desire to modernize the economy through industrialization and also in an attempt to alleviate rural poverty. Many individuals from rural areas sought employment opportunities in urban centers, where government-supported industries were rapidly growing and where accommodation was often provided by employers (Zheng et al., 2009). At that time, the focus of migration was primarily on individual or couple-based mobility. Young adults, particularly males, often left their rural hometowns to work in factories, construction sites, or in other labour intensive heavy urban industries (He & Gober, 2003). This individual migration strategy was fuelled by the hope of securing higher wages, escaping agricultural hardship and attaining a better quality of life (He & Gober, 2003).

Individual or couple-based migration was also facilitated by state policies, such as the gradual relaxation of *hukou* restrictions, which encouraged labour mobility and the flow of rural labour into urban areas. However, as the social security system and public services (such as education) were still supported mainly by local finance, these were targeted towards serving local residents rather than migrants. The lack of equitable access to local public service resources thus formed an essential element in the traditional reluctance of migrant workers to move as a family (Zhou et al., 2022). In essence, migrants often did not bring their entire families with them immediately due to the limitations on access to urban services that were imposed by the *hukou* system.

One crucial aspect that distinguishes family migration in China is the distinct cultural context. Traditionally, Chinese society placed high value on filial piety, with respect, care, and support for parents and elderly family members acting as deeply ingrained cultural norms (Li & Guo, 2022). Leaving children behind with grandparents while parents migrate for household income has long been an accepted practice, serving as a way to maintain family cohesion, ensure the development of children and filial piety to parents (Li et al., 2021). This practice differs significantly from the migration context of the United States and Western Europe, where such arrangements are far less normative and common.

However, this pattern of individual outmigration created many social problems as large numbers of children and women were 'left behind' in rural areas. For instance, left-behind children have been shown to lag behind their peers in health and education (Li et al., 2021). Most left-behind women take on the double burden of agricultural production and domestic work while also supporting the elderly and taking care of children. As a result, psychological studies show that left-behind women's obsessive symptoms, interpersonal sensitivity, depression, anxiety, and psychosis are significantly higher than the national average (Xiang, 2007; Ye et al., 2013).

Partly in response to these problems, further reforms of the *hukou* system have been launched in the last decade. In 2013, the State Council published the *Notice on Actively and Steadily Promoting the Reform of the Household Registration System*, which requires that except for the largest cities, the conditions for acquiring a local urban hukou should be gradually removed. In October 2016, the State Council clearly set out the goal of promoting the settlement of 100 million people in urban areas. *The 2019 Key Tasks for the Construction of a New Type of Urbanisation* continued to step up the process of *hukou* reform: this stipulated that cities with a resident population of less than 3 million should fully abolish restrictions on *hukou* transfer, while large cities with a resident population of 3–5 million should generally relax their conditions and fully abolish restrictions on household settlement for key groups such as skilled workers and graduates. Super mega-cities are to adjust and improve their household settlement policies to ensure that the main conditions for settlement are length of residence in the local area and whether people have stable employment.

The relaxation of the *hukou* system in China has therefore created new opportunities for entire family-based migration. In many places families can now more easily migrate together to urban areas, seeking improved living conditions, employment opportunities, better education for their children and access to social benefits (Chan, 2021). Nevertheless, family migration in China is still often difficult and many migrations therefore take place in a stepwise manner (Fan & Li, 2019). For example, education disruption can be a deterrent to migration as moving to a new location entails changes in school curricula, separation from established peer groups, and the need for children to adapt to unfamiliar educational systems (Zhang et al., 2019). Parents may thus be hesitant to disrupt their children's education and social development by uprooting them from familiar educational settings, even if cities tend to provide better schooling opportunities (Zhang et al., 2019).

Moreover, housing affordability remains a critical constraint on

moving to large cities, even with the relaxation of the *hukou* system. Urban areas, where many families aspire to migrate, often experience high housing prices and rental costs (Wang et al., 2010). Finding suitable and affordable housing that can accommodate all family members is therefore frequently challenging, particularly in metropolitan areas with limited affordable housing options (Wang, et al., 2010). Finally, social integration and the availability of support networks play a crucial role in family migration decisions (Zhao & Qu, 2022). Relocating to a new location involves building new social connections and support systems. The absence of familiar support networks, limited social ties and challenges in establishing a sense of belonging may act as deterrents for entire family migration. These factors can contribute to feelings of isolation and difficulties in adapting to the new environment, influencing families to opt for stepwise migration strategies.

2.2. Migration destination

Previous studies on the migration patterns of Chinese workers have mainly relied on economic models such as neoclassical and NELM frameworks that position moving as a rational utility-maximising economic strategy (Li et al., 2013). In line with these models, the spatial pattern of the flows of migrant workers in China has changed over time as regional economic geographies have evolved, with a significant increase in rural-to-urban migration during the 1990s due to the growing wage gap between urban and rural areas. This led to the emergence of a "migrant worker tide" moving from inland to coastal regions and from rural to urban areas. These migrants tended to settle in large or medium-sized cities with more developed manufacturing industries, driven by employment opportunities and income considerations (Gao et al., 2010). However, since 2004, a significant number of migrant workers have started to move away from coastal cities and returned to second-tier cities, leading to a shortage of migrant workers in some coastal areas heavily reliant on handicraft industries. Meanwhile, rural reforms have improved living standards and increased the cost of migrant work, resulting in a phenomenon known as the "returning home tide" (Wang, 2013; Xia, 2010).

