Marriage Matters: Internal Migration and Marital Sorting in Indonesia*

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Abstract

This paper examines how location characteristics enter into the marriage decision, with a focus on differences between rural and urban locations and between economic activity. Using a structural matching model and data from Indonesia, I estimate utilities of matching and staying at home, migrating together, and marrying someone from another market. I find that couples migrating together face utility losses compared to those staying at home, and that urban destinations are typically preferred by migrants, both joint and independent. By simulating a marriage market in which joint migration becomes less costly, I quantify the substitution between joint migration and marriage migration. The results show that mixed marriages in urban locations are most responsive, primarily driven by rural couples forming at home and migrating together. On the other hand, restricting joint migration increases mixed marriages in urban destinations by up to 17 percentage points.

Keywords: Marriage markets, matching models, internal migration
J12, J16, J21, J61, O15, O18, R23.

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1 Introduction

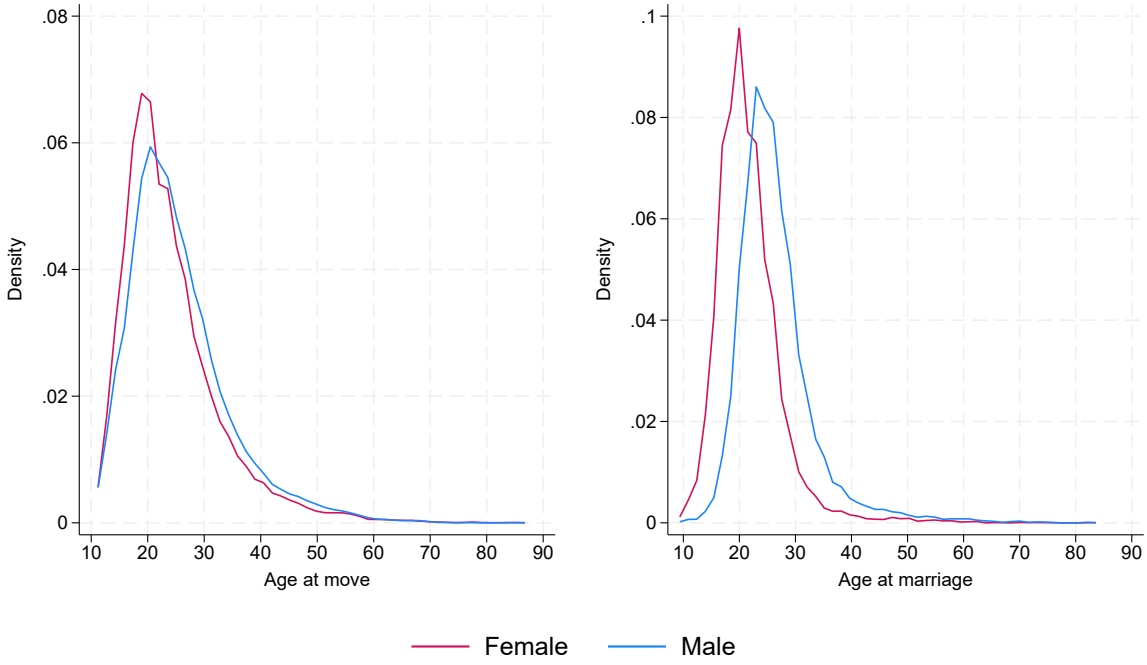
With approximately 740 million internal migrants globally, mobility within a country's borders is a common phenomenon in many developing countries (UNDP, 2009). In Indonesia, Jakarta and other metropolitan centers are primary destinations for young migrants in search for better work and educational opportunities (Wajdi et al., 2017). Yet, sizable migration flows are also recorded across rural areas, highlighting economic pull factors in both rural and urban sectors (Bryan and Morten, 2019). For policy makers, these large mobility flows present a dual challenge of incentivizing migration to reap productivity gains, while avoiding overpopulation of developed regions through agglomeration forces (Gollin et al., 2021, 2014, Lagakos et al., 2023). A key aspect in designing appropriate policy responses is to understand what drives destination choices and the motives of migration.

In this paper, I provide evidence that the decision (where) to migrate is closely interlinked with the decision (where) to marry. As Figure 1 shows, the majority of internal moves by men and women occur around the ages 20-30, coinciding with the timing of marriage for most people. Thus, location and marriage decisions may be interlinked in several ways. For example, Imbert et al. (2023) show that migrants may trade off destinations based on wages and amenities depending on whether they can bring their family or not. When it is costly to move together, migrants leave their family behind and choose higher wages over better living conditions. On the other hand, better labor market conditions elsewhere may incentivize marriage with a migrant when individual migration barriers exist (Amirapu et al., 2022). Lastly, finding a spouse in a different location may be a way to access better economic opportunities.[1] The aim of this paper is to bring these potential choices together in a framework where men and women make their marriage decision with their location preferences in mind. I explore how men and women choose their spouse based on their location, and how joint migrants choose their destination. Further, I test how the decision to marry someone at the destination is affected by incentives or barriers to joint migrants.

I start by documenting several descriptive facts about couples' origins and locations. Using data from the Indonesia Family Life Survey (IFLS), I show that spouses primarily come from different subdistricts and distances between birthplaces can be large. There are important differences between urban and rural couples, with urban couples being generally more likely to have migrant spouses. Further, important interactions arise in the choice of rural and urban destinations in terms of economic activity, proxied by the average labor force participation rate: while rural-to-rural migrants (both joint and independent) on average live in locations with a higher labor force participation rate than their origin, rural-to-urban migrants are more likely to choose a destination that has a lower average

[1] For example, Rosenzweig and Stark (1989) show that marriage migration can serve as a mechanism for consumption smoothing for rural families in India.

Figure 1: Migration frequency by age and gender



labor force participation rate as their origin. This indicates important trade-offs between urban labor markets and those with high economic activity.

How do location preferences enter the marriage decision, and how much do couples value their location? To investigate this, I introduce a structural model of the marriage market where men and women can find a spouse in their home or across markets, while matching along location-specific traits and education. Thereby, couples can either be native (i.e., matching in the same location and stay), joint migrants, or mixed couples, where one of the spouses is a migrant and one is a native. In particular, individuals or couples can move between rural and urban locations which are further distinguished by their labor force participation rate. From the observed matches, I estimate preferences based on a parametric joint utility function within a matching model with transferable utility.

The results show that the highest utility comes from native couples in any location. Couples migrating together to urban destinations receive positive, but lower utility levels and rural migration is associated with negative utilities. In other words, couples migrating together face utility losses compared to those staying at home. Similar destination-dependent results are recorded for mixed couples, where urban mixed couples receive higher utility than those in rural areas. This is true both for couples with a male or a female migrant. Further, matching on education plays an important role for all types of couples.

