

Rushed to the altar: The effect of social interactions on migrant workers' marriage

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ABSTRACT: This paper provides novel evidence that social interactions of rural-to-urban migrants can enforce traditional norms. Using variation of social pressure to conform to rural norms from migrants from the same hometown in the workplace, I find that the concentration of same-origin co-workers substantially increases the likelihood of early marriage for female rural-to-urban migrants in China, but not for male migrants. Consistent with the norm-based explanation for the association between social interactions and early marriage, the gender-differential effect is more pronounced for migrants from regions with more traditional gender norms. The effect is not driven by matching or self-selection into social interactions.

Key words: social interactions, co-workers, marriage, rural-to-urban migrants

JEL classification: D91, J12, J16, R23

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1. Introduction

China's fast-growing cities have attracted a large number of rural migrants. Due to their disadvantaged positions in cities, migrant workers typically form social networks based on their place of origin to share information and resources. Previous literature has mainly focused on the economic consequences of concentration of migrants from the same origin (e.g., [Edin, Fredriksson and Åslund, 2003](#); [Munshi, 2003](#)). At the same time, migrant networks can also affect individual behaviour through social interactions and pressure. Given the large discrepancy in economic development as well as norms between rural and urban China, it can have an important consequence for rural-to-urban migrants if social interactions pressure them to adhere to norms from agricultural societies, which may no longer be optimal in cities.

This paper provides novel evidence that social interactions of rural-to-urban migrants can enforce rural norms by examining the marriage decisions of migrant workers in China. I use variation in social pressure to conform to the rural norm of early marriage from migrants from the same rural origin in the workplace. Given the strong ties based on kinship and common origin in Chinese society, co-workers from the same rural place can pressure migrant workers to abide by rural norms even when they now live in an urban setting. Compared to friendship, co-workers are less subject to selection bias because individuals have less control over the origin of their co-workers and self-selection into co-workers, if any, is unlikely to be driven primarily by a preference of early marriage.¹ By examining rural-to-urban migrants, the effect of cultural norms can be isolated from that of rural occupations. Because the social norm of early marriage is much more pronounced for females in agricultural societies than for males, I examine the effect separately by gender, which also helps to difference out the part of selection bias that is identical for males and females.

Using a discrete-time hazard model, I find that intensive social interactions (with the majority of co-workers from the same hometown) compel female migrants to abide by norms from their hometown, thereby increasing their probability of getting married before age 22 from 0.21 to 0.43.² Conditional on getting married before 40, women with the majority of co-workers from the same hometown are estimated to marry 2.5 years earlier than ones without any same-origin co-workers. For male migrants, however, the association between social interactions and early marriage is much weaker.

To further address selection bias in social interactions, I first use propensity score matching to control for selection on observables. I allow selection to vary by gender and compare individuals who differ only in terms of the composition of their co-workers but are otherwise equal and find that

¹As expected, the paper finds that same-origin co-workers do not pick up women's preference or tendency to marry early, whereas friendships with same-origin individuals are correlated with women's propensity to marry early.

²To put the number into perspective, extending the use of contraceptive pills to young unmarried women in the U.S. contributed to a reduction in the proportion of married college graduate women before age 26 from 0.7 for the cohort born in 1950 to 0.54 for the cohort born in 1957 ([Goldin and Katz, 2000](#)). Intensive social interactions between co-workers of the same rural origin increase the proportion of married female migrants before age 26 from 0.59 to 0.8.

the resulting discrepancy in the effect of social interactions by gender is at least as large.³

It is possible that selection may be based on unobservable characteristics that capture certain private preferences or tendencies for early marriage while propensity score matching only accounts for observables. For example, individuals with traditional values might have a preference for a workplace with same-origin co-workers and an inclination towards early marriage at the same time. However, if the concentration of same-origin co-workers has no real impact on marriage behaviour but instead captures these private preferences or tendencies for early marriage, we would expect a correlation between early marriage and current same-origin co-workers present even for female migrants who were married prior to entering the workplace. Reassuringly, both the significance level and point estimate drop to zero when we examine females who have been married before migration.⁴ In addition, I find that there is no correlation between the concentration of same-origin co-workers and female (and male) migrants being more traditional, as proxied by their self-identification with rural origin, when such identification predicts early marriage.

An alternative channel through which social interactions with co-workers of the same origin can affect marriage age is by increasing the likelihood of matching individuals who are similar. However, the findings that the effect of social interactions is much smaller for males and not stronger with a more skewed gender ratio of same-origin migrant workers suggest that matching is not the main mechanism. In addition, I find that female migrants, when surrounded with same-origin co-workers, are more likely to marry someone within the same workplace, regardless of whether or not he is from the same hometown.

In line with the norm-based explanation, I find that the gender discrepancy in the effect of social interactions on marriage age is larger for migrants from regions that hold more traditional views regarding women's role in society. In other words, the same degree of concentration of same-origin co-workers will have a greater impact on early female marriage if the individual under consideration and their co-workers are from more traditional regions.

The gender-biased effect of social interactions on marriage echoes the gender-differentiated cultural norms surrounding marriage that originated in agricultural societies. Through the extended era of agrarian economy in China, the practice of early marriage for females was prevalent, fostering the formation and transmission of the corresponding norm across generations.⁵ According to the 2010 China General Social Survey, compared to urban dwellers, people from rural areas have a

³Individuals are matched according to an extensive set of characteristics: occupation, educational attainment, age at start of the current job, whether it is the first job, whether the job was obtained through a referral, self-identity, age cohort, and the place of origin and destination.

⁴This contrasts with friendships formed in the current location with individuals from the same hometown. Such friendships are found to be correlated with early marriage among female migrants who were already married before migration.

⁵Historical records date back to the Western Zhou period (1046 BC–771 BC), during which the dynasty stipulated the maximum marriage age of 30 for males and 20 for females, requiring obligatory parental consent. During the reign of Emperor Hui (194 BC–188 BC), unmarried women between 15 and 30 years of age faced a tax equivalent to one year's consumption of crops.

greater tendency to believe that women's primary role is domestic, and that marrying a good husband is of paramount importance for women (Table A1). Such norms translate into behaviour. Individuals in rural areas tend to marry at earlier age compared to their urban counterparts, and such distinction is more pronounced for females than for males (Figure A1).

As individuals migrate from rural to urban China, securing jobs in manufacturing and services, the socio-economic environment that historically facilitated early marriage to operate ceases to exist. Despite this shift, behaviour may persist unchanged if individuals continue adhering to old norms, even as the cost of early marriage for women rises in the modern economy. I find that female migrants are more likely than their male counterparts to marry early if they continue to identify with their rural origin. More importantly, social interactions with co-workers from the same rural origin can exert pressure on individuals to conform to traditional norms, even when these norms are not internalised.

This paper contributes to the literature on peer effects and social pressure (e.g., Mas and Moretti, 2009; Bandiera, Barankay and Rasul, 2010; Burke and Sass, 2013; Cornelissen, Dustmann and Schönberg, 2017; Kondo and Shoji, 2019). I focus on a particular type of peers that is co-workers from the same place of origin. Hence, this paper relates to studies on labour market networks (e.g., Cingano and Rosolia, 2012; Hellerstein, Kutzbach and Neumark, 2014) and ethnic enclaves (e.g., Borjas, 1995; Edin, Fredriksson and Åslund, 2003; Munshi, 2003; Zhang and Xie, 2016), which have primarily been concerned with their economic benefits; and here I explore the social aspects of concentration of same-origin co-workers by showing that their social interactions can enforce rural norms.

In this respect, this paper also contributes to the literature regarding the persistent effect of cultural norms (e.g., Fernández and Fogli, 2006; Fisman and Miguel, 2007) and provides evidence on cultural persistence through social interactions.⁶ In particular, I use variations in co-workers from the same rural origin, who can place higher pressure on conformity to rural norms than co-workers from distinct origins, to identify cultural transmission through social interactions. In contrast to Munshi and Myaux (2006) where individuals update their beliefs about the prevailing cultural practice through social interactions, in my case, close social interactions prevent adaptation to changes in the environment by pressuring individuals to comply with the pre-existing norms.

In a broader context, the paper contributes to the literature and policy discussions on the gender gap in cities. Urbanisation provides unprecedented job opportunities for female migrants. Previous studies have found an association between labour market opportunities and delayed marriage and childbearing for women (Jensen, 2012; Heath and Mobarak, 2015). Nevertheless, social interactions with co-workers from the same hometown can compel female migrants into early marriages, a choice that may no longer align with their optimal preferences in light of enhanced career prospects. Policy

⁶Various mechanisms of cultural persistence have been identified in the literature. For example, Giuliano and Nunn (2020) find that cultural persistence and change hinge on the similarity of the environment across generations. Additionally, Bau (2021) finds that policies have the potential to alter cultural persistence.

interventions aimed at closing the gender gap, such as ensuring equal access to education and job opportunities, may face limitations in effectiveness when confronted with the strong social pressure for women to adhere to the traditional norm of early marriage.

The remainder of this paper is organised in the following manner. Section 2 introduces the institutional background of the emergence of a large number of migrant workers in China and their concentration based on place of origin. Section 3 describes the data. Section 4 presents the estimation method, result, and mechanism. Section 5 rules out alternative explanations. Section 6 concludes.

2. Institutional background

In this section, I provide an overview of the causes of the concentration of rural-to-urban migrant workers based on their place of origin in destination cities and its consequences.

The economic reform of China since 1978 set the momentum of a large-scale migration from rural to urban areas, fueled by an outburst of employment opportunities within urban manufacturing and service industries. The rural reform freed farmers from land, further facilitating migration into cities. The number of migrant workers totalled 252 million in 2011, of which 43.2% were concentrated in the Pearl River and Yangtze River Deltas (Figure A2).⁷

The *hukou* system serves as the institutional catalyst that gives rise to social interactions of migrant workers based on their place of origin. This housing registration system mandates individuals to be registered under their place of origin and classified as either rural or urban residents, which, in turn, is used to link individuals to local public welfare programs. The conversion to local *hukou* remains extremely difficult for rural-to-urban migrants (Song, 2014). Lacking *hukou* status in their cities of residence, migrant workers have limited access to local public goods and, therefore, have less bargaining power in the labour market (Song, 2014).⁸

Further, owing to the pre-existing developmental disparities between rural and urban China, migrant workers also stand out for their appearance and accent, contributing to their social exclusion within the city.⁹ Because of their disadvantageous positions in cities, most migrant workers take up jobs that do not appeal to the locals, characterised by long hours, poor working conditions, and low and unstable pays (Wang and Zuo, 1999). Moreover, because a strict migration restriction was implemented before 1978, the isolation created large socio-economic barriers to interaction (e.g., language, custom, income) for people from different parts of China. Therefore, migrant workers stay

⁷Source: the Chinese National Bureau of Statistics.

⁸Studies find that rural migrants face severe labour market discrimination and the estimates range from 28% to 60% income differentials even after controlling for observable characteristics (Liu, 2005; Deng, 2007; Gravemeyer, Gries and Xue, 2011; Lee, 2012).