Migrant workers' destination choices are also known to differ across age groups. Younger workers tend to migrate to manufacturing coastal cities, while older workers are more likely to leave these locales due to their decreasing physical abilities and lack of skills for alternative jobs (Chan, 2010, pp. 1847–1861). Additionally, younger migrants seem to prefer provincial capitals and municipalities over other cities, as their goals and personal preferences differ from those of previous generations (Xia, 2010).

Chinese scholars have also paid attention to the role of distance in Chinese migration flows. An increase in moving distance causes an increase in transport costs, as well as a weakening of social network connections and employment information at the destination, which reduces the expected benefits for the migrant and therefore the probability of migration diminishes as distance rises. Thus, most people tend to move over short distances, and this appears to be true in contemporary China (Gao & Li, 2008). In addition, individual characteristics influence the propensity for migrants to move over long distances. The higher the level of education, the more inclined to long-distance migration, women are more inclined to long-distance migration than men, and there is a negative correlation between age and distance of migration (Yu et al., 2020). Interestingly, Yu et al.'s (2020) study also found that risk averse people tend to choose shorter distance migrations. However, the increasingly developed transport conditions of modern society have weakened the hindering effect of physical distances. Zhang et al. (2016) points out that the choice of destination for migrants depends on the level of expected benefits along with the time and monetary costs of travel rather than physical distance.

2.3. Family structures

Previous studies have not fully considered the relationship between family structures and the destinations of migrant workers in China. However, the linked lives principle, a key component of life course frameworks, emphasizes the interconnectedness of individuals' lives within the context of their social networks and family systems (Coulter et al., 2016). This principle suggests that familial connections substantially impact migration decisions in complex ways, in particular for people with the strong interpersonal ties that are created by marriage and parenthood. There is thus a need to better understand how the living arrangement choices of migrants who are married and have children relate to their destination selection across contemporary China.

There are a number of reasons to expect that family structure is, *ceteris paribus*, an important factor in migrants' destination selection decisions. In terms of residential arrangements, individual or couple migrants frequently pursue provisional or modest housing alternatives in urban locales that often have high housing costs. To minimize living expenses, employer-provided accommodations such as affordable or complimentary dormitories or sheds frequently constitute the most pragmatic and cost-efficient housing alternatives for migrant workers in China (Tao et al., 2014). Nevertheless, a considerable proportion of migrant workers lacking employer-provided lodgings must seek alternative housing options on the market. Due to their constrained financial resources, the majority of migrant workers tend to rent private residences in urban-rural vicinities or comparatively inexpensive, albeit substandard, housing in city centers (Zhang et al., 2019).

However, families migrating with children typically demand greater stability and a better home environment than individual or couple movers. As a consequence, house prices emerge as a significant factor in their decision-making process. In less developed regions (central and western) and small cities, property prices tend to be lower compared to their more developed counterparts, making them more affordable for families with limited financial resources. Likewise, the cost of living is lower in these areas. This affordability allows migrating families to secure more spacious and comfortable accommodations suitable for their needs, without overextending their budget. Locations outside of mega cities also typically have more relaxed *hukou* restrictions, further enabling entire family migration as mentioned in the last section.

Moreover, individual or couple migrants generally concentrate on optimizing their income and career progression in urban settings, pursuing higher-paying jobs and improved working conditions (Zhao, 1999; Zhu & Luo, 2010). This demographic is often more inclined to take risks and make sacrifices in terms of personal life, as they strive to enhance their economic prospects and secure long-term financial stability (Fan, 2007). In contrast, family migrants tend to prioritize job stability and work-life balance over higher earnings, as they aim to maintain family cohesion and well-being (Cooke, 2008; Kulu & Milewski, 2007). This group is more likely to value steady employment, manageable working hours, and a supportive work environment that allows them to fulfil their familial obligations effectively. This focus on the broader needs of the family unit can influence family migrants to choose locations that offer a more balanced lifestyle, even if it means forgoing potential higher earnings in more developed regions or cities.

Based on the discussion above, it appears that even after controlling for confounded relationships, family structure is likely to be closely related to migration destinations. In the following section, we now proceed to empirically investigate the connection between family dynamics and migration destinations.

3. Data and methods

This study uses data collected in the 2017 wave of the China Migrant Dynamics Survey (CMDS). The survey has been conducted by the National Population and Family Planning Commission (NPFPC) since 2009 to monitor the lives and livelihoods of migrant workers across China.

The survey samples migrant workers aged 15 years and above who were residing in their local area during the month prior to the survey but who had not acquired local *hukou*. The 2017 sweep covered over 400 cities in all 32 provinces of China and employed a stratified, multi-stage PPS sampling method. The first and second stages of sampling used the PPS method for townships (towns and districts) and neighborhood committees (village committees) respectively. The third stage involved selecting individual respondents through systematic sampling based on gender, age, and migration duration. In 2017, the CMDS sampled 170,000 respondents. This study focuses on married migrant workers who have migrated from one city/province to another, resulting in a final sample size of 108,872 cases.

Two research methods are employed. First, descriptive statistics describe the relationship between the family structures of married migrant workers with children and their migration destinations (regions and city types). Second, multinomial and binomial logit regressions are used to examine how family structures relate, *ceteris paribus*, to migration destinations. Our core dependent variables are destination region and city type. *Regions* were coded as eastern versus central/western following the official provincial classification system (see Fig. 1). *Cities* were initially classified as either mega, medium or small based on whether they have a population of more than 5 million (mega), 1–5 million (medium) or under 1 million (small). However, the results of preliminary analyses indicated that there were no significant differences between medium and small cities. For parsimony these two categories were therefore merged together.