These findings are consistent with strong preferences for matching at the origin. The utility losses incurred by joint migrants may incorporate migration costs and the weak-

ening of social ties that can benefit couples staying at home (Debray et al., 2025). The results further indicate that urban locations are preferred by both joint migrants and mixed couples. Given these findings, I turn to assessing how the "origin matching" preference interacts with migration preferences to urban destinations or destinations with a bigger labor market. To do this, I simulate counterfactual policy scenarios where (1) joint migration becomes less costly in utility terms, or (2) joint migration to some destinations is restricted or too costly. The resulting equilibrium matching into mixed couples indicates how responsive this migration channel is to changes in the availability of joint migration.

Reducing the utility loss from joint migration to all destinations affects mixed marriages primarily in urban areas, with both male and female migrants from all origins. This serves as evidence that matching with someone at the origin would be preferred if joint migration was less costly. In light of migration frictions for couples, marriage migration can serve as a way to realize migration preferences, particularly to urban areas. This is further confirmed when restricting urban access for joint migrants, which increases mixed marriages there by 7-17 percentage points, depending on the labor force participation rate. By contrast, restricting joint access to destinations with higher labor force participation, regardless if rural or urban, only affects mixed marriages in urban areas. This suggests that marriage migration only compensates for having a spouse from the same origin when the destination is urban.

Related Literature This paper relates to several strands of the literature. First, it contributes to the understanding of assortative mating based on the origin, and in particular how location background enters marriage utility. The assortative mating literature has primarily focused on socioeconomic traits, including education and income (Anderberg et al., 2019, Charles et al., 2013, Eika et al., 2019, Pesando, 2021), or socially ascribed characteristics such as ethnicity, race, and religion (Bandyopadhyay and Green, 2021, Crespin-Boucaud, 2020, Goldman et al., 2025). Such studies typically find strong positive matching along these dimensions. Where people are born and grow up can be highly correlated with such background characteristics and may itself constitute a basis of matching. For example, couples that come from the same region may share similar worldviews or aspirations. My findings present evidence that, indeed, men and women sort positively into marriages based on the same origin.

I further show that migration preferences also enter the marriage decision. With this, my study aligns with other works focusing on marriage migration. Several studies have investigated marriage across borders in Asia and Europe (Adda et al., 2025, Ahn, 2021, Farahzadi, 2024, Kawaguchi and Lee, 2017, Weiss et al., 2018). These accounts highlight the role of sex imbalances, income differences, and residence incentives. In a similar vein, I test how location-based economic incentives are taken into account in the marriage decision when there are no borders, but potentially other (social or economic) frictions.

Internal marriage migration has been brought forward as an economic strategy, though mostly as a coping mechanism after income shocks (Becerra-Valbuena and Millock, 2021, Gray and Mueller, 2012, Hidrobo et al., 2022, Rosenzweig and Stark, 1989). Closest to my approach are Amirapu et al. (2022) and Dupuy (2021), which incorporate the role of urban labor markets into the marriage decision. With respect to their findings, I elaborate on the substitutability between joint migration and marriage migration.

Lastly, I add to the research on frictions in rural-to-urban migration by taking into account the role of marriage markets. With persistent gaps in productivity and living standards between rural and urban areas in many developing countries (Gollin et al., 2014, Lagakos, 2020), previous studies have sought to explain these discrepancies by migration costs (Bryan et al., 2014, Lagakos et al., 2020, 2023). On the other hand, Imbert and Papp (2020) show that potential migrants trade off higher wages in the city with work opportunities in their village, indicating that they disproportionately value staying at home or have a strong distaste for urban living conditions. Indeed, Bryan and Morten (2019) find that both migration costs and amenity differences are important drivers of productivity gaps. To what extent utility from migration may differ between independent and joint migrants has not been part of this research agenda, with the exception of Imbert et al. (2023). They show that the decision to bring family can lead to different trade-offs between wages and amenities for migrants compared to those leaving family behind. Compared to their approach, I consider the option of migrating together or migrating alone and marrying someone at the destination. Thereby, I explore a different type of trade-off between home and destination marriage markets and how they relate to the (dis)utility of joint migration.

Context Indonesia has been rapidly urbanizing in the last decades, reflecting large-scale rural-to-urban movements across the country.[2] Several urban centers have developed primarily across the main islands (UNDESA, 2019). Urban areas are characterized by a mix of industries, including trade, services and manufacturing, while rural areas are mainly agricultural. As census data from 2010 shows in Table 1.1, these sectoral differences also imply differences in labor force participation and wage employment. While urban regencies (the second-highest administrative level) are on average more than 1.5 larger in terms of their working-age population (15 and older), they exhibit an average labor force participation rate that is almost 10 percentage points lower than that observed in the rural population. On the contrary, the mean share of wage employment in the labor force population is twice as high in urban compared to rural areas. This implies that a high share of the rural labor force works self-employed or as a unpaid (family) worker. Further, both rural and urban areas experience large variation in labor force participation and wage employment.

[2] As Figure A.1 in Appendix A shows, Indonesia surpassed the regional average for urbanization in the early 1990s, reaching an urban population of over 50% by 2010.

Table 1.1: Labor force participation rates across regencies

	Total		Rural		Urban	
	Mean	SD	Mean	SD	Mean	SD
Population size	114,493.941	93193.716	86,835.547	73403.296	142,804.684	102349.058
in labor force	0.696	0.460	0.743	0.437	0.650	0.477
in wage employment	0.403	0.490	0.275	0.446	0.547	0.498

Note: Data from 493 regencies in IPUMS census 2010. The table displays the average working-age population size (aged 15 and older) in a regency, share of the working-age population in the labor force, and share of the labor force in wage employment.

These geographical differences in labor markets may be potential push or pull factors for movements within the country. This is in line with large migration flows within rural or urban locations in Indonesia as found in Bryan and Morten (2019). In this study, I therefore focus on moves both across rural and urban categories as well as across locations with differing labor force participation rates. Compared to wages as a measure of productivity, this indicator has the advantage of taking into account economic activity beyond wage employment. Further, while wage employment of women has been increasing over time, they are to a large extent involved in non-wage employment. Focusing on wages only may therefore understate the relevance of female labor force participation compared to men (Schaner and Das, 2016).

The remainder of this paper is structured as follows. In section 2 I describe the data sources and the sample, in particular with respect to couples' origins. Section 3 introduces the matching model. Section 4 describes the estimation approach, with the results summarized in 5. In section 6, I introduce the counterfactual analysis. Lastly, 7 concludes.

2 Data

The primary source of data is the 2014 round of the Indonesia Family Life Survey (IFLS). The IFLS is a multi-purpose panel survey that was administered to households and individuals over five waves (1993-2014). The first wave of the survey was launched in 1993, where households in 13 of the 27 Indonesian provinces were interviewed, see Figure A.2.[3] The sampling scheme stratified on provinces and urban/rural location, resulting in a sample representative of 83% of the population (Strauss et al., 2016). In the subsequent rounds, target households and respondents were re-interviewed and, if necessary, tracked to their new residence where new household members were also interviewed. The residents roster links each member to their spouse in the household. For respondents above the age of 15, detailed migration histories are collected. For all panel and new respondents in 2014, I use information on their birthplace, residence at age 12, and their current resi-

[3]The remaining provinces were excluded due to remoteness and political risk.

dence. While this information is available on the sub-district (kecamatan) level, i.e., the third-level adminstrative subdivision, I can also identify if their community at each point in time is rural or urban. I further use information on urban and rural labor force participation by regency, i.e., the second-level administrative unit, from the IPUMS sample of the 2010 census (Ruggles et al., 2024).