⁹According to the 2010 survey on migrant workers, over 50% of the migrant workers reported discrimination by local residents and approximately 60% lacked of a sense of belongingness in the cities.

closely to their *tongxiang*—the Chinese word for people from the same hometown—to share networks, information, and resources.¹⁰

The motive to join a *tongxiang* network is usually financial, but the effect can go beyond pecuniary benefits. Regular interactions with individuals from the same rural origin can affect behaviour with social dimensions, such as marriage. Social interactions can increase the likelihood of finding a partner through increased opportunities for matching. In addition, marriage behaviour is often guided by social norms, making it susceptible to peer pressure. In the context of China's rural communities, characterised by strong ties based on kinship and common origin, individual behaviour tends to align closely within the social group of common origin.¹¹ This paper finds evidence for the latter channel—that social interactions affect marriage through social pressure to conform to the cultural norms of agricultural societies.

3. Data

The main analysis of this paper is based on survey data from interviews of a cross-sectional 4157 rural-to-urban migrant workers in China in 2010.¹² It took a representative sample of migrant workers working in the Yangtze and Pearl River Deltas in 2010.¹³ The quota sampling method was used to correct for representativeness in gender, occupation, and regional distribution of migrants, based on official statistical yearbooks. The data were used by [Zhang and Xie \(2016\)](#) to study the effect of the *tongxiang* network on migrant workers' wages; consequently, in the 2010 wave of the survey, they incorporated questions regarding relations with *tongxiang*, or people from the same hometown, information that had not been covered in previous surveys in China.

3.1 Measures of social interactions

The survey data contain information regarding the percentage of co-workers from the same province, county, and town, which are respectively first-, third- and fourth-level administrative units in China. In addition, we know whether the migrant worker's best friends in their current location are from

¹⁰Rural-to-urban migrants in China resemble the ethnic minorities in the U.S., and similarly respond to discrimination faced in destination cities by forming social networks based on their place of origin. Occasionally, this takes the form of *tongxiang* enterprises where hiring decisions are made according to people's place of origin, thereby resulting in a concentration of same origin co-workers within a particular workplace.

¹¹While co-workers or friends from the same origin may not be biologically related to the individual, they might still report individual behaviour to the closely connected rural community back home. This places individual behaviour under scrutiny within the context of kinship ties.

¹²The survey was part of a research project sponsored by the Ministry of Education in China with the aim of studying the status-quo of migrant workers and protecting their rights.

¹³According to the Chinese National Bureau of Statistics, the two regions have the highest concentration of migrant workers in China and together assimilated over 40% of total migrant workers in 2011. Figure A2 depicts the migration outflows to the Pearl and Yangtze River Deltas based on the survey data.

the same hometown, as identified by the respondents. In the survey, individuals were asked the following question:

Q1 On the production line (team) that you work, what is the proportion of people from the same town, county, or province?

(1) None, (2) Very few (<10%), (3) A few (10%–20%), (3) Some (20%–30%), (4) Many (30%–50%), (5) A lot (> 50%), (6) Do not know.

Table 1 presents the percentage of *tongxiang* co-workers in the same production line/team, defined by co-workers from the same town, county, or province, respectively. A sizeable proportion of people have over 30% of co-workers from the same region.

Table 1: Proportion of *tongxiang* co-workers

	None	Very few <10%	A few 10%–20%	Some 20%–30%	Many 30%–50%	A lot >50%
Town	0.483	0.265	0.091	0.072	0.040	0.050
County	0.412	0.265	0.117	0.091	0.053	0.061
Province	0.140	0.201	0.137	0.137	0.153	0.233

Notes: Based on the 2010 survey on migrant workers. The table presents the levels of the concentration of co-workers (in columns) from the same town, county, and province (in rows).

The concentration of *tongxiang* co-workers is my preferred measure of social interactions because it is a less endogenous choice than friendships. The concentration of co-workers based on the place of origin can be a result of the close proximity between the origin and destination cities, a large out-migration population from the origin, or employers' preferential hiring of *tongxiang*, which is likely to be orthogonal to the decision on the age of marriage.

Moreover, the concentration of co-workers is a good proxy for social interactions because migrant workers spend a substantial amount of time with their co-workers. According to the same survey, the average working hours are 9.3 hours per day on an average 6-day working schedule. In addition, 32% of total migrant workers even work 7 days a week. The intensity of the working schedule results in the intensity and closeness of social interactions within the workplace. Migrant workers have numerous opportunities to socialise (Fang, 2012). For example, 36% of total migrant workers live in the dormitory provided by their employers and the percentage increases to 49% for individuals who are single; 62% of workers dine in the canteen of the workplace.

Another potential measure of social interactions is migrant workers' self-perceived friendship with *tongxiang*. In the survey, respondents were asked to identify three of their best friends in their current location and whether each friend is from the same hometown. The data indicate that a considerable proportion of people have *tongxiang* as their best friends. The proportion of individuals whose first best friend is *tongxiang* is 0.37. If we consider three best friends, for 13% of

the individuals, all their best friends are *tongxiang*, and for 44% of the individuals, at least one of their best friends is *tongxiang*.

However, friendships are subject to a greater extent to selection bias. People choose who their friends are. Specifically, individual with more traditional values may be more likely to make friends with *tongxiang*. On the other hand, the concentration of co-workers is more exogenous to the outcome that I am attempting to evaluate. We would expect that the primary function of *tongxiang* enterprises is to advance the economic prospect of migrant workers rather than their marriage. The paper proceeds to demonstrate that self-selection into *tongxiang* co-workers is unlikely to correlate with a preference for early marriage, while self-selection into friendships is found to be associated with such a preference. Therefore, the main analysis is based on the concentration of *tongxiang* co-workers to study the effect of social interactions on marriage age.

3.2 Individual characteristics

The sample consists of 1895 females and 2252 males. After excluding observations that are either widower or divorced, a sample of 4093 individuals remains.

The average migrant worker in the sample has 9 years of education and migrated at an age of 19. The migration is typically temporary. Less than 25% migrant workers express a desire to convert to local *hukou*, not to mention the practical barriers to acquire one. The majority of individuals work in manufacturing and service industries with an almost equal number of male and female workers. There are significantly more males in construction than females although the total employment is only 308, which also makes up for the difference between the total number of females and males in the sample.¹⁴ Transportation assimilates the fourth largest employment with a balanced gender representation. The other sectors are relatively small and assimilate approximately 2% of workers (see Figure A3).

For the main analysis in Section 4, I proceed to show that the probability of early marriage depends on the prevalence of co-workers from the same rural origin for female migrant workers, but not for male migrants. One concern is that female migrant workers can sort into social interactions with *tongxiang* co-workers and have certain characteristics that make them marry early. Therefore, in Table A2, I present summary statistics detailing a wide range of individual characteristics by gender, as well as by the concentration of co-workers from the same town (i.e., over 30% *tongxiang* co-workers and less than 30% *tongxiang* co-workers).¹⁵ Sorting into *tongxiang* co-workers on observables does not differ between male and female migrants. Migrant workers with over 30% *tongxiang* co-workers have less education, it is more likely to be their first job, and the job was also more likely to be obtained through a referral. This holds true for both male and female migrant workers. While it may still be the case that even female and male migrants sort into *tongxiang*

¹⁴Estimation results in Section 4 are robust to exclusion of the construction sector.

¹⁵These include age, age at migration, age at start of the current job, distance to the destination city from hometown, education, wage, whether it is the first job, and whether it was a job obtained through a referral.

networks in a similar manner, the same individual characteristics can affect marriage behaviour differently by gender, in Section 5, I explicitly correct for selection on observables, separately for male and female migrants, showing that the gender-asymmetric effect of social interactions is not driven by this.

3.3 Complementary data

I use the 2010 Chinese General Social Survey which enquires about individual attitudes towards women's role in society to proxy for the differences in marriage norms in different parts of rural China. If social interactions pressure females into early marriages through cultural norms, the effect would be amplified by the strength of the norms.

4. Estimation method, result, and explanation

In this section, I first present the estimation method and result. I use the discrete-time duration model to examine the effect of social interactions on the distribution of marriage age and quantify the effect by translating the hazard rate to a cumulative distribution function. I then proceed to provide evidence that the association between social interactions with co-workers from the same hometown and early female marriage works through pressure to conform to rural norms.

4.1 Estimation of hazard rate

I examine the effect of social interactions on the probability of getting married at different ages. Alternatively, we can estimate the effect of social interactions by comparing average marriage ages, but this comparison would overlook individuals that have not been married in the sample. The fact that one has not been married and simultaneously has no co-workers of the same rural origin is also informative regarding the effect of social interactions on marriage age. Using a duration framework, which models probability of getting married conditional on not having been married earlier, allows us to incorporate this information as well as to closely examine the effect of social interactions on the entire distribution of the marriage age, in addition to the mean. I follow the specification of the logistic discrete-time duration model by [Bover, Arellano and Bentolila \(2002\)](#) and define the hazard rate of marriage as a function of the natural logarithm of age t :

$$h(t) = Pr(T_i = t | T_i \geq t) = G(\gamma_0 + \gamma_1(\ln t) + \gamma_2(\ln t)^2), \quad (1)$$

where

$$G(x) = \frac{\exp(x)}{1 + \exp(x)}. \quad (2)$$

The duration here is years to marriage. The hazard rate $h(t)$ is the conditional probability of getting married at age t , given that one has not been married before age t . The specification here allows the hazard rate to vary with age t .

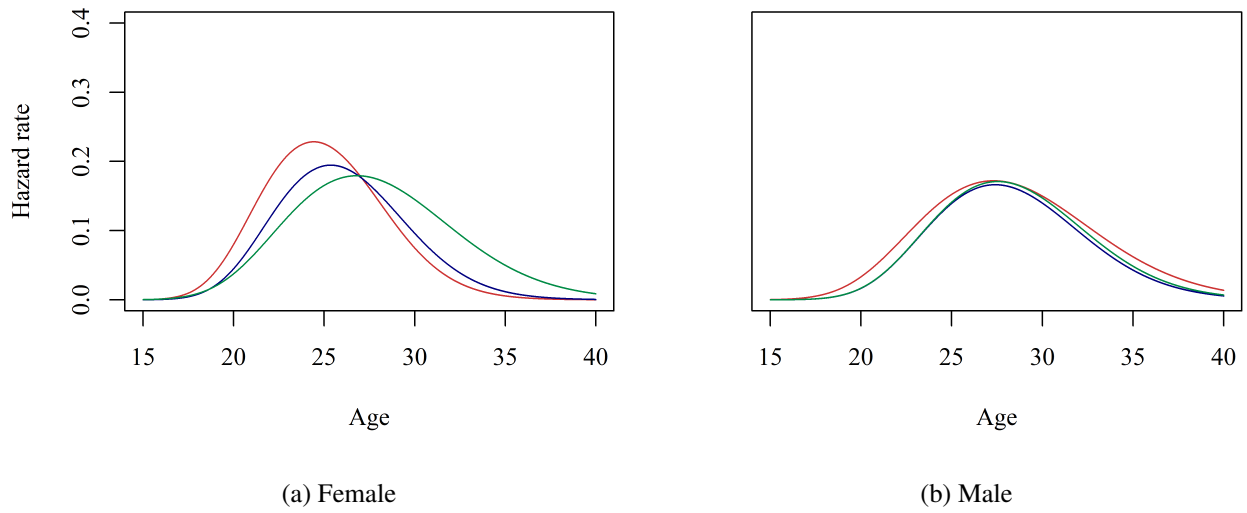


Figure 1: Estimated hazard rate: pc_town

green: none of the co-workers come from the same town
blue: 0–30% of the co-workers come from the same town
red: >30% of the co-workers come from the same town

I examine marriage hazard rates at different ages and also examine how they vary with the concentration of co-workers from the same hometown, separately for male and female migrant workers. Panel (a) of Figure 1 shows the estimated hazard rates for female migrant workers with different levels of concentration of co-workers from the same town (the fourth-level administrative unit in China). As the proportion of *tongxiang* co-workers increases, we see a gradual shift and intensification of exit (from singlehood) rate at early ages. This indicates that female migrant workers are more likely to marry early when they have a higher proportion of co-workers from the same hometown. In contrast, the concentration of *tongxiang* co-workers does not seem to affect the marriage age of male migrant workers, as shown in the right panel of Figure 1.