The core independent variable is the destination family structure of married migrant workers who have children. Family structure is divided into three categories based on information about the current residence of migrants' spouses and children. Migrant workers who do not live with their spouse and whose children live in their hometown are lone migrants. Migrant workers who moved together with their spouse while their children live in their hometown are classified as couple migrants. Finally, migrants living with their spouse and children are classed as entire family migrants. In the final sample, 14.9% migrated individually, 30.4% lived as a couple without their children, and 54.7% lived with their entire family. Looking at the gender distribution of lone migrants, we find that males are in the majority at 53.8%, consistent with the findings of previous studies (He & Gober, 2003).

Control variables which might confound observed associations between family structures and destinations were identified based on previous research. These include migrants' personal characteristics (gender, age, education level, land right in hometown, hometown region), migration characteristics (migration distance, elapsed duration of migration, employment status and wage level). Full details on variable coding as well as summary statistics for all variables are given in Table 1. It's worth noting that migration distance was coded as the calculated distance between the city where the respondent was living and working and the city where he/she came from. This variable was categorized into three groups based on visual inspection of the distance distributions (see

Fig. 1. Map of Chinese provinces and mega cities.

Table 1
Descriptive statistics (n = 108,872).

Survey Question	Variable	Description	Mean/ Percent
The region in which the migrant worker lives	Region	1: Eastern	49.99%
		2: Central/ Western	50.01%
The type of city in which the migrant worker lives	City	1: Mega city	22.51%
		2: Small city	77.49%
Are you migrating with your partner? Where do your children live?	Family Structure	1: Lone	14.86%
		2: Couple	30.44%
		3: Entire Family	54.70%
Distance from hometown to destination	Migration Distance	1: Under 200 km	28.53%
		2:200–500 km	28.16%
		3: Over 500 km	43.31%
Migrant's gender	Gender	1: Male	51.92%
		2: Female	48.08%
Migrant's age	Age group	1.Less than 30	25.97%
		2.30–50	61.99%
		3.Over 50	12.04%
Migrant's education background	Education	1.Primary and below	19.06%
		2.Secondary	65.47%
		3. College or Above	15.47%
Do you have land right in your hometown?	Land	1: Without	34.98%
		2: With	65.02%
How long have you been migrating?	Migration Duration	1: less than 3 yr.	36.91%
		2: 3–10 yrs.	40.33%
		3: Over 10 yrs.	22.77%
Employment status	Employment	1.Unemployed	19.39%
		2.Employee	43.95%
		3. Employer	36.65%
What is your wage level?	Wage level per month (Yuan)	1: less than 3000	34.47%
		2:3000–8000	40.39%
		3: over 8000	25.14%

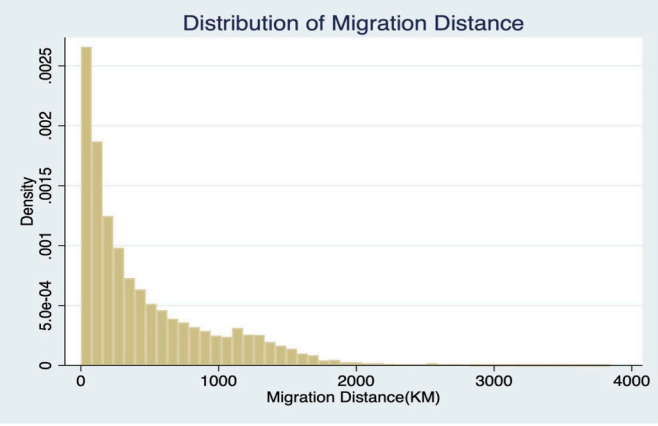

Fig. 2. Distribution of migration distances.

Fig. 2), with careful consideration given to ensuring that observations within each category were numerous enough to support statistical analysis.

4. Analysis

4.1. Descriptive analysis

Tables 2 and 3 compare the family structures of married migrants with children by region and city size. Table 2 reveals that entire families are more common in the central/western region, accounting for 56.7% of married migrants with children, compared to 52.7% in the eastern region. Conversely, couples with left-behind children are more prevalent in the eastern region, comprising 32.4% of the sample, compared to 28.4% in the central/western region. The percentage of lone movers is similar in both regions, at 14.9%. The Pearson chi-square statistic ($p < 0.001$) confirms that the distribution of family structures differs between the two regions.

Table 2
Family structure by region.

Family structure	Eastern	Central/Western
Lone	8124	8054
	14.87%	14.85%
Couple	17,717	15,424
	32.44%	28.43%
Family	28,782	30,771
	52.69%	56.72%
Total	**54,623**	**54,249**

Pearson chi2(2) = 224.1019 Pr = 0.000

Table 3
Family structure by city size.

Family structure	Mega	Small
Lone	4367	11,811
	17.73%	14.02%
Couple	7982	25,159
	32.41%	29.87%
Family	12,283	47,270
	49.87%	56.11%
Total	**24,632**	**84,240**

Pearson chi2(2) = 352.7402 Pr = 0.000

The information presented in Table 3 reveals differences in married migrants' family structures between small and mega cities. In smaller cities, families constitute a higher percentage of married migrants (56.1%) compared to mega cities (49.9%). Couples are the second most common family structure in both city types, but with a higher proportion in mega cities (32.4%) than in small cities (29.9%). Meanwhile, lone movers are the least common family structure in both mega cities (17.7%) and small cities (14.0%).

4.2. Modelling

To gain a more comprehensive understanding of the relationship between migrants' family structures and their settlement patterns, binominal logistic regression analysis was used. This analysis aimed to examine the relationship between family structure and destination geography using the eastern region and mega city as reference groups (Table 4).