2.1 Sample

My population of interest is, primarily, married (or co-habitating) individuals living in the same household. Further, for the estimation I will use information on single, never-married men and women.[4] I focus my analysis on men aged 29 to 67, and women aged 24 to 63. As shown in Figure A.3, the median age at marriage is 25 for men and 21 for women, with 75% of men and women married by the age of 29 and 24, respectively. Therefore, I use this as a threshold for the age at which most men and women are married in expectation. This allows me to infer the utility for independent migration, without the expectation of getting married at the destination, from single migration. The descriptive findings are not substantially altered by this age restriction. Married individuals are matched with their spouse living in the same household, and singles are observed in their current residence.[5]

Table 2.1 describes important characteristics of the sample. The average age of the sample is 43 for men and 38 for women, with around 95% of men and women being married or living with their spouse. Almost 60% of men and women live in urban locations, while only 28% of men and 33% of women were born in an urban town or city. This reflects the urbanization trends of the country, and is underlined further by the fact that around 68% of men and 66% of women have moved away from their birthplace in their lifetime. In terms of education, men and women have similar levels of schooling. The majority of men and women in the sample have a secondary degree, with around 15% of men and 17% of women achieving higher than secondary education. Only around 2% of men and women have no education, and around a third of men and women have achieved a primary degree.

2.2 Descriptive Evidence

This section explores the composition of couples in terms of migrants and natives, the distances between spouses' birthplaces, and salient differences between rural and urban

[4] I exclude individuals that are divorced, separated, or widowed. Of all respondents aged 15 or older, 4.6% are widowed and 2% are divorced or separated. Shares of these groups are similar for men and women, and when taking into account older cohorts.

[5] There is only one case where one man is matched to two spouses in the same household. I drop this household altogether. The marriage history questionnaire reveals that around 4% of men indicate having more than one current wife. In this case, I treat the spouse living in the same household as the "main wife", which is included in the sample.

Table 2.1: Summary statistics

	Men		Women	
	Mean	SD	Mean	SD
Age in years	42.978	10.051	38.169	10.233
Married or cohabitating	0.948	0.221	0.947	0.223
Live in urban	0.571	0.495	0.593	0.491
Born in urban	0.284	0.451	0.325	0.469
Ever moved	0.675	0.468	0.664	0.472
Eduaction				
No education	0.024	0.153	0.035	0.184
Primary education	0.322	0.467	0.294	0.456
Secondary education	0.505	0.500	0.501	0.500
Tertiary education	0.150	0.357	0.170	0.376
Observations	8466		8462	

Notes: The sample contains men aged 29-67 and women aged 25-63. The variable "born in urban" is defined as the place of birth being a town or city. The variable "ever moved" is a binary variable that is 1 if the respondent does not live in the same sub-district as they were born or if they have indicated a move of over 6 months.

couples. Further, it discusses the types of destinations chosen by joint migrant couples and male or female independent (marriage) migrants.

Figure 2 shows the shares of couples from the same province, regency and sub-district in urban and rural Indonesia. Provinces are the highest administrative level in the country, covering large geographic areas and a number of regencies. Generally, a greater share of rural couples was born in the same location than is the case for urban couples. While the majority of couples is from the same province, the share drops to around 51% of urban couples and 68% of rural couples from the same regency. Only around half of rural and one third of urban couples were born in the same sub-district. Marriages across sub-districts can reach large distances, as seen in Figure 3. Consistent with the implications of Figure 2, around 50% of marriages are within a 5km distance.[6] Still, there is large variation in distances of cross-district marriages, with some reaching 800km and more.

Next, we investigate in more detail the composition of couples in terms of their birthplaces and where they live now. Figure 4 indicates three main types of couples: (1) those with both spouses coming from close to their current residence (observations in the bottom left corner of the plot), (2) couples that move together from the same birthplace (observations on the diagonal), and (3) couples where one spouse is from close to

[6]The distances in Figure 3 are calculated using geo-reference of the birth sub-districts. This implies that I cannot distinguish distances of marriages within sub-districts, which may be sizable in some areas given the high variation of sub-district sizes across the country.

Figure 2: Share of couples from the same birthplace

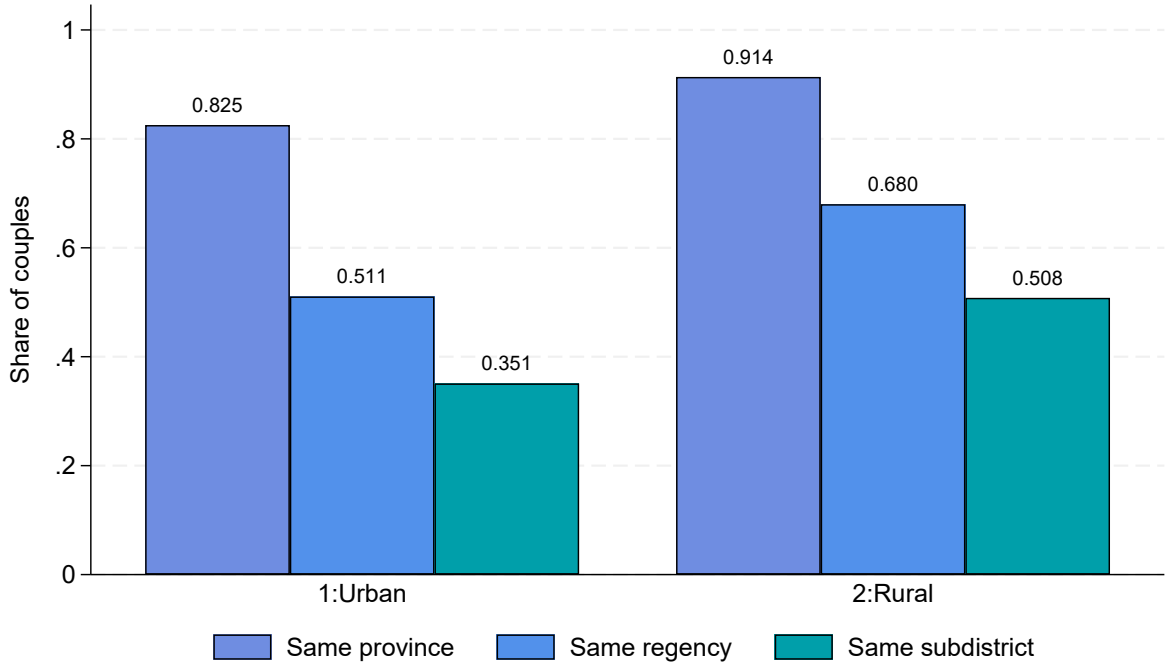
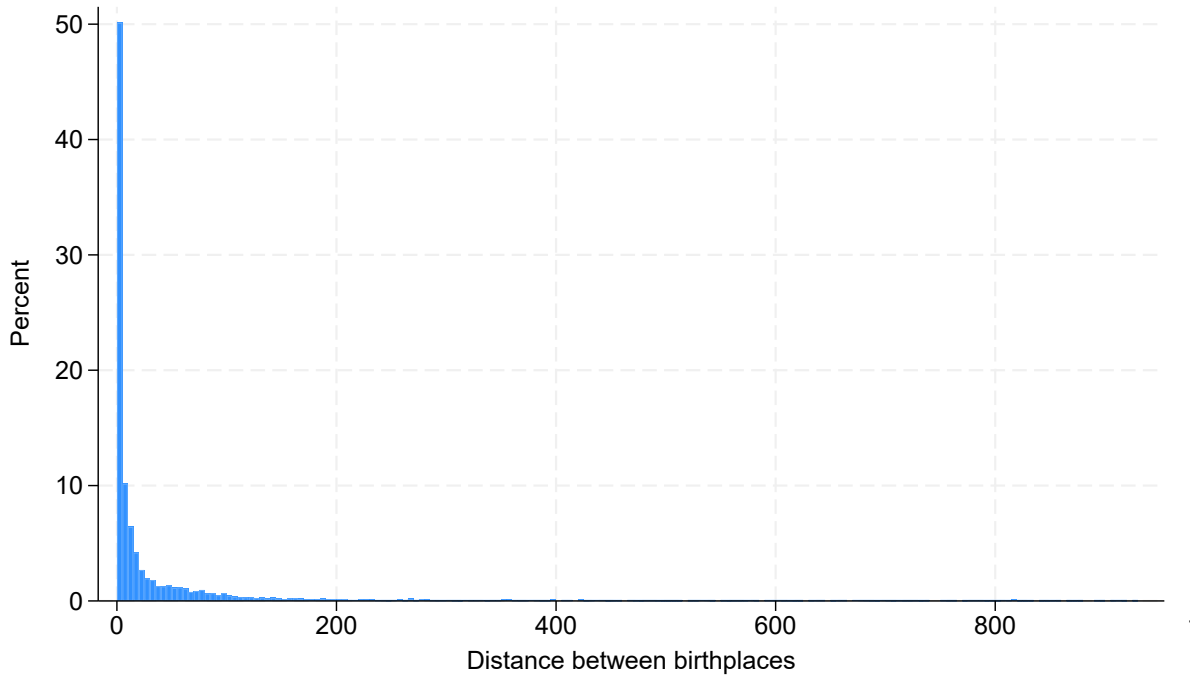