In Section 5.1, I use propensity score matching to control non-parametrically for an extensive set of individual characteristics (i.e., occupation, educational attainment, age at start of the current job, whether it is the first job, whether the job was obtained through a referral, *tongxiang* ratio in the city, self-identity, age cohort, and the place of origin and destination) and find similar gender-differentiated effects of *tongxiang* co-workers.

Similar gender-differentiated patterns emerge when examining co-workers from the same county, and the results are presented in the Appendix (Figure A4). The effect of co-workers from the same province is less clear (Figure A5). Given that the average area of a province in China is comparable to that of Germany and its average population is similar to that of Spain, there exists substantial heterogeneity within a province. Consequently, individuals might cease to identify people from the

same province as *tongxiang*.¹⁶

4.2 Estimation of cumulative distribution function

The estimated hazard rates provide an intuitive overview for the effect of social interactions on marriage age. However, they cannot be used to directly quantify the magnitude of the effect of social interactions. This is because the difference in hazard rates of marriage between the treated and control groups for any given age is a combination of the treatment effect of social interactions and the compositional differences between groups. At each point of time, as more marriageable individuals exit from singlehood and more individuals exit in the group with a higher concentration of *tongxiang* co-workers, the compositions of the remaining population change differently for groups with different proportions of *tongxiang* co-workers.¹⁷ As time goes by, people who remain unmarried in the group with more *tongxiang* co-workers are, on average, less marriageable than people in the group with less *tongxiang* co-workers. Consequently, the difference of hazard rates is likely to underestimate the treatment effect of social interactions, as the treated group with a higher proportion of *tongxiang* co-workers over time has a less marriageable population.

In order to rigorously quantify the treatment effect of social interactions, I translate the hazard rate into a cumulative distribution function, calculated in the following manner:

$$F(t) = 1 - \prod_{t=1}^T (1 - h(t)) , \quad (3)$$

where $F(t)$ is the proportion of individuals that get married or the probability that an individual gets married before age t . We can interpret the difference in this probability between individuals with more or less *tongxiang* co-workers as the treatment effect of social interactions.

Table 2 compares individuals that have over 30% or 50% of the co-workers from the same town with ones with none of the co-workers from the same town. The sample is restricted to individuals who get married after migration. For presentational purposes, the table only shows the probability of getting married before the ages of 20–30.¹⁸ In columns (1) and (4), I show the probability of getting married before a certain age for the baseline group for female and male migrants, respectively. The baseline group is migrant workers with none of the co-workers from the same hometown. The differences in columns (2), (3) for females and columns (5), (6) for males yield the effect of social interactions, which is the increase relative to the baseline group in the probability of getting married

¹⁶The average area of a province in mainland China is 352,033 km², excluding provincial level municipalities (i.e., Beijing, Shanghai, Tianjin, and Chongqing). The average population of a province was 46 million in 2010.

¹⁷This is evident from the fattening-out of the right-hand tail of the hazard rate for the group of female migrants with high levels of concentration of co-workers from the same rural origin.

¹⁸The probability of marriage can be calculated for all ages starting from 16, which is set to be the minimum marriage age.

Table 2: Marriage age and same-town co-workers—main analysis

Age	Probability of being married before a certain age					
	Female			Male		
	Baseline 0 same origin (1)	Difference >30% (2)	Difference >50% (3)	Baseline 0 same origin (4)	Difference >30% (5)	Difference >50% (6)
20	0.070	0.069* (0.039)	0.101 (0.079)	0.027	0.035* (0.019)	0.046 (0.025)
21	0.128	0.122** (0.048)	0.167** (0.081)	0.060	0.054** (0.026)	0.067* (0.032)
22	0.207	0.174*** (0.057)	0.227*** (0.084)	0.114	0.072** (0.031)	0.084** (0.038)
23	0.302	0.208*** (0.065)	0.261*** (0.089)	0.190	0.083** (0.036)	0.093** (0.046)
24	0.404	0.217*** (0.071)	0.265*** (0.093)	0.283	0.086** (0.041)	0.092* (0.054)
25	0.503	0.204*** (0.077)	0.245** (0.095)	0.385	0.081* (0.046)	0.082 (0.063)
26	0.591	0.177** (0.081)	0.212** (0.097)	0.483	0.071 (0.049)	0.069 (0.068)
27	0.664	0.145* (0.083)	0.174* (0.098)	0.571	0.060 (0.050)	0.056 (0.069)
28	0.722	0.114 (0.084)	0.139 (0.099)	0.644	0.050 (0.050)	0.046 (0.068)
29	0.767	0.087 (0.084)	0.109 (0.099)	0.701	0.042 (0.049)	0.038 (0.065)
30	0.801	0.064 (0.084)	0.084 (0.100)	0.745	0.037 (0.047)	0.034 (0.062)

Notes: The estimation is based on the sample of individuals married after migration. The baseline group is migrants without any co-workers from the same town. The difference is the increase in probability relative to the baseline group for migrants with over 30% or 50% of the co-workers from the same town. Bootstrap standard errors with 500 replicates are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

for migrant workers with over 30% and 50% of the co-workers from the same hometown. Bootstrap standard errors with 500 replicates are given in parentheses.¹⁹

A female migrant who does not have any *tongxiang* co-workers is expected to get married by 22 with a probability of 0.21 (column (1)). If, instead, the majority of her co-workers come from the same hometown, the likelihood of being married by 22 increases by 23 percentage points (column (3)). The effects on male workers, however, are much smaller (columns (5) and (6)).

¹⁹The estimation of duration model generates $t-15$ (the minimum marriage age is set to be 16) observations for individuals who get married at age t and generates the number of observations that equals one's age minus 15 if the individuals is not married. The bootstrap error is calculated by clustering at the individual level. Clustered bootstrapping is equivalent to taking a random sample of individuals from the original sample (with replacement) and generates the above-mentioned expanded sample each time.

As a placebo test, we can make the identical calculation for individuals who have already been married before migration. If social interactions have no real impact on marriage behaviour, but instead capture certain private preferences or tendencies for early marriage, we would expect a correlation between early marriage and social interactions with same-origin co-workers even among females who were already married before entering a workplace with *tongxiang* co-workers. In Table 3, I estimate the treatment effect of social interactions with current *tongxiang* co-workers, but look at individuals who were already married before migrating into a city. Now, the effect of social interactions disappears for females (columns (2) and (3)). Not only does the significance level fall to zero but so do the point estimates. The concentration of *tongxiang* co-workers does not predict past marriage age, showing that social interactions have a real impact on behaviour rather than capturing certain preferences or tendencies for early marriage.

Notice that for male migrant workers who were married before migration, the estimated association between social interactions and early marriage is slightly positive but very similar to the results for migrants who marry after migration. This implies positive sorting for male migrants, yet nearly all of this positive association disappears once the selection on observables is taken into account, as detailed in Section 5.2.

In Table A5, I present additional results using alternative thresholds for the concentration of same-town co-workers. Specifically, female migrants with over 10% or 20% of co-workers from the same hometown also have a higher probability of early marriage than females without any *tongxiang* co-workers, and as expected the effects appear more modest than the results at higher thresholds (i.e., 30% and 50% same-town co-workers). Consistent with Figure 1, the effect of social interactions increases with the fraction of same-town co-workers.

The estimation results using same-county co-workers (Table A6, Table A7 and Table A8) show similar patterns: (1) female migrant workers with co-workers from the same rural origin are more likely to marry early, (2) the effect is stronger with a higher fraction of same-origin co-workers, (3) the effect is much smaller for male migrants, and (4) the association between same-origin co-workers and early marriage is not present for female migrants who have been married before migration, ruling out spurious correlation.

By comparison, Table A3 and Table A4 show the estimates using the friendship measure. The gender-differentiated effects of social interactions are similar as to those of co-workers. For a female migrant worker who marries after migration, she is more likely to marry early if her best friend in her current location is from the same hometown. The effect for male migrants is smaller.²⁰ Interestingly, if we focus on individuals who have been married before migration, there is still a positive association between early marriage and same-origin best friends for female migrant workers. This indicates, contrary to co-workers, friendship with *tongxiang* is subject to selection in the same direction of early marriage for female migrant workers. Put differently, female migrants with an

²⁰Note also that the estimated effect of best friends from the same hometown is smaller than the effect of 50% co-workers from the same hometown and comparable to the effect of 10% co-workers from the same hometown.

Table 3: Marriage age and same-town co-workers—placebo analysis

Age	Probability of being married before a certain age					
	Female			Male		
	Baseline 0 same origin (1)	Difference >30% (2)	Difference >50% (3)	Baseline 0 same origin (4)	Difference >30% (5)	Difference >50% (6)
20	0.285	−0.039 (0.054)	−0.063 (0.228)	0.159	0.084* (0.044)	0.100* (0.056)
21	0.437	−0.036 (0.064)	−0.032 (0.190)	0.267	0.096* (0.055)	0.102 (0.070)
22	0.594	−0.028 (0.070)	0.011 (0.144)	0.398	0.093 (0.063)	0.087 (0.081)
23	0.731	−0.021 (0.070)	0.040 (0.104)	0.536	0.079 (0.066)	0.061 (0.086)
24	0.835	−0.016 (0.063)	0.046 (0.073)	0.662	0.059 (0.063)	0.034 (0.083)
25	0.904	−0.013 (0.051)	0.038 (0.047)	0.765	0.040 (0.055)	0.011 (0.076)
26	0.946	−0.011 (0.038)	0.026 (0.029)	0.841	0.025 (0.046)	−0.003 (0.065)
27	0.971	−0.010 (0.028)	0.016 (0.018)	0.895	0.014 (0.037)	−0.011 (0.054)
28	0.984	−0.008 (0.020)	0.009 (0.011)	0.930	0.008 (0.029)	−0.014 (0.044)
29	0.991	−0.007 (0.015)	0.005 (0.007)	0.953	0.004 (0.022)	−0.014 (0.035)
30	0.995	−0.006 (0.011)	0.003 (0.005)	0.967	0.002 (0.017)	−0.012 (0.028)

Notes: The estimation is based on the sample of individuals married before migration. The baseline group is migrants without any co-workers from the same town. The difference is the increase in probability relative to the baseline group for migrants with over 30% or 50% of the co-workers from the same town. Bootstrap standard errors with 500 replicates are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

inclination towards early marriage are more likely to form friendships in their current location with other migrants from the same hometown.