In Model 1 of Table 4, the negative coefficient on the couple variable suggests that couples are less likely to live in the central or western region in comparison to the eastern region, when compared to lone movers. Surprisingly, the negative coefficient on the entire family variable indicates that migrant workers who moved as a family were more likely to live in the eastern region than lone migrants. This could be attributed to the omission of city types as a variable in the model, a point which will be addressed in the subsequent analysis.

Turning to the control variables, negative coefficients on the female dummy means that female migrant workers are more likely to migrate to the eastern region than men. This may be due to the fact that women are often concentrated in low-skilled and informal service-sector jobs, such as domestic work, retail, and food services, which are more prevalent in the east. The educational background of migrant workers is also associated with destination regions. The results of Model 1 show that migrant workers are more likely to migrate to the eastern region rather than central or western region as their education level increases. This

Table 4
Binomial logit model of destination (Region and City).

Destination	Model 1(ref = Eastern region)	Model 2 (ref = Mega city)
Family Structure (Lone = 1)		
Couple	−0.315***	−0.0211
	(-15.07)	(0.91)
Entire Family	−0.128***	0.209***
	(-6.58)	(-9.63)
Gender (Male = 1)		
Female	−0.355***	−0.286***
	(-25.11)	(17.51)
Education (Primary = 1)		
Middle School	−0.357***	−0.459***
	(-20.26)	(20.41)
College and above	−0.479***	−1.029***
	(-19.25)	(35.77)
Age Group (less than 30 = 1)		
30–50	−0.0614***	−0.0191
	(-3.82)	(1.03)
Over 50	0.0565*	−0.230***
	(2.26)	(7.98)
Land Right(without = 1)		
With	−0.340***	0.0735***
	(-23.62)	(-4.46)
Migration Distance (Under 200 km = 1)		
200–500 km	−0.710***	−0.647***
	(-41.08)	(31.34)
Over 500 km	−0.897***	−0.465***
	(-56.30)	(23.93)
Duration (less than 3 years = 1)		
3–10 years	−0.0510***	−0.206***
	(-3.41)	(11.65)
Over 10 years	−0.252***	−0.549***
	(-13.93)	(26.45)
Employment status (Unemployed = 1)		
Employee	−1.579***	−1.069***
	(-54.03)	(33.78)
Employer	−0.554***	−0.609***
	(-19.82)	(19.82)
Wage (less than 3000 yuan)		
3000–8000	−0.627***	−0.366***
	(-39.98)	(19.46)
Over 8000	−1.113***	−1.093***
	(-42.27)	(38.80)
Constant	2.990***	−3.515***
	(66.91)	(-68.85)
N	108,872	108,872
Pseudo R2	0.0903	0.0592
AIC	137336.9	109566.5
BIC	137500.1	109729.7

*t statistics in parentheses, *p < 0.05, **p < 0.01, ***p < 0.001*

pattern can be explained by various factors, including the more developed and diversified economy in the eastern region, which provides more job opportunities and better remuneration for workers with higher education levels. Additionally, the presence of prestigious universities and research institutions in the eastern region attracts highly educated workers seeking further and higher education opportunities.

Age is also correlated with region. The results show that younger (less than 30 years old) migrant workers have a higher probability of migrating to the eastern region compared to those who are middle-aged or older. This result is consistent with Fielding's (1992) findings that young migrants move to more economically developed areas to accelerate their career advancement. The results of Model 1 indicate that migrant workers with hometown land rights are more likely to move to the eastern region than those without such rights. This may be due to their relatively stable economic foundation, which provides a safety net and enables them to take greater risks in search of better job opportunities and higher wages.

Migrant workers' migration characteristics are also associated with region. Model 1 indicates that the further migrant workers move, the more likely they are to go to the eastern region, holding all other variables constant. The second migration characteristic is elapsed duration. The results here show that migrant workers who have been in the local area for more than 10 years are more likely to be in the eastern region than in the central or western regions. This may be due to the fact that in addition to economic factors (wage levels, employment opportunities), public services and the living environment in the east may be more attractive for retaining migrants. In terms of wage levels, migrant workers with high wage levels tend to be in the eastern region rather than the other two regions. The eastern region of China is characterized by a more developed and diversified economy, with a greater concentration of advanced industries and service sectors that provide higher-paying employment opportunities. These industries typically require a higher level of skills and education, such as finance, technology, and manufacturing, thereby attracting a higher-skilled workforce. As such, migrant workers with high wage levels may be more inclined to seek employment in the Eastern region, where they are more likely to find job opportunities that provide better remuneration than those available in the central or western regions. In addition, migrant workers in the eastern region are more likely to be employees and employers.

The next research strategy is to explore the relationship between migrant workers' family structure and destination city type (Model 2 in Table 4). The results show that although the coefficient on the variable couple migration is not statistically significant, families are more likely to migrate to small cities than lone migrants. The preference entire families have for small cities could be attributed to several factors identified in previous research. Small cities often offer a more family-friendly environment, with lower property prices and living costs, making them attractive options for families with limited financial resources (Wang et al., 2017). These factors contribute to the attractiveness of smaller cities with more lenient *hukou* regulations as optimal destinations for family migrants in search of stability, affordability, and a nurturing environment for the well-being and development of their children.

In Model 2, the coefficient for the female dummy is negative and statistically significant, indicating that female migrant workers are more likely to move to mega cities than to small and medium-sized cities, in comparison to their male counterparts. This could be because the service sector, which employs more female migrant workers, is more developed in mega cities. The results of Model 2 also demonstrate that the more educated the migrant worker, the more likely they are to live in a mega city. This may be because higher education equips movers with specialised skills that are in greater demand in large cities. In terms of age, older migrant workers are more likely to be in mega cities than in small and medium-sized cities. A positive coefficient on the variable land rights means that migrant workers who have land rights in their hometown are more likely to be in small cities.