Figure 3: Distance between spouses' birthplaces



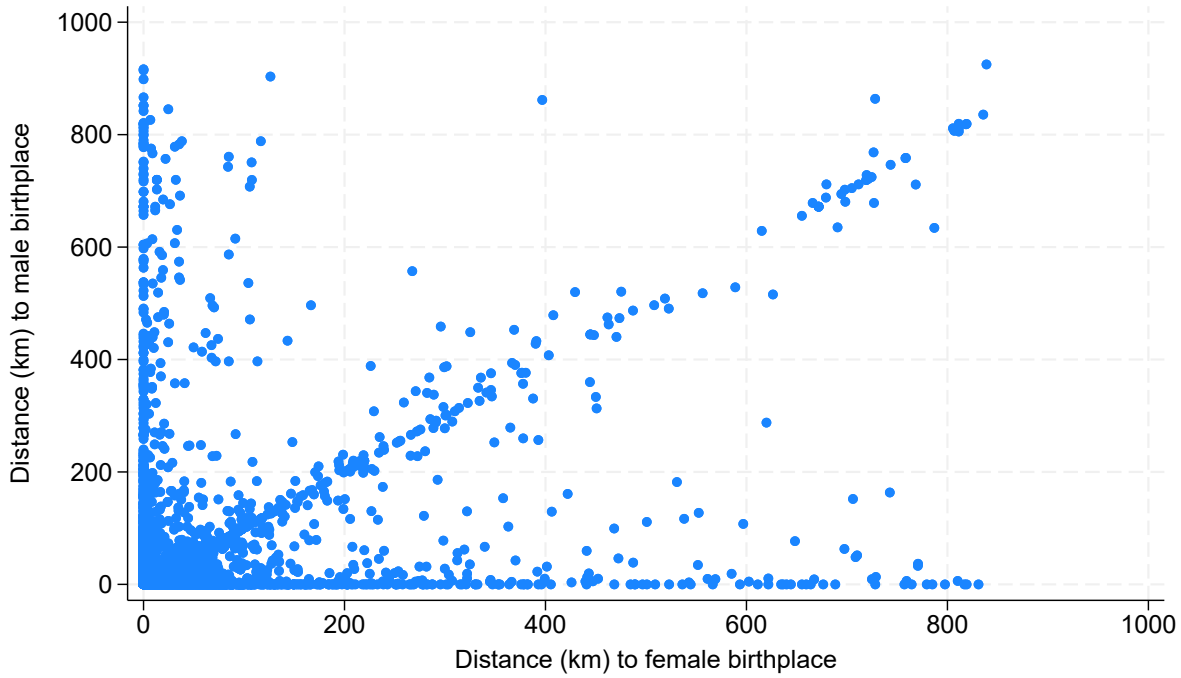
Notes: Distances are calculated using longitude and latitude of the sub-district at birth. Bins represent 5km distances. Observations with distances larger than the 99th percentile are dropped as outliers.

their current residence and the other has moved there (observations along the x- and y-axis). Again, the data suggests that while there is a large share of couples living close

to their birthplace, this is far from the only option. Notably, couples with both male and female (independent) migrants are prevalent. Further, all types of migrants, regardless if joint, male, or female, seem to cover extensive distances. This may reflect different locality norms present in Indonesia. Specifically, some ethnic groups primarily practice matrilocality, while others observe patrilocal (or neolocal) norms (Bau, 2021).[7] Locality traditions govern the post-marital location of the couple, which may be close to the husband's (in case of patrilocality) or the wife's (matrilocality) kin, or in an entirely new household (neolocal). Thereby, these traditions are intrinsically linked to migration behavior of couples.

Figure 5 shows the differences of types of couples by urban and rural residence. Couples that jointly move across sub-districts make up around 9% of urban couples and 10% of rural couples. Around 42% of urban couples consist of a migrant wife and 40% have a migrant husband. By contrast, the share of rural couples with a female migrant is 31% and those with a male migrant is 27%. Thus, while similar shares of couples moving together exist in rural and urban areas, urban couples are largely characterized by independent migrants.