The results in this section indicate a causal link from the concentration of co-workers from the same rural origin to female early marriage, a relationship that does not seem to be impacted by spurious correlations, as observed in friendships. The next section proceeds to provide evidence for the underlying mechanism.

4.3 Effect of social interactions through cultural norms

Anecdotal evidence suggests that female migrant workers in the workplace face considerable social pressure to get married from social interactions with their co-workers. Fang (2012) depicts a vivid

picture of social interactions in an electronic factory in Shenzhen, Pearl River Delta:

On the factory floor, women have plenty chances to compare themselves to one another...Married women gossip aggressively about the unmarried, especially the 'old' ones, and the gossiping does not take into account any career performance. No matter how well an unmarried woman performs in her job or how high the job position she attains, she will still be singled out for her embarrassing unmarried status. In other words, she has simply 'failed' to marry.

Social interactions with co-workers from the same rural origin can exert much stronger social pressure to conform to rural norms of early marriage than interactions with co-workers from distinct origins who form looser relationships. While migrants with a diverse social network—whose members could be equally rural—can adapt to the new socio-economic environment in cities by marrying late, female migrant workers with the concentration of co-workers from the same rural origin may be pressured into early marriages.²¹

I provide two sets of evidence to bolster the idea that the effect of social interactions on marriage age works through social pressure to conform to the rural norm of early female marriage. First, I show a gender-differentiated reaction to rural norms in marriage behaviour. Female migrants who identify more with their rural origin are more likely to get married early. For male migrants, the association between rural identity and early marriage is much weaker. This indicates that the rural norm of early marriage, proxied by self-identification with rural origin, is more pronounced for females than for males.

While the first evidence establishes a gender-differentiated norm and links the norm with marital behaviour, the second set of evidence seeks to establish a link between social pressure to conform to norms and marital behaviour. If the concentration of co-workers from the same rural origin exerts pressure to conform to norms, then the effect will be stronger if the social pressure is higher (i.e., higher concentration of *tongxiang* co-workers) and if the norm is stronger (i.e., more traditional values on women). The results in Section 4.2 showed that the higher concentration of *tongxiang* co-workers, the earlier female migrants marry. Such effect of social interactions should be larger if the norm is stronger. Specifically, I show that the gender-differentiated response to the presence of *tongxiang* co-workers is stronger for those whose hometown have more conservative attitudes towards women's role in society.

Note that the second test should not be confused with a narrative suggesting that female migrant workers from more traditional regions are both more likely to sort into a workplace with *tongxiang* co-workers and more inclined to marry early at the same time. Instead, it examines, conditional on

²¹ Although the data do not contain information about the composition of local co-workers, it is likely that these co-workers are mostly migrant workers from other rural regions, given the segregated labour market for local residents and migrant workers (Wang and Zuo, 1999). The comparison, therefore, involves more same-origin co-workers versus those from other rural origins rather than the comparison between same-origin co-workers and local co-workers.

the same level of concentration, whether the effect is stronger when the norm is more pronounced. If only sorting occurs and the co-worker network exerts no social pressure on marriage behaviour, this test would yield a null result.

4.3.1 Farmer v.s. Worker Identity

Female migrant workers who identify with their rural origin internalise social norms in an agriculture society and may continue to behave according to rural norms when economic conditions change. I investigate this possibility in this section as supporting evidence that the gender-biased effect of social interactions is attributed to rural norms. Although in the sample, less than 1% of individuals work in the agriculture sector in cities, a large number of migrants still identify themselves as farmers because of their rural origin and rural *hukou*.

In the same 2010 survey of migrant workers, individuals were asked the following question:

Q2 Which of the following do you believe to be your identity?

(1) Farmer, (2) Worker, (3) Others, (4) Do not know.

Table 4 calculates the probability of getting married before a certain age by self-identity, separately for males and females, and only for individuals who get married after migration. The baseline groups are migrant workers who identify themselves as workers for females in column (1) and for males in column (3). I show the increase relative to the baseline in the probability of getting married for individuals who identify themselves as a farmer for females in column (2) and for males in column (4). Female migrants who recognise themselves as farmers are more likely to get married early (column (2)). For males, the association between rural origin and marriage age is much weaker (column (4)).

One concern is that people who identify with their rural origin may be more likely to associate with *tongxiang* co-workers. Consequently, the correlation between the prevalence of *tongxiang* co-workers and early marriage instead reflects the effect of self-identity on marriage behaviour. In Table A10, I regress the concentration of *tongxiang* co-workers on an indicator for self-identification as a farmer and find little correlation between the two. This also provides suggestive evidence that individuals do not self-select into same-origin co-workers based on the rural norm of early marriage, as proxied by self-identification with rural origin.²²

Another possibility is that self-identification with rural origin is correlated with occupations, which lead to early marriage. However, in the sample, less than 1% of individuals work in the agriculture sector. Self-perceived identity does not appear to be related to the actual jobs migrants take up. 64.06 % of people who regard themselves as farmers work in manufacturing compared

²²Another interpretation of the result is that social interactions do not fundamentally modify the values and beliefs of migrant workers. Females rush into early marriages under social pressure, without necessarily altering their self identities and preferences.

Table 4: Marriage age and identity

Age	Probability of being married before a certain age			
	Female		Male	
	Baseline Worker (1)	Difference Farmer (2)	Baseline Worker (3)	Difference Farmer (4)
20	0.076	0.035 (0.029)	0.035	0.003 (0.011)
21	0.135	0.060 (0.037)	0.070	0.009 (0.018)
22	0.214	0.086* (0.045)	0.124	0.020 (0.026)
23	0.307	0.105** (0.053)	0.197	0.034 (0.034)
24	0.406	0.113* (0.058)	0.283	0.048 (0.041)
25	0.502	0.108* (0.062)	0.376	0.059 (0.045)
26	0.588	0.095 (0.063)	0.466	0.065 (0.047)
27	0.660	0.077 (0.063)	0.547	0.067 (0.047)
28	0.718	0.058 (0.064)	0.616	0.064 (0.045)
29	0.763	0.041 (0.065)	0.672	0.059 (0.044)
30	0.798	0.026 (0.067)	0.716	0.053 (0.044)

Notes: The estimation is based on the sample of individuals married after migration. The baseline group is individuals who identify themselves as workers. The difference is the increase in probability relative to the baseline group for migrants who identify themselves as farmers. Bootstrap standard errors with 500 replicates are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

to 62.61% of people who self-identify as workers. For service, the second largest category, the comparison is 22.51% v.s. 23.92 %.

I find that for individuals who marry before migration, females who identify with their rural origin (responded in the survey after migration and marriage) have also married early but their male counterparts have not (Table A9). This is consistent with the notion that self-identity remains stable over time and is associated with a set of values and norms that endure for individuals. Female migrants who identify with their rural origin value early marriage, which is the norm in agricultural societies, and accordingly marry early. For males, as the norm of early marriage is not as strong, self-identification with rural origin does not translate into early marriages. Note also that the effect of farmer identity is weaker than the effect of same-origin co-workers. This may be due to either

(1) farmer identity being an imperfect measure of the social norm of early marriage, or (2) the intensifying and multiplying effects of social pressure on marital behaviour.

4.3.2 Traditional v.s. Non-traditional Provinces

If rural norms pressure females into early marriages in the presence of *tongxiang* co-workers, we would expect a stronger effect of social pressure when the norm is stronger. The strength of the norm can be proxied by views regarding women's role in different rural communities. I use the response in the 2010 China General Social Survey to the following question:

Q3 Do you agree that for females, it is more useful to have a good husband than a good career?
 (1) Completely disagree, (2) Disagree, (3) Indifferent, (4) Agree, (5) Strongly agree, (6) Do not know.

I divide provinces into two equal groups and code them as traditional and non-traditional provinces depending on the proportion of rural respondents who agree or strongly agree with the above statement (high proportion defined as traditional province, see Figure A8 for the province classification). I classify traditional provinces along the dimension of this question in the General Social Survey because it solicits the value of marriage compared to career for females, which is closely related to a preference of female early marriage. I compare the difference in the gender-differential of the effect of social interactions on marriage age between individuals from the traditional and non-traditional provinces. If we index social interactions by s , ns (s : majority of *tongxiang* co-worker; ns : no *tongxiang* co-workers); gender by M , H (M : female; H : male); and "traditionalness" by c , nc (c : traditional province; nc : non-traditional province); the triple difference of the effect of social interactions on the probability of getting married before age t is:

$$\begin{aligned} \Delta F(t) = & \underbrace{\left((F_{s,M,c}(t) - F_{ns,M,c}(t)) \right)}_{\text{effect on females from traditional prov.}} - \underbrace{\left((F_{s,H,c}(t) - F_{ns,H,c}(t)) \right)}_{\text{effect on males from traditional prov.}} \\ & - \underbrace{\left((F_{s,M,nc}(t) - F_{ns,M,nc}(t)) \right)}_{\text{effect on females from non-traditional prov.}} - \underbrace{\left((F_{s,H,nc}(t) - F_{ns,H,nc}(t)) \right)}_{\text{effect on males from non-traditional prov.}}. \end{aligned} \quad (4)$$

As shown in column (1) of Table 5, the gender differential is larger for individuals whose native provinces have more conservative values for women's role in society. Females exhibit a higher likelihood of early marriage when surrounded by *tongxiang* co-workers compared to male migrants, as evident from the differences shown in columns (3) and (6) of Table 2). Moreover, there is heterogeneity in the gender-asymmetric response to the concentration of *tongxiang* co-workers, contingent upon the strength of the norm. Specifically, the gender differential of the probability of getting married before 25 is 39 percentage points higher for individuals originally from traditional provinces compared to those from non-traditional provinces. In other words, the impact of the same

Table 5: Gender-differentiated effect of social interactions

Age	Triple differences of probability of being married before a certain age	
	Traditional v.s. non-traditional (1)	More males v.s. less males (2)
20	0.259 (0.428)	0.087 (0.352)
21	0.220 (0.390)	0.075 (0.318)
22	0.212 (0.336)	0.042 (0.283)
23	0.255 (0.269)	0.000 (0.259)
24	0.329 (0.220)	−0.038 (0.246)
25	0.386* (0.200)	−0.064 (0.240)
26	0.394** (0.200)	−0.076 (0.237)
27	0.364* (0.202)	−0.076 (0.235)
28	0.322 (0.203)	−0.067 (0.233)
29	0.279 (0.202)	−0.053 (0.231)
30	0.240 (0.199)	−0.038 (0.230)

Notes: Column (1) compares the gender differential in the probability of getting married before a certain age between individuals from traditional and non-traditional provinces. Traditional provinces are defined as ones that have above median fraction of rural residents who agree that for females it is more useful to have a good husband than a good career (Q3). Column (2) compares the gender differential between individuals in cities with a higher origin-destination specific (*tongxiang*) male-to-female migrant ratio and a lower ratio, imputed from the 2000 population census. Bootstrap standard errors with 500 replicates are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

degree of concentration of *tongxiang* co-workers on female early marriage will be greater if these co-workers are from regions with more traditional norms regarding women's roles in society.