Most of the destination characteristic variables introduced in Model 2 were statistically significant. The coefficient on the migration distance variable is mostly negative and increases in value, which means that as the distance travelled by migrant workers increases, the likelihood of their destination being a mega city also increases. In addition, the results of the model show that the longer the duration of migration, the higher the likelihood of migrant workers being in a mega city. This may be due to the fact that the economic and public service advantages of mega cities make it more desirable for migrants to stay here for longer periods. The coefficient on the variable wage level is negative and significant, which means that higher wages are more common for migrant workers in mega cities. There are two possible explanations for this phenomenon: either the higher wages in mega cities attract migrant workers, or the higher cost of living in these cities means that only higher-paid migrant workers can afford to live there. The next variable is employment status and the results show that migrant workers in mega cities are more likely to be employers and employees.

Next, we combined the city ('mega' or 'small') and region ('eastern' or 'central', 'western') variables into four categories (eastern mega, eastern small, central/western mega, central/western small) as dependent variables for additional multinomial regressions. The results are shown below in Table 5. Here, most of the coefficients on the core variable family structure are statistically significant, implying that destinations do vary by family structure, holding other factors constant. Table 6 further shows the predicted probabilities of destinations for different family structures considering other variables at observed values. Clearly, the differences across destinations tend to be more substantial compared to differences in family structures, even though the disparities among various family structures were statistically significant. Most migrant workers tend to migrate to smaller cities in all regions. Moreover, of the four destination types, couples are the most likely to move to the eastern mega cities. Smaller cities in the central/western are the most attractive to family-based migrants and lone migrants.

Table 5
Multinomial model of destination (Region and City).

Destination	Model 3(ref = Eastern Mega)		
	Eastern small	Central/Western mega	Central/Western small
Family Structure (Lone = 1)			
Couple	0.0704*	−0.483***	−0.260***
	(2.46)	(-9.17)	(-9.45)
Entire Family	0.307***	−0.175***	0.0857***
	(11.35)	(-3.67)	(3.32)
Gender (Male = 1)			
Female	−0.156***	−0.281***	−0.472***
	(-7.84)	(-7.47)	(-24.34)
Education (Primary = 1)			
Middle School	−0.338***	−0.192***	−0.611***
	(-12.38)	(-3.70)	(-23.31)
College and above	−1.067***	−0.566***	−1.162***
	(-30.00)	(-8.46)	(-34.29)
Age Group (less than 30 = 1)			
30–50	−0.00158	−0.0871*	−0.0488*
	(-0.07)	(-2.07)	(-2.21)
Over 50	−0.256***	0.255***	−0.121***
	(-7.06)	(4.08)	(-3.57)
Land Right(without = 1)			
With	0.365***	0.0533	−0.128***
	(17.92)	(1.41)	(-6.59)
Migration Distance (Under 200 km = 1)			
200–500 km	−0.775***	−1.334***	−1.213***
	(-28.32)	(-32.16)	(-46.72)
Over 500 km	−0.618***	−2.350***	−1.236***
	(-24.11)	(-49.15)	(-50.54)
Duration (less than 3 years = 1)			
3–10 years	−0.319***	−0.373***	−0.255***
	(-14.82)	(-9.65)	(-12.05)
Over 10 years	−0.778***	−1.115***	−0.720***
	(-30.78)	(-21.74)	(-29.43)
Employment status (Unemployed = 1)			
Employee	−0.450***	−1.201***	−1.881***
	(-11.41)	(-16.17)	(-49.72)
Employer	−0.410***	−0.382***	−0.811***
	(-10.61)	(-5.38)	(-22.33)
Wage (less than 3000 yuan)			
3000–8000	−0.157***	−0.588***	−0.747***
	(-6.81)	(-13.82)	(-33.34)
Over 8000	−0.801***	−1.051***	−1.628***
	(-22.84)	(-15.85)	(-47.93)
Constant	2.136***	1.964***	4.985***
	(32.86)	(17.11)	(80.01)
N		108,872	
Pseudo R2		0.0795	
AIC		233089.8	
BIC		233579.3	

*t statistics in parentheses, *p < 0.05, **p < 0.01, ***p < 0.001*

Table 6
The predicted probabilities of destinations for different family structures.

Destination	Family structure	Margin	P > z	95% Conf. interval	
Eastern mega	Lone	0.193	0	0.187	0.199
	Couple	0.212	0	0.208	0.216
	Entire Family	0.171	0	0.168	0.174
Eastern small	Lone	0.271	0	0.265	0.278
	Couple	0.323	0	0.318	0.328
	Entire Family	0.323	0	0.319	0.326
Central/Western mega	Lone	0.051	0	0.048	0.054
	Couple	0.036	0	0.034	0.038
	Entire Family	0.038	0	0.037	0.040
Central/Western small	Lone	0.485	0	0.477	0.492
	Couple	0.429	0	0.424	0.434
	Entire Family	0.469	0	0.465	0.472

4.3. Changing family structures

Traditionally, many Chinese migrant workers migrated in a stepwise manner through a gradual and phased process over an extended period of time (Chan, 2012). The initial migrant is often a young male adult who seeks employment in the city and may live in shared accommodation with other migrants to reduce living expenses. As they establish themselves and accrue savings, they may then bring additional family members to the city (Fan et al., 2012). This process can extend over several years, as successive family members join the initial migrant in the urban location. The ultimate objective is to establish a permanent family residence in the city, where all family members can reside together (Yuan et al., 2019). This step-by-step approach to internal migration effectively mitigates the financial and practical challenges of relocating an entire family in a single move. Thus, we now turn to explore how changing family structures relate to the geography of married migrants with children across China.