Figure 4: Distance between spouses' birthplaces and current location

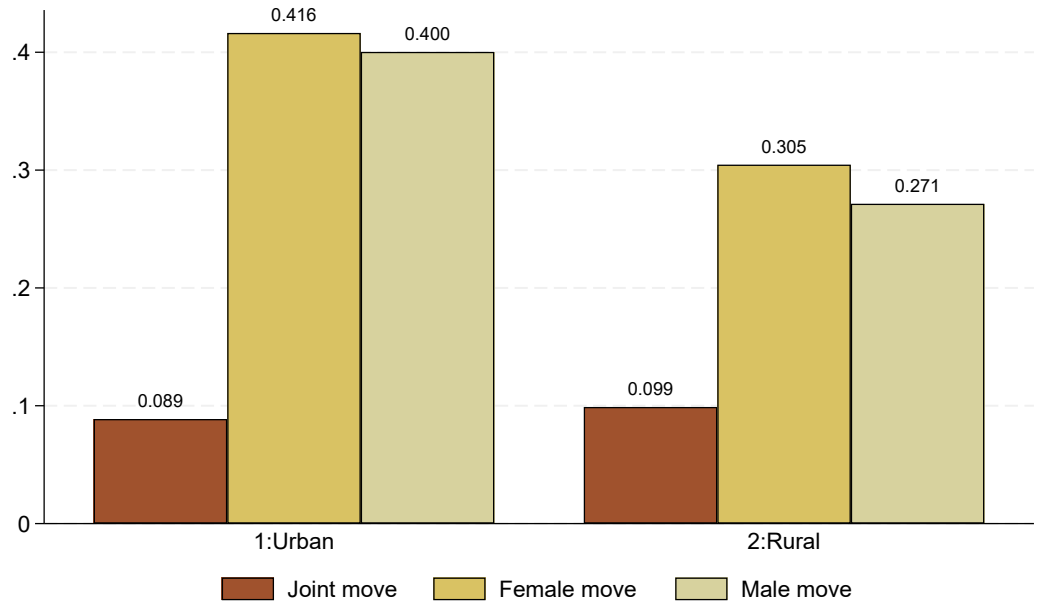


Notes: Distances are calculated using longitude and latitude of the sub-district at birth and current residence. Observations with distances larger than the 99th percentile are dropped as outliers.

Lastly, Figure 6 shows the type of rural and urban destinations different migrant types

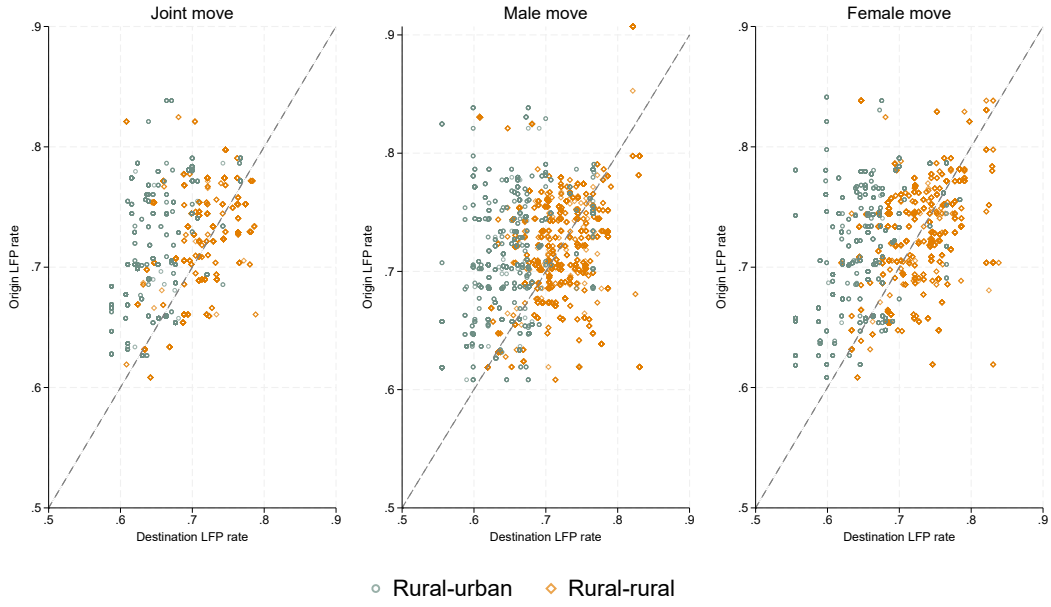
[7]Ethnicity and religion play a major role in the family formation. This is reflected in the 2010 census, where 89% of couples are from the same ethnic group.

Figure 5: Share of migrant couples by urban and rural residence



Notes: Migration is defined as moves across sub-districts from birthplace to current residence. The graph shows the shares of couples in rural and urban locations of each migrant type: joint move (both spouses from same sub-district), female move (wife from different sub-district), male move (husband from different sub-district).

Figure 6: Origin and destination labor force participation rate by type of move



Notes: Graphs plot the origin and destination labor force participation rate on the regency level. Migration is defined by moves across regencies for each migrant type: joint move (both spouses from same sub-district), female move (wife from different sub-district), male move (husband from different sub-district).

choose in terms of labor force participation.[8] It indicates that rural-to-rural moves are primarily taking place to destinations with higher labor force participation than the origin, while rural-to-urban moves are more likely to go in the opposite direction. This pattern appears for couples that move jointly as well as those where either the husband or the wife has moved. However, Figure 5 showed that the share of mixed marriages is higher in urban areas compared to rural areas. In combination, this could imply that marriage migrants are more prone to enter urban destinations by making concessions on the size of the labor market, while for joint migrants the trade-off is less clear.

While these descriptive facts shed light on the observed choices in partners and locations, they cannot give insight into the underlying preference structure that leads to these observations. For example, from observing mixed couples in urban locations, we cannot distinguish if these couples formed because of intrinsic preferences, or as an equilibrium outcome from bounds to joint migration. To shed light on how these choices interact with each other, we move to a structural model in the next section.

3 Model

This section introduces a two-sided matching model with transferrable utility including location choice to explain how spousal characteristics and location characteristics enter the marriage decision. This model allows for a general equilibrium analysis taking into account preferences of both sides of the marriage market and the supply of potential spouses. The estimation of structural parameters from the model further enables the application of a counterfactual analysis in section 6.

The decision-makers in this market are men and women, who match given their personal preferences and bargaining based on utility transfers. It should be noted that while arranged marriage traditionally has played a role in the family formation in Indonesia, the decision-making has shifted from parents to the spouses in the recent decades, with almost 95% of couples recorded in the IFLS and married after 2000 confirming they were the ones who chose their spouse.[9] Still, even in the case of family involvement in the match, I will assume that the decision was made based on the spouses' utility.

Transfers can be in form of monetary or non-monetary exchanges. For example, some ethnic groups in Indonesia engage in bride price customs (Ashraf et al., 2020). However, these customs often include the exchange of gifts that are hard to be priced accurately. Beyond that, utility transfers may include other non-monetary concessions such as child rearing or housework. Thus, while transfers are an equilibrium object in the model, they will not be explicitly identified.

[8] The figure displays moves across regencies instead of sub-districts as more reliable labor force participation rates are taken from the 2010 census, which is only available on the regency level. The trends are replicable when taking information on labor force participation from the IFLS and plotting moves across sub-districts.

[9] This is compared to 61% of couples that were married in 1970 or earlier.