5. Alternative explanations

In this section, I rule out alternative mechanisms that can generate the gender-differentiated effect of social interactions.

5.1 Matching

Migrant workers originating from the same rural area share customs, languages, and similar socio-economic conditions. The concentration of *tongxiang* co-workers can facilitate meeting fellow countrymen who are similar to the individual, thereby increasing the likelihood of meeting a potential partner and a quick transition into marriage.

However, matching cannot primarily account for the impact of social interactions on marriage if the effect is much more pronounced for female migrants than their male counterparts. Granted, it is a known fact that men generally tend to marry later than women. Still, we do not observe a comparable effect of same-origin co-workers on male migrant workers for later ages either. It is plausible, however, that if there is a significant gender imbalance with considerably more male migrant workers than females, some male migrants may struggle to find marriage partners even if they have female *tongxiang* co-workers whom they prefer. This, in turn, could contribute to the gender-asymmetric effect of social interactions. Notably, the data demonstrate balanced gender representations across all industries, except for construction (Figure A3), and the results remain robust after excluding migrants in the construction industry (not shown). Additionally, I show that the gender differential in the effect of social interactions is not stronger with a higher relative ratio of *tongxiang* male migrants in the same city (column (2) of Table 5).²³

In addition, I explore a testable implication of the matching story. If workplace matching takes place, the likelihood of a migrant worker's spouse being in the same workplace may increase with a higher fraction of same-origin co-workers. To investigate this, I regress the indicator of the spouse being in the same workplace on measures of the concentration of same-origin co-workers, separately for male and female migrant workers who married after migration. The results are presented in Table 6. Columns (1) and (2) consider an indicator for whether the migrant worker has over 30% of the co-workers from the same town, while columns (3) and (4) look at whether the migrant worker has over 50% co-workers from the same town. The results indicate that a female migrant working in an environment with a higher concentration of same-origin co-workers is significantly more likely to have her spouse within the same workplace. However, this effect is not observed among male migrant workers. If workplace matchmaking occurs for individuals from the same hometown, one would expect similar effects for both male and female migrant workers.²⁴ The gender-asymmetrical effect instead implies that females migrants with co-workers from the same town are more likely to

²³The gender composition of the workplace is not observed in the data.

²⁴As same-sex marriage is not legalised in China, the matching story posits that marriages involve a male and a female of the same origin. Hence, a similar positive association between *tongxiang* co-workers and the presence of a spouse in the same workplace for male migrants would be expected for matching to occur. Note that an alternative scenario where female migrants seek and work in their husband's workplace, potentially having more same-origin co-workers, is inconsistent with the results either. Such scenario would also require a similar positive correlation between the concentration of same-origin co-workers and the presence of a spouse in the same workplace for male migrants. Furthermore, if male migrants are more inclined to switch jobs afterwards, this in turn contradicts the observation that the spouses of female migrants tend to work in the same workplace.

marry someone from their workplace, irrespective of whether or not that person hails from the same hometown.

In addition to results on the probability of early marriage, shown in Section 4, examining a distinct outcome—whether the spouse is in the same workplace—also shows a gender-asymmetric pattern. Both results are consistent with the possibility that females are pressured into early marriages with close interactions with co-workers of the same rural origin and marry someone from their workplace, regardless of whether or not he is from the same hometown.

Table 6: Spouse workplace and same-town co-workers

	Dep. var.: 1 (Spouse in the same workplace)			
	Female (1)	Male (2)	Female (3)	Male (4)
> 30% same-town co-worker	0.250*** (0.081)	0.050 (0.049)		
> 50% same-town co-worker			0.295*** (0.104)	0.048 (0.063)
Constant	0.200*** (0.019)	0.214*** (0.016)	0.205*** (0.019)	0.216*** (0.015)
Observations	501	783	501	783
R-squared	0.027	0.001	0.023	0.001

Notes: The estimation utilises the linear probability model to predict whether the spouse is in the same workplace for migrant workers who married after migration. In columns (1) and (2), the explanatory variable is an indicator for whether the individual has over 30% same-town co-workers. In columns (3) and (4), the explanatory variable is an indicator for whether the individual has over 50% same-town co-workers. Robust standard errors are given in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

5.2 Selection

Social interactions with *tongxiang* may correlate with factors that affect the timing of marriage. For example, people who are less educated may be more likely to rely on the *tongxiang* network and, simultaneously, are more likely to marry early. Moreover, people who are more resourceful can join the *tongxiang* network and are also more capable of finding a marriage partner. It is also possible that even if male and female migrant workers sort into *tongxiang* networks similarly based on certain characteristics, these characteristics may influence their marriage behaviour differently, thus resulting in the gender-differentiate effect of social interactions.

To address these concerns, I employ propensity score matching to control for gender-differential selection on observables and then estimate the effect separately by gender.²⁵ The idea is to compare female migrant workers who are otherwise similar but only differ in terms of the concentration of

²⁵The estimation procedure of the duration model with propensity score matching follows Austin (2014).

co-workers from the same rural area. The same analysis is conducted in an identical manner, but separately for male migrant workers, accounting for that (1) selection into *tongxiang* networks may be different for male migrants and (2) the same type of selection may affect marriage behaviour differently for males. Individuals are matched based on an extensive set of characteristics that may be correlated with the workplace concentration of *tongxiang*, including education, occupation, origin and destination, age cohort, age at start of the current job, whether it is the first job, and whether it was a job obtained through a referral.

The results of matching is presented in Table A11. People with *tongxiang* co-workers are less educated and it is more likely to be a job acquired through a referral. Further, the ratios of citywide *tongxiang* are positively correlated with entry into a *tongxiang* enterprise, although their effects are not statistically significant.²⁶ Furthermore, I incorporate self-identification with farmer or rural origin into the matching function as an effort to match individuals based on their own preferences for early marriage. However, as Table A10 already suggests, farmer identity does not serve as a predictor for the concentration of *tongxiang* co-workers. This may arise from the notion that farmer identity may not capture a preference for early marriage. This seems unlikely given that farmer identity predicts early marriage. Alternatively, a preference for early marriage may have little influence on the choice of entering a workplace with a concentration of *tongxiang* co-workers. I explore this aspect in greater detail towards the conclusion of this section.

In Table A12, I recalculate the cumulative distribution function using matched observations. The estimated effects of social interactions remain similar for female migrants, although the significance levels become slightly lower with a smaller sample size. For male migrants, the small positive correlation between early marriage and co-workers from the same town disappears after controlling for selection on observables.

There is also a possibility that unobservable individual characteristics may influence both entry into a *tongxiang* network and early marriage. Specifically, there is a concern that individuals with a preference or tendency to marry early might be more inclined to join a workplace with *tongxiang* co-workers. The paper presents several strands of evidence to demonstrate that this scenario is unlikely. First, there is no association between early marriage and *tongxiang* co-workers among women who married before migration (Table 3). If social interactions with co-workers pick up certain private preferences or tendencies for early marriage, a correlation would exist between early marriage and having co-workers from the same rural origin among women who were already married prior to meeting *tongxiang* co-workers. This stands in contrast to the findings for *tongxiang* friends in the current location, where the choice of friendship reveals a preference for early marriage. Table A4 shows that among female migrants who married before migration, those who married earlier are more likely to later form best friendships with *tongxiang* in the city they migrated to. Second, while migrant workers' identification with their farmer or rural origin predicts early female marriage

²⁶Controlling for the concentration of *tongxiang* in the city helps to differentiate the effect of social interactions in the workplace from citywide social interactions.

and serves as a plausible proxy for the preference for early marriage, it is not correlated with the concentration of co-workers from the same town (Table A10). Taken together, these findings suggest that the sorting into a workplace with *tongxiang* is unlikely to be driven by private preferences or tendencies for early marriage.

The results demonstrate that instead of capturing spurious correlations, social interactions with co-workers from the same rural origin have an actual impact on marriage behaviour. The evidence presented in the previous sections reveals that the channel is social pressure and not matching.

6. Conclusion

This paper provides novel evidence that social interactions of rural-to-urban migrants can pressure their behaviour to conform to traditional norms. I focus on the gender-asymmetric norm of early marriage from agricultural societies and use variation in social pressure to conform to the norm from migrants from the same rural origin in the workplace. When women migrate from rural to urban areas, the economic conditions for early marriage cease to exist, but their marriage behaviour can still be subject to old norms when pressured by individuals from the same rural area. I find that social interactions with co-workers from the same hometown substantially increase the probability of early marriage for female migrants. In contrast, social interactions affect the likelihood of early marriage for male migrant workers to a much lesser extent.

Consistent with the explanation that social interactions pressure women into early marriages in order to conform to the rural norms, I find that the gender-differential effect is larger for individuals from areas that hold more conservative values for women. Further, combining propensity score matching and placebo tests, I show that the effect is not driven by spurious correlations or selection into social interactions. While close interactions can also facilitate matching between individuals from the same region who share customs and languages, the matching story requires either (1) a symmetric effect on males or (2) an asymmetric effect on males with a skewed gender ratio, which are not supported by the data.

The findings carry important policy implications: the economic independence of female migrant workers may not automatically translate into the freedom to choose when to marry, which in turn can impact their decisions regarding childbearing and career paths. Policies designed to address gender gaps through equal access to education and employment may face limitations if women are still expected to adhere to traditional norms.

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7. Appendix

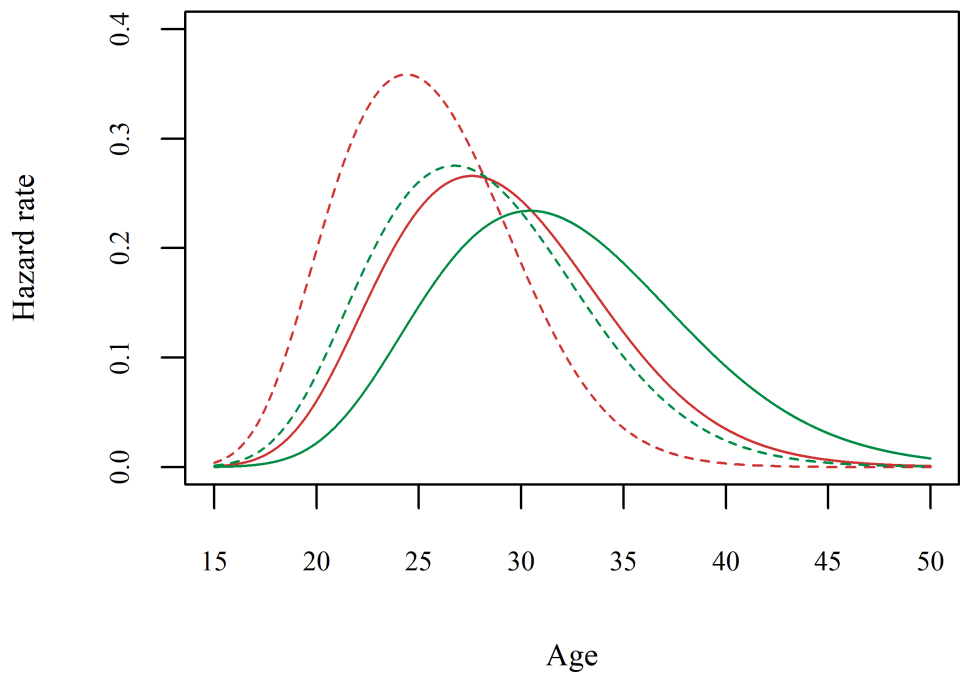


Figure A1: Marriage hazard rate in rural and urban China

— : urban female - - - : rural female — : urban male - - - : rural male

Notes: Based on the 2010 Chinese General Social Survey. *Rural* is defined as individuals who are born in rural regions and have never left. *Urban* is defined as individuals who are born with urban *hukou* and currently hold urban *hukou*.