Using CMDS data about the place of residence and the time of each family member's migration, we classified family structures into six dynamic categories: always lone (lived alone in destination up to the survey sweep), from lone to couple, from lone to entire family, always couple, from couple to entire family, always entire family. For example, if the spouse migrated after the respondent but the children still live in the hometown, they are categorized as 'from lone to couple'. Table 7 shows that more than 37% of migrant workers moved with their families at the very beginning. Also, it is worth noting that the family structure of most migrant workers rarely changes significantly (14.9% + 24.7% + 37.5% = 77.1%). This suggests that stepwise migration behaviour is gradually beginning to shift in China.

This new set of family structure variables was introduced into the logistic regression and the results are shown below (Table 8). Model 4 begins by examining the relationship between dynamic family structure and destination type. The model includes a reference category for destination (eastern region) and family structure (always lone), and other five categories are based on family structure at the time of the survey. The coefficients suggest that households that always consist of an entire family do not differ significantly in their destination region choice from those that are always lone migrants. The coefficients for all other categories are statistically significant and negative. This indicates

Table 7
The distribution of family structures.

Family Structure	Freq.	Percent
Always lone	16,178	14.86
From lone to couple	6287	5.77
From lone to entire family	13,917	12.78
Always couple	26,854	24.67
From couple to entire family	4841	4.45
Always entire family	40,795	37.47
Total	108,872	100

Table 8
Binomial logit models of destination (Region and City).

Destination	Model 4 (ref = eastern region)	Model 5 (ref = mega cities)
Family structure (ref = always lone)		
From lone to Couple	−0.606***	−0.260***
	(-18.40)	(-7.74)
From lone to Entire Family	−0.448***	−0.0578*
	(-17.55)	(-2.10)
Always Couple	−0.241***	0.0521*
	(-11.09)	(2.13)
From couple to Entire Family	−0.339***	−0.153***
	(-9.58)	(-3.93)
Always entire family	0.00410	0.372***
	(0.20)	(15.98)
Gender (Male = 1)		
Female	−0.356***	−0.287***
	(-25.11)	(-17.48)
Education (Primary = 1)		
Middle School	−0.346***	−0.449***
	(-19.56)	(-19.91)
College and above	−0.448***	−1.004***
	(-17.90)	(-34.74)
Age Group (less than 30 = 1)		
30–50	−0.109***	−0.0611**
	(-6.70)	(-3.25)
Over 50	−0.00134	−0.277***
	(-0.05)	(-9.48)
Land Right(without = 1)		
With	−0.335***	0.0823***
	(-23.21)	(4.98)
Migration Distance (Under 200 km = 1)		
200–500 km	−0.702***	−0.636***
	(-40.49)	(-30.73)
Over 500 km	−0.880***	−0.443***
	(-55.07)	(-22.74)
Duration (less than 3 years = 1)		
3–10 years	−0.00385	−0.156***
	(-0.26)	(-8.71)
Over 10 years	−0.138***	−0.436***
	(-7.35)	(-20.25)
Employment status (Unemployed = 1)		
Employee	−1.559***	−1.044***
	(-53.19)	(-32.89)
Employer	−0.558***	−0.612***
	(-19.89)	(-19.87)
Wage (less than 3000 yuan)		
3000–8000	−0.619***	−0.356***
	(-39.35)	(-18.85)
Over 8000	−1.096***	−1.077***
	(-41.47)	(-38.09)
Constant	2.940***	3.447***
	(65.64)	(67.33)
N	108,872	108,872
Pseudo R2	0.0943	0.0635
AIC	136734.3	109069.4
BIC	136926.2	109261.4

*t statistics in parentheses, *p<0.05, **p<0.01, ***p<0.001*

that, compared to “always lone” migrants, migrants with the other four family structures are more likely located in the eastern region over the central or western regions. Table 9 illustrates this further by showing the predicted probabilities of destinations for different family structures, considering other variables at observed values.

By comparing the three initial migration structures - "Always lone," "From lone to couple," and "From lone to entire family", our results suggest that lone migrants are initially more inclined to choose the central or western regions as their destination. When compared with "Always lone" migration, migrants who later bring their spouse along tend to exhibit a higher likelihood of moving towards the eastern region. Moreover, those migrant workers who gradually bring their children to the destination tend to show a stronger inclination towards the central and western regions. Furthermore, by comparing the three paths of family migration (From “lone to Entire Family”, “From couple to Entire Family”, and “Always entire family”), we can observe that migrant workers who initially undergo full family migration exhibit the lowest inclination to migrate to the eastern regions.

Model 5 in Table 8 of the study employed a logistic regression model to explore the relationship between family structure and destination city among married migrant workers with children. Here the coefficients for most categories are statistically significant, indicating that there are significant differences in destination city types among migrant worker with different family structures. Based on the predicted probabilities presented in Table 10, migrant workers who initiate their migration as a full family have the lowest likelihood of migrating to mega cities as opposed to smaller cities. Comparing the three migration modes that start with individual migration, the results indicate that migrant workers who transition from individual migration to including their spouse are more inclined to settle in mega cities.