The model assumes a frictionless market as in Choo and Siow (2006). This implies that individuals have perfect information about the distribution of the types of potential partners in different marriage markets. Given that in my model, people care about their partners' origin (in terms of rural/urban status and level of labor force participation) and their education level, it may be plausible to assume perfect information and the absence of search costs. Still, marrying someone away from home may involve overcoming physical and social constraints, e.g., leaving family and social ties behind. While these potential frictions cannot be directly measured, I intend to shed light on "utility costs" involved in joint or independent migration through the counterfactual exercise.

Lastly, I introduce location as a choice within the marriage decision following Dupuy (2021). As the model is static, the marriage and migration decision is made once and is irreversible. For marriage, this implies no divorce and re-marriage is possible. For the location choice, this can be interpreted as permanent migration.

3.1 Two-sided Maximization Problem

The market consists of men of type $x \in \mathcal{X}$ and women of type $y \in \mathcal{Y}$, which includes the origin, denoted by $Z(x)$ and $Z(y)$. There are finite masses of types $N(x)$ and $M(y)$ in the market. Formally, men and women choose their partner from the choice sets $\mathcal{Y}_0 = \mathcal{Y} \cup \{0\}$ and $\mathcal{X}_0 = \mathcal{X} \cup \{0\}$, respectively, where 0 denotes the option to remain single. Locations are of type $z \in \mathcal{Z}$, including the origin $Z(x)$ for men and $Z(y)$ for women.

The utility of man i of type x married to a woman of type y living in location z is given by:

$$u_i(x) = \alpha(x, y, z) + t(x, y, z) + \varepsilon_i(y, z)$$

Similarly, the utility of a y-type woman j married to a man of type x in location z is:

$$v_j(y) = \gamma(x, y, z) - t(x, y, z) + \eta_j(x, z)$$

where $\varepsilon_i(y, z)$ and $\eta_j(x, z)$ are idiosyncratic tastes of man i (woman j) for a type of woman y (man x), drawn from an Extreme Value type I distribution.

Therefore, the systematic part of their utilities, $\{\alpha(x, y, z)+t(x, y, z)\}$ and $\{\gamma(x, y, z)-t(x, y, z)\}$, consists of an intrinsic utility, $\alpha(x, y, z)$ or $\gamma(x, y, z)$, and a utility transfer, $t(x, y, z)$, from one side of the match to the other. The intrinsic (or direct) utilities account for utility that is received from matching with a man of type x or a woman of type y as well as the utility of living in location z. The transfer allows for a bidding process and connects the utilities of i and j in case they match. If i and j match, they receive a joint systematic utility

$$\begin{aligned}\Phi(x,y,x) &= \alpha(x,y,z) + t(x,y,z) + \gamma(x,y,z) - t(x,y,z) \\ &= \alpha(x,y,z) + \gamma(x,y,z)\end{aligned}$$

where the transfer $t(x,y,z)$ cancels out.[10]

If man i and woman j decide to stay single, they receive a reserve utility of

$$u_i^0(x) = \alpha(x,0,z) + \varepsilon_i(0,z)$$

and

$$v_j^0(y) = \gamma(0,y,z) + \eta_j(0,z)$$

Man i and woman j then maximize their utilities according to:

$$\max_{y \in \mathcal{Y}^0 z \in \mathcal{Z}} \{\Phi(x,y,z) - \gamma(x,y,z) + \varepsilon_i(y,z), \quad \alpha(x,0,z) + \varepsilon_i(0,z)\}$$

for man i, and

$$\max_{x \in \mathcal{X}^0 z \in \mathcal{Z}} \{\Phi(x,y,z) - \alpha(x,y,z) + \eta_j(x,z), \quad \gamma(0,y,z) + \eta_j(0,z)\}$$

for woman j.

This two-sided maximization problem produces a matching vector μ in equilibrium, which contains the masses of couples of types x and y in location z, $\mu(x,y,z)$, as well as the masses of single men of type x, $\mu(x,0,z)$ and the masses of single women of type y, $\mu(0,y,z)$. Matching μ must satisfy the feasibility constraints:

$$N(x) = \sum_{yz} \mu(x,y,z) + \sum_{z} \mu(x,0,z), \quad \text{and} \quad M(y) = \sum_{xz} \mu(x,y,z) + \sum_{z} \mu(0,y,z)$$

Therefore, man i and woman j face several trade-offs. First, given their preferences for their partners' type and the masses of men or women of this type in market z, they decide on where to get married to whom. They further trade off the utility from a potential match with the outside option of staying single. Lastly, they take into account the utility they receive as a single native or migrant in location z, with the utility they receive as a native, migrant, or mixed couple in location z. Given the finite types of men and women in the market, both sides negotiate an adequate transfer $t(x,y,z)$.

[10] This result is conveniently used in the identification of the joint utility $\Phi(x,y,z)$ instead of separate utilities $\alpha(x,y,z)$ and $\gamma(x,y,z)$, as the (hypothetical) transfer between husbands and wife is not observed in the data.

3.2 Equilibrium

Given the distributional assumptions on the idiosyncratic tastes, the maximization problem above can be solved as a two-sided discrete choice problem. As outlined in Dupuy (2021), this results in the following solutions:

$$\Phi(x,y,z) = log\left(\frac{\mu^2(x,y,z)}{\mu(x,0)\mu(0,y)}\right) \tag{1}$$

for couples, where $\Phi(x,y,z)$ is the joint systematic utility from $\alpha(x,y,z) + t(x,y,z) + \gamma(x,y,z) - t(x,y,z)$ and $\mu(x,0), \mu(0,y)$ are the masses of singles of types x or y at origin location $Z(x)$ or $Z(y)$, respectively. As I do not observe data on the utility transfers $t(x,y,z)$, for couples I will identify the joint surplus $\Phi(x,y,z)$ from marriage in location z compared to staying single at home. For singles, the solutions are:

$$\alpha(x,0,z) = log\left(\frac{\mu(x,0,z)}{\mu(x,0)}\right) \tag{2}$$

$$\gamma(0,y,z) = log\left(\frac{\mu(0,y,z)}{\mu(0,y)}\right) \tag{3}$$

Assuming that we observe a stable equilibrium in the data, these result imply that the objects $\Phi(x,y,z), \alpha(x,0,z)$ and $\gamma(0,x,z)$ are a direct mapping of the observed choices through the matching pattern $\mu = \{\mu(x,y,z), \mu(x,0,z), \mu(0,y,z)\}$.[11]

3.3 Identification

I will leverage these results to identify several key objects of interest:

(1) Native couples' joint utility in location $z = Z(x) = Z(y)$, i.e., the utility of a couple with the same origin and still residing in the origin;

(2) Joint migrant couples' utility in $z \neq Z(x) = Z(y)$, i.e., the utility of a couple with the same origin in a new location;

(3) Mixed couples' utility in location $z = Z(x) \neq Z(y)$ or $z = Z(y) \neq Z(x)$, i.e., the utility of a couple with one migrant spouse; and

(4) Single migrants' utility in $z \neq Z(x)$ or $z \neq Z(y)$.

By normalizing the utility of single natives to 0, i.e., $\alpha(x,0,Z(x)) = 0$ and $\gamma(0,y,Z(y)) = 0$, the above utilities are expressed as the surplus of a (native/migrant/mixed) couple or migrant single of type x and y compared to being single at home.