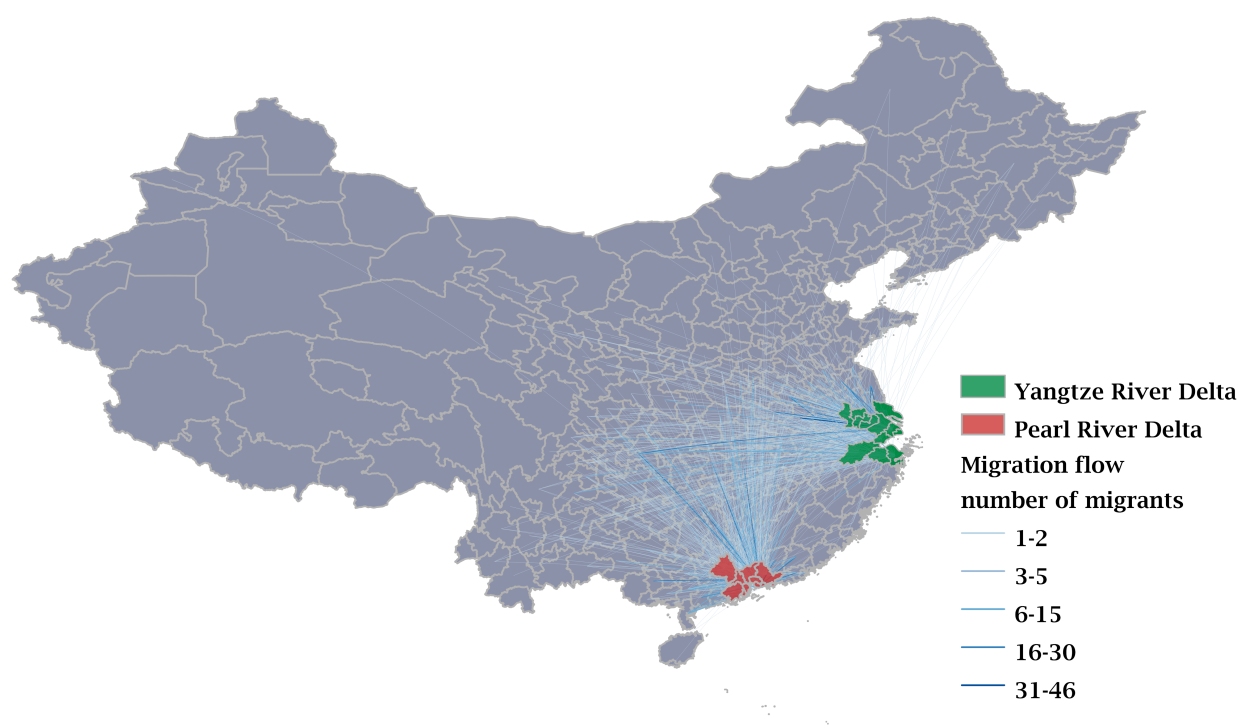


Figure A2: Migration flows to the Yangtze and Pearl River Deltas

Notes: The number of rural-to-urban migrant workers (prefecture to prefecture migration) calculated from the 2010 survey data on migrant workers. The data are representative of the regional distribution of migrants.

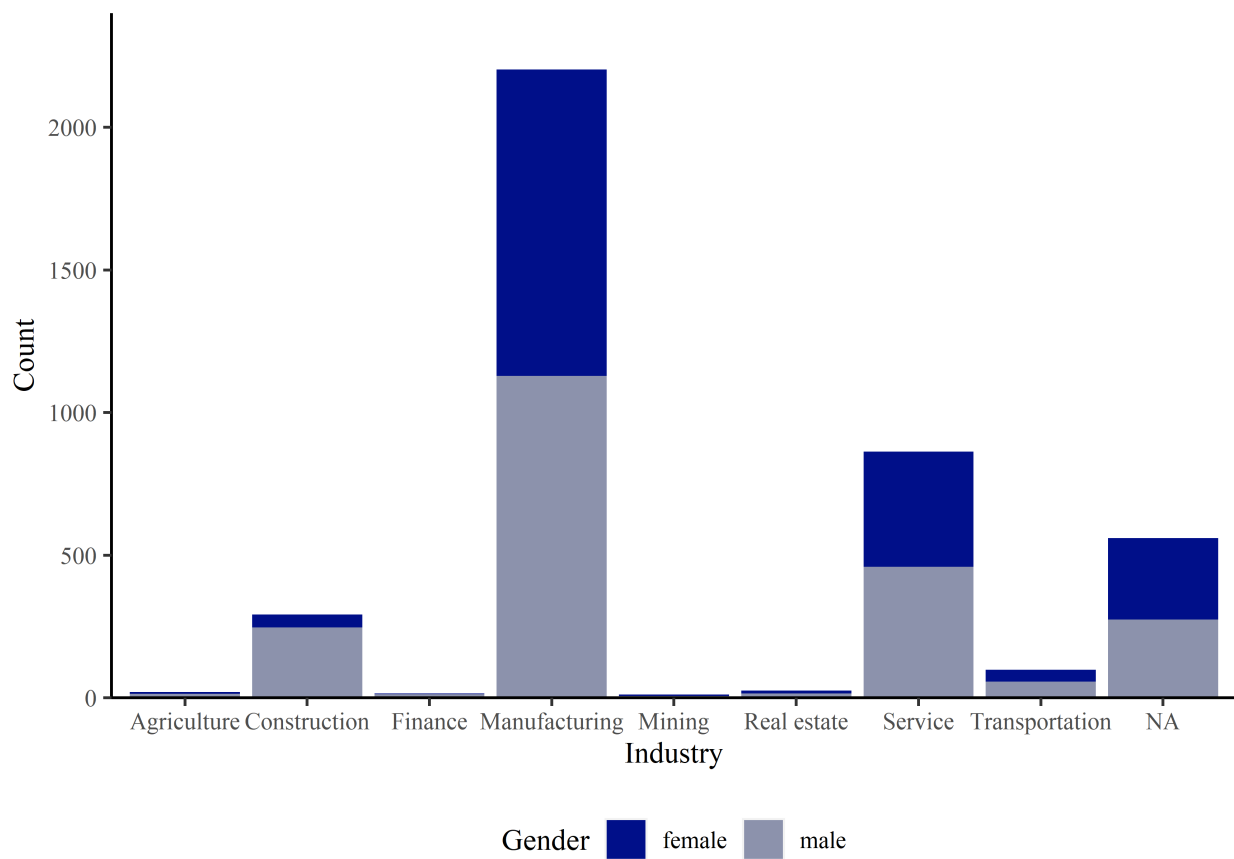
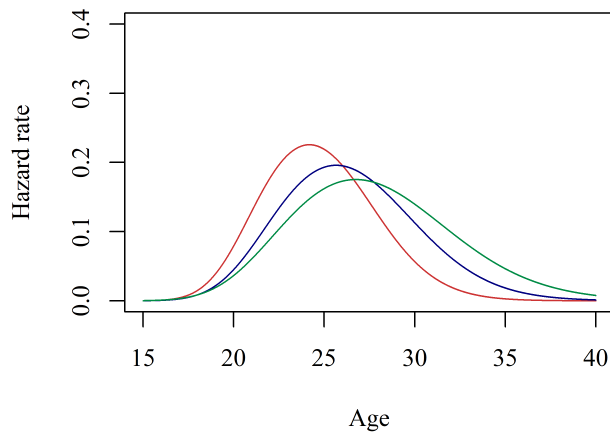
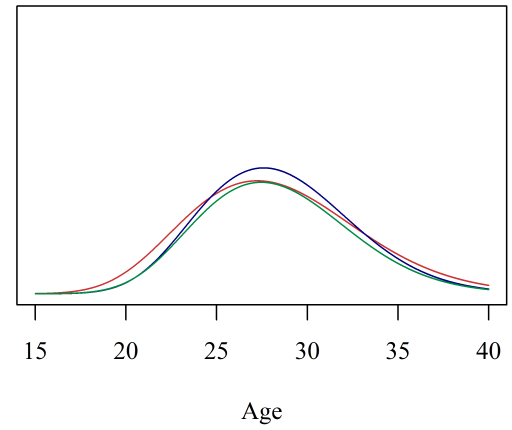


Figure A3: Industrial employment by gender

Source: the 2010 survey data on migrant workers.



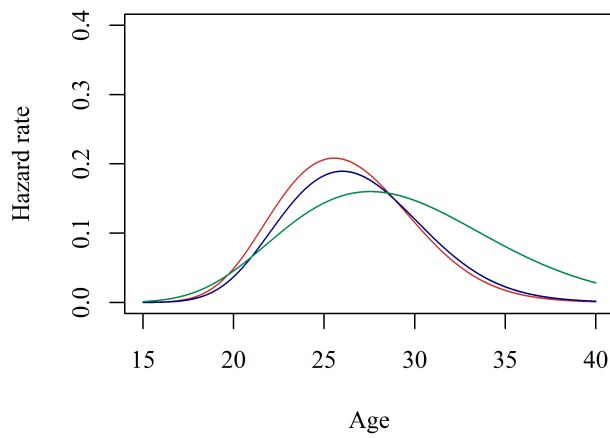
(a) Female



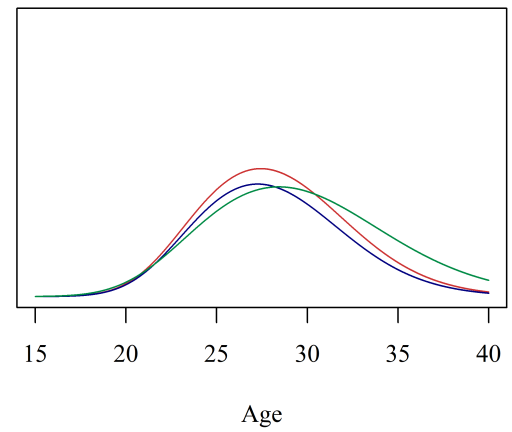
(b) Male

Figure A4: Estimated hazard rate: pc_county

green: none of the co-workers come from the same county
blue: 0–30% of the co-workers come from the same county
red: >30% of the co-workers come from the same county



(a) Female



(b) Male

Figure A5: Estimated hazard rate: pc_province

green: none of the co-workers come from the same province
blue: 0–30% of the co-workers come from the same province
red: >30% of the co-workers come from the same province