Lastly, we again combined the city (’mega’ or ’small’) and region (’eastern’ or ’central’, ’western’) variables of the destination into four categories and used this as the dependent variable for the regressions. Table 11 presents the results (Model 6). Here the estimates indicate that there are significant differences in destinations among migrant workers with different family structures. Table 12 further displays the predicted probabilities to provide a more intuitive understanding of the destination variations among migrant workers with different migration paths.

Particularly, comparing the three consistent migration patterns, "Always lone," "Always couple," and "Always entire family," the latter has the lowest likelihood of migrating to major cities in the eastern region, while "Always entire family" has the highest probability. This outcome aligns with the findings of our Model 3. Moreover, individuals who always live alone display a lower tendency to relocate to major cities within the eastern region. Nevertheless, this probability rises for those who subsequently migrate with their spouse. However, in the case of migrants who also relocate with their children, this likelihood diminishes, though it remains higher than the preference for exclusively family migration. This finding may be explained by the psychological pressure and greater risk associated with lone migration, which reduces migrant workers’ willingness to work in economically developed areas. The higher willingness of couples to seek job opportunities in the most developed areas to obtain higher wages may be driven by their greater capacity to tolerate the associated risks and uncertainties. However, when they bring their children along, this significantly increases the family’s economic burden and may require one parent to leave the job market to care for the children, which reduces their willingness to choose economically developed areas.

Moreover, when further comparing the two types of couple

Table 9
The predicted probabilities of eastern region for different family structures.

Eastern Region	Margin	P > z	95% Conf. interval	
Always Lone	0.466	0	0.458	0.473
From Lone to Couple	0.598	0	0.587	0.610
From Lone to Entire Family	0.564	0	0.556	0.573
Always Couple	0.519	0	0.513	0.525
From Couple to Entire Family	0.541	0	0.527	0.554
Always Entire Family	0.465	0	0.460	0.469

Table 10
The predicted probabilities of mega cities for different family structures.

Mega City	Margin	P > z	95% Conf. interval	
Always Lone	0.244	0	0.237	0.250
From Lone to couple	0.292	0	0.281	0.302
From Lone to entire family	0.254	0	0.247	0.261
Always Couple	0.235	0	0.230	0.240
From Couple to Entire Family	0.271	0	0.259	0.284
Always Entire family	0.185	0	0.181	0.189

Table 11
Multinomial model of destination (Region and City).

Destination	Model 6 (ref = eastern mega)		
	Eastern small	Central/Western mega	Central/Western small
Family structure (ref = always lone)			
From lone to Couple	−0.0806*	−0.767***	−0.642***
	(-2.01)	(-8.57)	(-15.72)
From lone to Entire Family	0.0894**	−0.729***	−0.365***
	(2.66)	(-10.41)	(-11.16)
Always Couple	0.131***	−0.381***	−0.148***
	(4.36)	(-6.92)	(-5.10)
From couple to Entire Family	−0.000138	−0.253**	−0.356***
	(-0.00)	(-2.87)	(-7.65)
Always entire family	0.479***	0.0607	0.340***
	(16.43)	(1.21)	(12.25)
Gender (Male = 1)			
Female	−0.159***	−0.286***	−0.476***
	(-7.98)	(-7.60)	(-24.44)
Education (Primary = 1)			
Middle School	−0.328***	−0.170**	−0.594***
	(-12.00)	(-3.28)	(-22.58)
College and above	−1.045***	−0.518***	−1.119***
	(-29.29)	(-7.71)	(-32.85)
Age Group (less than 30 = 1)			
30–50	−0.0386	−0.162***	−0.120***
	(-1.70)	(-3.82)	(-5.38)
Over 50	−0.299***	0.152*	−0.206***
	(-8.16)	(2.40)	(-5.99)
Land Right(without = 1)			
With	0.373***	0.0608	−0.117***
	(18.23)	(1.61)	(-6.01)
Migration Distance (Under 200 km = 1)			
200–500 km	−0.769***	−1.327***	−1.203***
	(-28.05)	(-31.94)	(-46.14)
Over 500 km	−0.603***	−2.331***	−1.211***
	(-23.50)	(-48.68)	(-49.33)
Duration (less than 3 years = 1)			
3–10 years	−0.275***	−0.300***	−0.178***
	(-12.60)	(-7.69)	(-8.34)
Over 10 years	−0.680***	−0.936***	−0.545***
	(-25.93)	(-17.75)	(-21.46)
Employment status (Unemployed = 1)			
Employee	−0.431***	−1.171***	−1.851***
	(-10.91)	(-15.74)	(-48.70)
Employer	−0.414***	−0.395***	−0.820***
	(-10.71)	(-5.55)	(-22.47)
Wage (less than 3000 yuan)			
3000–8000	−0.148***	−0.575***	−0.733***
	(-6.44)	(-13.50)	(-32.61)
Over 8000	−0.788***	−1.021***	−1.605***
	(-22.42)	(-15.37)	(-47.03)
Constant	2.075***	1.882***	4.898***
	(31.85)	(16.37)	(78.36)
N		108,872	
Pseudo R2		0.0831	
AIC		232195.3	
BIC		232771.1	

*t statistics in parentheses, *p<0.05, **p<0.01, ***p<0.001*

Table 12
The predicted probabilities of destinations for different family structures.