[11] The equilibrium matching is stable under the conditions that (1) no married individual would rather be single (no divorce), and (2) no two individuals who are not married to each other would rather be married with each other. The first condition is in line with the low number of observed divorces in the sample and the high stigma surrounding divorce in the country. While it is hard to justify the second condition with data, it is a standard and intuitive assumption when analyzing marriage markets in general.

3.4 Spousal and Location Types

With the model, I aim to primarily estimate who marries whom in terms of their origin and where different types of couples settle. To do this, I distinguish the location types between rural and urban, as well as the level of labor force participation, which can be either low or high compared to a threshold value. Given that the potential origin types $Z(x)$ and $Z(y)$ are identical to the location types z, the set of origin and location types are summarized as $z = Z(x) = Z(y) = \{RL, RH, UL, UH\}$, where R is rural, U is urban, L is low and H is high labor force participation. In terms of data, the rural/urban status is taken from the IFLS.[12] The low or high labor force participation rate is determined using information from the 2010 census and linked on the regency-level to the origin and current location. The threshold is set at the country-level average (69.6% as indicated in Table 1.1). Therefore, migration is determined by changes in the type of location from the type of origin, i.e., across rural/urban classification and/or across levels of labor force participation.

Another attribute that may be important in determining both a marital match and the propensity to migrate is the education level. Therefore, men and women are further distinguished by their schooling, which can be either low – primary level or below (P), or high – high school level or above (HS). Assortative mating, especially for higher levels of schooling, has been documented for developed and developing countries (Eika et al., 2019, Esteve et al., 2016, Pesando, 2021). Data from the 2010 Indonesian census shows that around 72% of couples had the same education level. However, this may be due to the distribution of educational attainment of men and women or preferences. Further, differences in assortative mating may arise across different types of locations given higher potential incomes.

4 Estimation

To estimate preferences over types of spouses and locations, I assume that the joint surplus of couples and the migration surplus of singles are linear in parameters:

$$\Phi^{\lambda}_{xyz} = \phi'_{xyz}\lambda = (\phi_{xy} \times z)'\lambda \tag{4}$$

$$\alpha^{\delta}_{x0z} = \Lambda'_{x0z}\delta = (\Lambda_{x0} \times z)'\delta \tag{5}$$

$$\gamma^{\tau}_{0yz} = \Gamma'_{0yz}\tau = (\Gamma_{0y} \times z)'\tau \tag{6}$$

[12] While the rural/urban status is collected directly for the community in which the respondent is found, for the origin I take self-reported information on the birthplace being a village, small town, or big city. I consider villages rural and small towns and big cities as urban.

where ϕ'_{xyz} contains indicator variables determining a marital match between natives, joint migrants, and mixed couples as well as couples with the same level of education for each location z. Similarly, Λ'_{x0z} and Γ'_{0yz} contain indicator variables for single migrants to z, as well as an interaction term with higher education.

Using the system of equations (1), (2), and (3), I then employ a moment-based estimation strategy by Poisson regression following Galichon and Salanié (2024).[13] To do this, we can combine the expressions with the feasibility constraints and rearrange them into a Poisson model of the following form:

$$\mathbb{E}[\mu^0_{xyz} \mid \phi'_{xyz}, \Lambda'_{x0z}, \Gamma'_{0yz}, \mathbf{I}_X, \mathbf{I}_Y, w] = \exp\left(w\phi'_{xyz}\lambda + w\Lambda'_{x0z}\delta + w\Gamma'_{0yz}\tau + w\mathbf{I}_X + w\mathbf{I}_Y\right) \quad (7)$$

where $\mu^0_{xyz} = \{\mu_{xyz}, \mu_{x0z}, \mu_{0yz}\}$, $\mathbf{I}_X$ and $\mathbf{I}_Y$ are indicator variables for types x and y and w are weights that are 0.5 for couples and 1 for singles. In other words, I run a Poisson regression of μ^0_{xyz} on the matching indicators in ϕ'_{xyz}, Γ'_{0yz} and Λ'_{x0z} with weighted x- and y- fixed effects. These fixed effects control for the total masses of types of x and y in the market according to the feasibility constraints of the model. Practically, this means that we can control for the supply of men and women by their education level and origin characteristics. The singles' migration parameters δ and τ then quantify the importance of an attribute (here: the education level) for the selection into single migration (by location), and the couples' parameters collected in λ quantify the importance of matching on a particular attribute (origin and education) by location.

5 Estimation Results

5.1 Model Fit

Before presenting the estimation results, this subsection provides evidence that the predictions from the applied specification fit the data well. Table 5.1 shows the actual and predicted population sizes in each location, in total, by gender, and by type of household. Overall, the predicted data matches well the observed data, both in terms of total population sizes and disaggregated populations of interest. This is true for all locations, with no major divergences.

The fit also holds when considering the marriage shares by genders as in Figure 7. The marriage shares of both men and women are slightly underpredicted in rural areas, but differences are small. For urban marriages, the data is well represented.

Lastly, we can assess the fit of the predictions in terms of type of couples observed. The main categories of interest are displayed in Figure 8. Again, predictions are close to

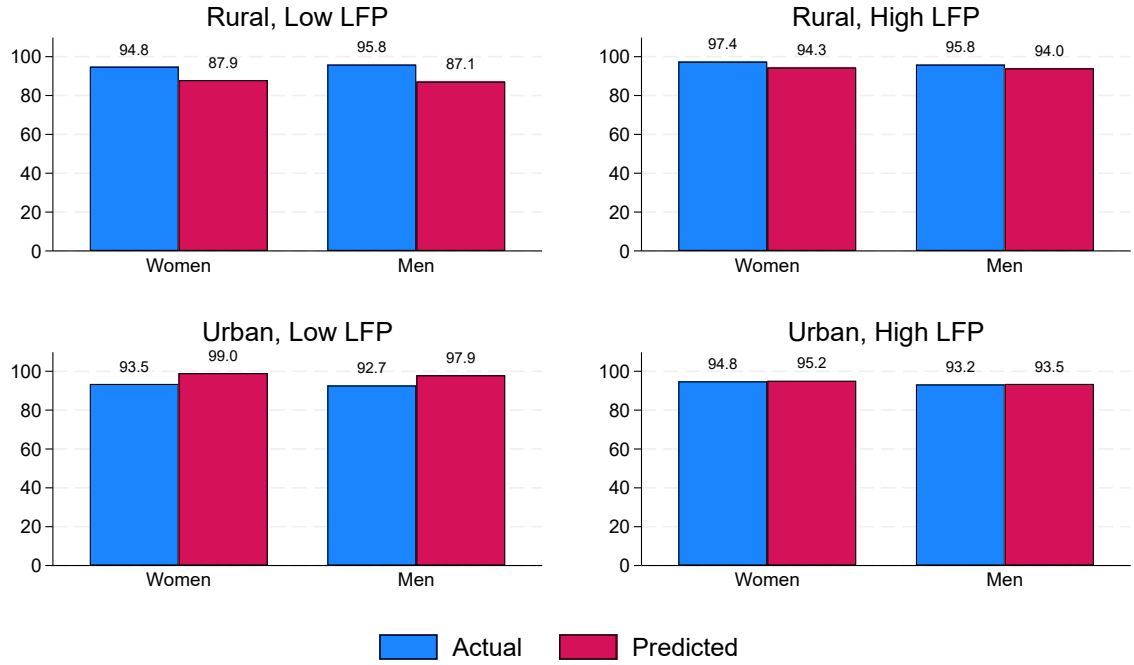
[13] This method is a fast and straightforward alternative to the moment-matching procedure introduced in Galichon and Salanié (2022). The goal of this procedure is to match moments in the data to simulated moments in the model, using the given set of basis functions.