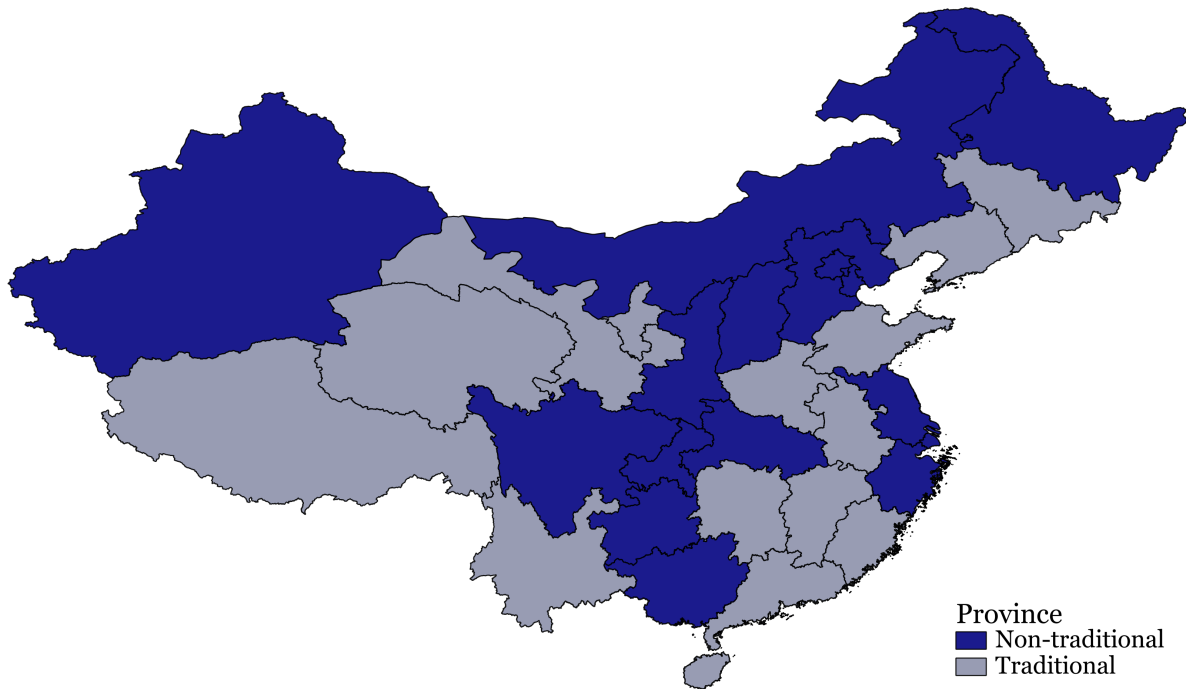


Figure A8: Traditional and non-traditional provinces

Notes: ‘Traditionalness’ is defined by attitudes towards the role of women in society, calculated from the responses to the 2010 Chinese General Social Survey. I compute the median value of the fraction of rural individuals in each province who agree with the following statement: ‘Marrying a good husband is more important than having a good job for females.’ Provinces with values above the median are categorised as traditional, while those below the median are classified as non-traditional.

Table A1: Attitudes towards females

	Family first (1)	Marriage first (2)
Rural	0.292*** (0.016)	0.127*** (0.018)
Male	0.058*** (0.019)	−0.014 (0.019)
Rural × male	−0.074*** (0.024)	−0.062*** (0.027)
Constant	0.519*** (0.013)	0.426*** (0.013)
Observations	6,408	6,390
R-squared	0.077	0.013

Notes: Based on the 2010 Chinese General Social Survey. *Family first* is an indicator for whether the respondent agrees that men should prioritise career and women should prioritise family. *Marriage first* is an indicator for whether the respondent agrees that for females marrying a good husband is more useful than having a good job. The estimation uses the linear probability model to predict *family first* and *marriage first*. *Rural* is an indicator variable that equals one if the respondent was born and has stayed in the rural region and zero if the respondent was born and has stayed in the urban region. Negative interactions between *rural* and *male* indicate gender-differentiated rural norms. Robust standard errors are given in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

Table A2: Summary statistics: to continue

	(1) <30% <i>tongxiang</i>	(2) >30% <i>tongxiang</i>	(3) Difference
<i>Panel A: Age</i>			
Female	28.53 (8.80)	30.15 (9.97)	1.62 (0.88)
Male	31.47 (9.51)	33.85 (10.81)	2.37 (0.77)
Difference	2.94 (0.31)	3.69 (1.13)	0.75 (1.17)
<i>Panel B: Age at migration</i>			
Female	20.68 (6.12)	19.55 (6.57)	-1.13 (0.76)
Male	21.13 (6.87)	21.48 (7.71)	0.35 (0.70)
Difference	0.45 (0.27)	1.93 (1.00)	1.48 (1.43)
<i>Panel C: Age at start of current job</i>			
Female	25.97 (8.04)	27.78 (11.57)	1.81 (0.07)
Male	27.76 (8.78)	28.58 (10.02)	0.82 (0.72)
Difference	1.79 (0.28)	0.80 (1.21)	-1.00 (1.24)
<i>Panel D: Distance from home (kilometres)</i>			
Female	598.90 (443.49)	578.97 (453.38)	-19.94 (41.35)
Male	630.98 (448.12)	578.46 (420.56)	-52.52 (31.50)
Difference	32.08 (15.45)	-0.50 (49.76)	-32.58 (51.99)
<i>Panel E: Education</i>			
Female	1.30 (0.90)	0.99 (0.85)	-0.32 (0.08)
Male	1.44 (0.85)	1.13 (0.79)	-0.31 (0.06)
Difference	0.14 (0.03)	0.15 (0.09)	0.01 (0.10)

Table A2: Summary statistics: continued

	(1) <30% <i>tongxiang</i>	(2) >30% <i>tongxiang</i>	(3) Difference
<i>Panel F: Log hourly wage</i>			
Female	2.00 (0.45)	1.89 (0.66)	-0.12 (0.06)
Male	2.23 (0.52)	2.22 (0.51)	-0.01 (0.04)
Difference	0.23 (0.02)	0.33 (0.07)	0.10 (0.07)
<i>Panel G: First job</i>			
Female	0.35 (0.48)	0.42 (0.50)	0.07 (0.04)
Male	0.29 (0.45)	0.37 (0.48)	0.08 (0.03)
Difference	-0.06 (0.02)	-0.05 (0.05)	0.01 (0.06)
<i>Panel H: Job referral</i>			
Female	0.49 (0.50)	0.72 (0.45)	0.23 (0.04)
Male	0.46 (0.50)	0.66 (0.47)	0.20 (0.03)
Difference	-0.03 (0.02)	-0.06 (0.05)	-0.03 (0.05)

Notes: The table presents the mean and standard deviation (in parentheses) of individual characteristics by gender and concentration of *tongxiang* co-workers (i.e., < 30% co-workers from the same town in column (1) and > 30% co-workers from the same town in column (2)). The difference by gender is given in the last row of each panel and the difference by *tongxiang* concentration is shown in column (3). In *Panel E*, *Education* is a categorical variable that increases with the level of education (0: less than or equal to primary school; 1: junior high school; 2: senior high school; 3: more than high school). In *Panel G*, *First job* is an indicator variable that takes value 1 if it is the migrant worker's first job. In *Panel H*, *Job referral* is an indicator variable that takes value 1 if the job was obtained through a referral.

Table A3: Marriage age and friendship—married after migration

Age	Probability of being married before a certain age			
	Female		Male	
	Baseline (1)	Difference <i>Tongxiang</i> friend (2)	Baseline (3)	Difference <i>Tongxiang</i> friend (4)
20	0.058	0.049*** (0.015)	0.023	0.014** (0.007)
21	0.114	0.080*** (0.021)	0.053	0.022** (0.011)
22	0.194	0.111*** (0.028)	0.105	0.029* (0.015)
23	0.293	0.132*** (0.034)	0.180	0.033* (0.019)
24	0.399	0.140*** (0.038)	0.274	0.032 (0.024)
25	0.500	0.136*** (0.040)	0.377	0.028 (0.027)
26	0.587	0.125*** (0.040)	0.477	0.021 (0.029)
27	0.658	0.110*** (0.040)	0.566	0.015 (0.030)
28	0.712	0.096** (0.040)	0.640	0.010 (0.030)
29	0.752	0.084** (0.041)	0.698	0.007 (0.030)
30	0.781	0.074* (0.042)	0.741	0.006 (0.029)

Notes: The estimation is based on the sample of individuals married after migration. The baseline group is individuals whose best friend is not from the same hometown. The difference is the increase in probability relative to the baseline group for migrants whose best friend is from the same hometown. Bootstrap standard errors with 500 replicates are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

Table A4: Marriage age and friendship—married before migration

Age	Probability of being married before a certain age			
	Female		Male	
	Baseline (1)	Difference <i>Tongxiang</i> friend (2)	Baseline (3)	Difference <i>Tongxiang</i> friend (4)
20	0.288	0.059 (0.037)	0.158	0.041 (0.029)
21	0.438	0.082** (0.039)	0.267	0.059* (0.035)
22	0.594	0.088** (0.040)	0.400	0.073* (0.039)
23	0.731	0.075** (0.038)	0.538	0.078* (0.040)
24	0.834	0.053* (0.032)	0.664	0.074** (0.037)
25	0.904	0.032 (0.025)	0.767	0.064** (0.032)
26	0.947	0.017 (0.018)	0.844	0.052** (0.026)
27	0.971	0.008 (0.012)	0.897	0.040** (0.020)
28	0.984	0.003 (0.008)	0.931	0.030* (0.016)
29	0.991	0.000 (0.006)	0.954	0.022* (0.012)
30	0.995	−0.001 (0.004)	0.968	0.017* (0.010)

Notes: The estimation is based on the sample of individuals married before migration. The baseline group is individuals whose best friend is not from the same hometown. The difference is the increase in probability relative to the baseline group for migrants whose best friend is from the same hometown. Bootstrap standard errors with 500 replicates are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

Table A5: Marriage age and same-town co-workers—additional results

Age	Probability of being married before a certain age					
	Female			Male		
	Baseline 0 same origin (1)	Difference >10% (2)	Difference >20% (3)	Baseline 0 same origin (4)	Difference >10% (5)	Difference >20% (6)
20	0.070	0.027 (0.020)	0.050** (0.025)	0.027	0.012 (0.010)	0.028** (0.014)
21	0.128	0.059* (0.026)	0.091*** (0.032)	0.060	0.020 (0.014)	0.043** (0.019)
22	0.207	0.100*** (0.032)	0.135*** (0.040)	0.114	0.029 (0.019)	0.057** (0.024)
23	0.302	0.137*** (0.039)	0.168*** (0.047)	0.190	0.037 (0.024)	0.066** (0.028)
24	0.404	0.161*** (0.045)	0.181*** (0.052)	0.283	0.042 (0.027)	0.069** (0.032)
25	0.503	0.167*** (0.047)	0.176*** (0.055)	0.385	0.044 (0.030)	0.065* (0.036)
26	0.591	0.159*** (0.047)	0.158*** (0.056)	0.483	0.043 (0.032)	0.058 (0.038)
27	0.664	0.143*** (0.047)	0.134** (0.056)	0.571	0.041 (0.033)	0.051 (0.039)
28	0.722	0.124*** (0.046)	0.109* (0.057)	0.644	0.038 (0.033)	0.044 (0.039)
29	0.767	0.105** (0.046)	0.086 (0.058)	0.701	0.036 (0.032)	0.040 (0.038)
30	0.801	0.089* (0.046)	0.067 (0.060)	0.745	0.034 (0.032)	0.037 (0.037)