Destination	Family structure	Margin	P > z	95% Conf. interval	
Eastern Mega cities	Always Lone	0.193	0	0.187	0.199
	From Lone to Couple	0.256	0	0.246	0.266
	From Lone to Entire Family	0.220	0	0.214	0.227
	Always Couple	0.199	0	0.194	0.204
	From Couple to Entire Family	0.223	0	0.212	0.234
	Always Entire Family	0.144	0	0.141	0.148
Eastern small cities	Always Lone	0.271	0	0.265	0.278
	From Lone to Couple	0.341	0	0.329	0.352
	From Lone to Entire Family	0.343	0	0.335	0.351
	Always Couple	0.320	0	0.315	0.326
	From Couple to Entire Family	0.318	0	0.305	0.330
	Always Entire Family	0.320	0	0.315	0.324
Central/Western Mega cities	Always Lone	0.051	0	0.047	0.054
	From Lone to Couple	0.034	0	0.029	0.039
	From Lone to Entire Family	0.030	0	0.027	0.033
	Always Couple	0.037	0	0.035	0.039
	From Couple to Entire Family	0.048	0	0.042	0.054
	Always Entire Family	0.040	0	0.038	0.041
Central/Western Small cities	Always Lone	0.485	0	0.477	0.492
	From Lone to Couple	0.369	0	0.357	0.381
	From Lone to Entire Family	0.407	0	0.399	0.415
	Always Couple	0.444	0	0.438	0.449
	From Couple to Entire Family	0.411	0	0.398	0.425
	Always Entire Family	0.497	0	0.492	0.501

migration (transitioning from lone to couple migration and those always couple migration), we found that the latter has a significantly decreased likelihood of moving to economically developed eastern big cities. This might be because they previously lacked migration experience, and therefore avoid choosing large cities with higher living pressures as destinations. For the former, since one spouse already has migration experience, their knowledge can be beneficial in helping the other spouse better integrate into the local community, making them more inclined to choose economically developed areas as their destination.

5. Conclusion

Massive flows of rural-to-urban migrants have powered China's transformation into an urbanised economic superpower. However, in contrast with Global North countries, the family structures of internal migrants in China are much more diverse. Historically and in line with NELM theories, it has been commonplace for lone (predominantly male) migrants to leave their families behind in rural areas in order to seek employment in rapidly industrialising cities. The relaxation of the hukou system in most cities in recent years coupled with labour market change has, however, meant that while individuals and couples still leave their families behind to move for work, increasingly entire families are now moving together and reunifying in cities (Démurger & Xu, 2015). As little is known about how migrants' family structures relate to their destination locations, in this paper we harnessed a large survey dataset to explore these issues specifically for married migrants with children, as for this demographic moving either means dividing up the family unit or undertaking a costly, disruptive and complex entire family relocation.

Several conclusions emerged from the analyses. Firstly, even after controlling for other factors we find that the destination of migrant workers is related to their family structures. Specifically, couples with left-behind children are over-represented in economically developed regions and cities, whereas entire family migrants are more common in smaller cities and less developed areas. Couples who migrate together may prioritize economic opportunities for themselves and their families. They may choose to migrate to economically developed regions and cities where they believe they can find better-paying jobs. Despite the higher cost of living in economically developed regions, migrant workers often employ various non-family friendly means to mitigate living expenses, for example relying on employer-provided accommodation such as cheap or free dormitories or sheds (Tao et al., 2014).

Our research has also found that when migrant workers bring their

children with them, they tend to choose destinations that are less economically developed. On the one hand, this is due to economic considerations, as bringing children increases costs of living in the city. On the other hand, our study suggests that when the entire family migrates together, the focus is no longer solely on economic benefits, but gradually shifts to prioritizing the quality of life. The high cost of housing in eastern mega cities often leads to migrant workers, particularly couples or lone movers, being short-term movers who prioritize attaining the highest economic utility. However, when migrant workers bring their children with them, they may have a stronger intention to settle down and provide a stable and higher quality living environment for their children's development. Moreover, due to the household registration system are more challenging in mega cities compared to smaller ones. Those might lead migrant workers who are relocating their entire families to lean towards smaller cities.

Furthermore, this study found that migrant workers with different migration paths have distinct preferences for their destinations. Among those who choose to migrate with their entire families from the outset, there's a tendency to not gravitate towards economically developed areas and cities. This aligns with the conclusion mentioned above, suggesting that they might prioritize quality of life over wage levels. Further comparing the three migration paths that begin with lone migration, it's found that migrant workers who transition from lone to couple migration have a higher likelihood of moving to economically developed eastern regions and mega cities. This might be driven by the pursuit of greater economic benefits. Moreover, comparing the two types of couple migration (transitioning from lone to couple migration and those always couple migration), this paper found that couples consistently migrating together are less likely to move to economically developed eastern cities. This reluctance may stem from their lack of prior migration experience and the desire to avoid cities with greater living pressures. In contrast, couples where one partner has migration experience are more likely to opt for these developed areas, leveraging their experience to help the other spouse integrate. The finding also highlights the importance of family dynamics and social factors in shaping migration decisions, providing a more comprehensive perspective on the factors that influence destination beyond purely economic considerations. It also emphasizes the importance of considering how these choices evolve as migrants' circumstances and priorities change over time.

Although this paper has documented clear patterns in married migrants' family structures across space, the cross-sectional nature of our data makes it difficult to explain the temporal migration dynamics that lie behind these general patterns. Future research should use longitudinal data to examine how migration destination selection and migrants' choices of family structure in destination are shaped by geographical opportunities and constraints such as differentials in wage rates and living costs as well as the geography of family networks. This would yield new insights on the rapid but spatially uneven changes in family migration behaviour that are occurring in contemporary China.

Author statement

Yufeng Wu: Conceptualization, Methodology, Formal analysis, Writing - Original Draft.

Rory Coulter: Writing - Review Editing, Supervision, Project administration.

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Declaration of competing interest

The authors declare no conflict of interest.

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