Notes: The estimation is based on the sample of individuals married after migration. The baseline group is migrants without any co-workers from the same town. The difference is the increase in probability relative to the baseline group for migrants with over 10% or 20% of the co-workers from the same town. Bootstrap standard errors with 500 replicates are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

Table A6: Marriage age and same-county co-workers—married after migration

Age	Probability of being married before a certain age					
	Female			Male		
	Baseline 0 same origin (1)	Difference >30% (2)	Difference >50% (3)	Baseline 0 same origin (4)	Difference >30% (5)	Difference >50% (6)
20	0.067	0.067* (0.035)	0.106 (0.117)	0.027	0.033* (0.017)	0.029 (0.020)
21	0.122	0.126*** (0.046)	0.180* (0.109)	0.058	0.050** (0.023)	0.044* (0.026)
22	0.199	0.187*** (0.056)	0.252** (0.101)	0.110	0.067** (0.028)	0.057* (0.032)
23	0.292	0.230*** (0.064)	0.298*** (0.095)	0.184	0.078** (0.033)	0.065* (0.038)
24	0.392	0.244*** (0.068)	0.310*** (0.091)	0.273	0.081** (0.037)	0.067 (0.046)
25	0.489	0.232*** (0.070)	0.295*** (0.088)	0.371	0.078* (0.041)	0.064 (0.053)
26	0.576	0.204*** (0.071)	0.263*** (0.085)	0.466	0.069 (0.044)	0.058 (0.058)
27	0.650	0.169** (0.072)	0.225*** (0.082)	0.552	0.059 (0.045)	0.051 (0.060)
28	0.708	0.135* (0.073)	0.189** (0.080)	0.624	0.050 (0.045)	0.046 (0.059)
29	0.754	0.105 (0.074)	0.158** (0.079)	0.681	0.043 (0.044)	0.043 (0.057)
30	0.788	0.080 (0.075)	0.132* (0.079)	0.724	0.039 (0.043)	0.041 (0.055)

Notes: The estimation is based on the sample of individuals married after migration. The baseline group is migrants without any co-workers from the same county. The difference is the increase in probability relative to the baseline group for migrants with over 30% or 50% of the co-workers from the same county. Bootstrap standard errors with 500 replicates are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

Table A7: Marriage age and same-county co-workers—married before migration

Age	Probability of being married before a certain age					
	Female			Male		
	Baseline 0 same origin (1)	Difference >30% (2)	Difference >50% (3)	Baseline 0 same origin (4)	Difference >30% (5)	Difference >50% (6)
20	0.314	−0.064 (0.066)	−0.111 (0.113)	0.159	0.031 (0.038)	0.071 (0.051)
21	0.450	−0.025 (0.069)	−0.085 (0.108)	0.268	0.055 (0.047)	0.087 (0.063)
22	0.587	0.023 (0.066)	−0.039 (0.097)	0.400	0.077 (0.052)	0.092 (0.073)
23	0.708	0.055 (0.056)	0.003 (0.084)	0.537	0.091* (0.053)	0.086 (0.077)
24	0.805	0.064 (0.044)	0.026 (0.067)	0.662	0.092* (0.050)	0.072 (0.074)
25	0.874	0.057* (0.032)	0.031 (0.049)	0.764	0.082* (0.043)	0.056 (0.065)
26	0.921	0.043* (0.023)	0.027 (0.034)	0.840	0.068* (0.035)	0.041 (0.054)
27	0.951	0.030* (0.016)	0.020 (0.023)	0.892	0.053** (0.027)	0.029 (0.043)
28	0.970	0.020* (0.011)	0.013 (0.015)	0.927	0.040* (0.021)	0.020 (0.034)
29	0.981	0.013 (0.008)	0.008 (0.010)	0.950	0.030* (0.016)	0.015 (0.026)
30	0.988	0.008 (0.006)	0.005 (0.007)	0.964	0.023* (0.012)	0.011 (0.020)

Notes: The estimation is based on the sample of individuals married before migration. The baseline group is migrants without any co-workers from the same county. The difference is the increase in probability relative to the baseline group for migrants with over 30% or 50% of the co-workers from the same county. Bootstrap standard errors with 500 replicates are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

Table A8: Marriage age and same-county co-workers—additional results

Age	Probability of being married before a certain age					
	Female			Male		
	Baseline 0 same origin (1)	Difference >10% (2)	Difference >20% (3)	Baseline 0 same origin (4)	Difference >10% (5)	Difference >20% (6)
20	0.067	0.014 (0.017)	0.033 (0.022)	0.027	0.011 (0.009)	0.019* (0.012)
21	0.122	0.039 (0.024)	0.062** (0.030)	0.058	0.020 (0.013)	0.032* (0.017)
22	0.199	0.072** (0.031)	0.096** (0.038)	0.110	0.031* (0.018)	0.046** (0.022)
23	0.292	0.106*** (0.037)	0.125*** (0.046)	0.184	0.042* (0.022)	0.058** (0.026)
24	0.392	0.131*** (0.042)	0.142*** (0.052)	0.273	0.051** (0.026)	0.066** (0.030)
25	0.489	0.141*** (0.044)	0.145*** (0.055)	0.371	0.055* (0.029)	0.069** (0.032)
26	0.576	0.139*** (0.045)	0.136** (0.056)	0.466	0.056* (0.031)	0.068** (0.034)
27	0.650	0.128*** (0.045)	0.122** (0.055)	0.552	0.053* (0.032)	0.065* (0.035)
28	0.708	0.113** (0.044)	0.105* (0.054)	0.624	0.049 (0.032)	0.061* (0.035)
29	0.754	0.097** (0.045)	0.088 (0.054)	0.681	0.045 (0.031)	0.057* (0.034)
30	0.788	0.083* (0.046)	0.074 (0.054)	0.724	0.041 (0.031)	0.054 (0.034)

Notes: The estimation is based on the sample of individuals married after migration. The baseline group is migrants without any co-workers from the same county. The difference is the increase in probability relative to the baseline group for migrants with more than 10% or 20% of the co-workers from the same county. Bootstrap standard errors with 500 replicates are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

Table A9: Marriage age and identity—married before migration

Age	Probability of being married before a certain age			
	Female		Male	
	Baseline Worker (1)	Difference Farmer (2)	Baseline Worker (3)	Difference Farmer (4)
20	0.303	−0.009 (0.059)	0.177	−0.012 (0.038)
21	0.423	0.049 (0.061)	0.293	−0.021 (0.047)
22	0.546	0.102* (0.060)	0.430	−0.030 (0.053)
23	0.660	0.129** (0.056)	0.571	−0.037 (0.058)
24	0.756	0.126** (0.050)	0.695	−0.041 (0.058)
25	0.831	0.106** (0.043)	0.794	−0.041 (0.054)
26	0.886	0.081** (0.037)	0.865	−0.038 (0.046)
27	0.925	0.058** (0.030)	0.914	−0.033 (0.038)
28	0.950	0.040* (0.024)	0.945	−0.028 (0.030)
29	0.967	0.027 (0.019)	0.964	−0.024 (0.024)
30	0.978	0.018 (0.015)	0.976	−0.020 (0.019)

Notes: The estimation is based on the sample of individuals married before migration. The baseline group is individuals who identify themselves as workers. The difference is the increase in probability relative to the baseline group for migrants who identify themselves as farmers. Bootstrap standard errors with 500 replicates are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

Table A10: Same-town co-workers and identity

	Dep. var.: Concentration of co-workers from the same town
	(1)
Male	0.115* (0.065)
Farmer	0.093 (0.077)
Farmer \times Male	−0.012 (0.109)
Constant	1.000*** (0.047)
Observations	2,938
R-squared	0.002

Notes: The dependent variable is a categorical variable that increases with the level of concentration of co-workers from the same town (0: none; 1: 0%–10%; 2: 10%–20%; 3: 20%–30%; 4: 30%–50%; 5: more than 50%). *Male* is an indicator for male migrants. *Farmer* is an indicator for self-identification with farmer or rural origin. Robust standard errors are given in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

Table A11: Prediction of *tongxiang* co-workers

	Dep. var.: 1 (over 30% <i>tongxiang</i> co-workers)	
	Female (1)	Male (2)
Education	−0.678*** (0.237)	−0.545*** (0.191)
Age at start of work	−0.015 (0.052)	−0.021 (0.034)
First job	0.163 (0.412)	0.609* (0.350)
Referral	0.933*** (0.342)	0.914*** (0.289)
<i>Tongxiang</i> share	5.394 (5.461)	6.859 (4.940)
Farmer	−0.183 (0.387)	0.301 (0.314)
Occupation dummies	Yes	Yes
Cohort fixed effects	Yes	Yes
Origin province fixed effects	Yes	Yes
Destination city fixed effects	Yes	Yes
Observations	466	587

Notes: The table estimates propensity scores using logistic regressions. The sample includes observations with none of the co-workers from the same town or with over 30% co-workers from the same town. The dependent variable is an indicator for having over 30% co-workers from the same town. *Education* is a categorical variable that increases with the level of education (0: less than or equal to primary school; 1: junior high school; 2: senior high school; 3: more than high school). *Age at start of work* is the age that the individual began working for the current job. *First job* is an indicator for whether the job is the first job of the individual. *Referral* indicates whether the job was obtained through a referral. *Tongxiang share* is the ratio of same origin migrant workers over the total number of migrant workers in the same destination city, proxied from the 2000 population census. *Farmer* is an indicator for self-identification with farmer or rural origin. Robust standard errors are given in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

Table A12: Marriage age and same-town co-workers—matched sample

Age	Probability of being married before a certain age			
	Female		Male	
	Baseline 0 same origin (1)	Difference >30% (2)	Baseline 0 same origin (3)	Difference >30% (4)
20	0.086	0.070 (0.089)	0.075	0.012 (0.039)
21	0.148	0.123 (0.095)	0.152	−0.006 (0.054)
22	0.229	0.176* (0.103)	0.259	−0.037 (0.068)
23	0.322	0.213* (0.110)	0.381	−0.070 (0.080)
24	0.420	0.227** (0.114)	0.497	−0.092 (0.087)
25	0.514	0.219* (0.114)	0.594	−0.098 (0.090)
26	0.597	0.197* (0.114)	0.669	−0.089 (0.090)
27	0.667	0.169 (0.115)	0.722	−0.071 (0.088)
28	0.723	0.141 (0.117)	0.759	−0.048 (0.087)
29	0.768	0.115 (0.120)	0.783	−0.025 (0.087)
30	0.801	0.093 (0.123)	0.798	−0.003 (0.087)

Notes: The estimation is based on the sample of matched individuals married after migration. The baseline group is migrants without any co-workers from the same town. The difference is the increase in probability relative to the baseline group for a subsample of migrants with over 30% of the co-workers from the same town. Each individual in the subsample is matched with an individual in the baseline group using propensity score matching based on Table A11. Bootstrap standard errors with 500 replicates are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.