Table 5.1: Actual versus predicted population

	Total		Men		Women		Couples		Migrants	
	Data	Pred.	Data	Pred.	Data	Pred.	Data	Pred.	Data	Pred.
RL	1971	2146.58	980	1078.53	991	1068.05	939	1002.28	358	456.61
RH	4182	4290.24	2108	2149.10	2074	2141.13	2020	2068.40	535	608.52
UL	4948	4676.43	2485	2351.26	2463	2325.18	2303	2195.81	1807	1692.94
UH	3264	3251.75	1646	1640.11	1618	1611.64	1534	1502.05	1559	1528.39

Note: The table shows actual number of matches (count data) from the IFLS 2014 data and those predicted by the model. The column "Total" provides the total population. "RL" stands for rural, low economic activity, "RH" for rural, high economic activity, "UL" for urban, low economic activity, and "UH" for urban, high economic activity locations.

Figure 7: Actual versus predicted marriage rates

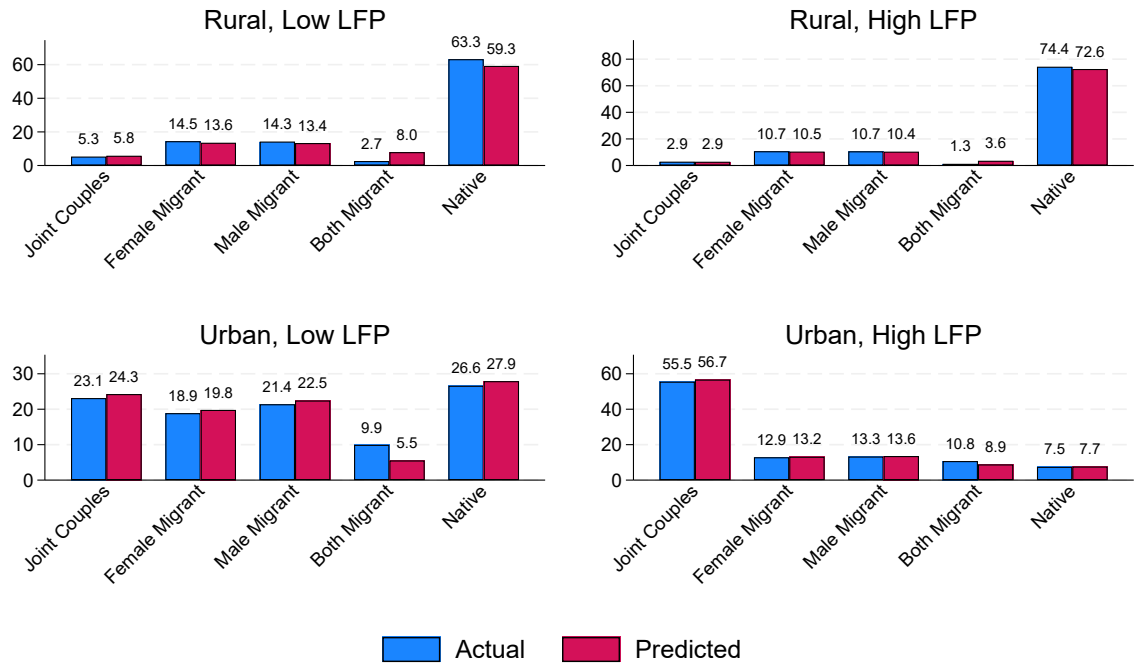


the shares observed in the data. Joint migrant couples are slighly overpredicted in rural locations and underpredicted in urban locations. However, these differences are small.

5.2 Preferences

The first set of results pertain to utilities received by a type of match or single. As described above, the parameters can be interpreted as a surplus from marriage or single migration with respect to staying single at home (given a specific type). They can also be seen as preference parameters in comparing different choices with each other. Table 5.2 presents the main parameter estimates for the model specified in equation (7) above. It shows that native couples receive positive marriage utility across locations, which is consistently higher than joint migrants and mixed couples. On average, joint migrants in rural destinations receive negative utility, while those in urban areas receive a positive

Figure 8: Actual versus predicted matches by type of couple



level that is still lower than for natives. With similar levels of positive assortative mating in education for native and migrant couples, only those rural migrant couples matching on their education level increase their utility to a positive level. Taken together, these results imply a strong preference both for matching with someone from the same origin and for staying there together.

Turning to mixed marriages, the results are similar for couples with a male or female native. Mixed marriages in urban locations receive higher utility than those in rural areas. While for couples with a native husband there is no large distinction between locations with higher or lower economic activity, those with a native wife seem to receive higher utility in locations where labor force participation is lower. This could imply that men migrating to these types of locations benefit more from marrying a native than when migrating to urban destinations with better labor markets.

Lastly, migration utilities for singles can give insight into how men and women value the outside option of independent migration without marriage. While precise estimation is difficult due to the low number of observed single migrants, the results suggest that, similar to couples, urban destinations are preferred to rural ones. However, single migration is costly anywhere for both men and women, and this is only partly offset by a higher education level.

Table 5.2: Estimation results

	Rural		Urban	
	Low LFP	High LFP	Low LFP	High LFP
Both native	4.023	4.72	5.817	2.985
	(0.377)	(0.344)	(0.719)	(0.399)
Same education	2.296	2.207	2.87	2.956
	(0.337)	(0.217)	(0.199)	(0.194)
Joint migrants	-2.93	-2.461	1.726	2.473
	(0.408)	(0.436)	(0.715)	(0.568)
Same education	2.592	3.451	2.058	2.245
	(0.592)	(0.671)	(0.954)	(0.749)
Wife native	-.149	.242	2.102	.388
	(0.659)	(0.503)	(0.897)	(0.622)
Same education	1.707	1.947	2.998	3.004
	(0.718)	(0.620)	(0.755)	(0.791)
Husband native	-.706	.538	2.143	1.475
	(0.550)	(0.583)	(0.816)	(0.705)
Same education	2.168	1.478	2.795	2.051
	(0.774)	(0.651)	(0.611)	(0.835)
Male single migrant	-2.932	-.605	-.603	-.532
	(0.988)	(1.541)	(1.236)	(1.070)
High education	.854	-.977	.544	.813
	(1.092)	(1.486)	(0.950)	(0.642)
Female single migrant	-1.99	-1.5	-.65	-.252
	(1.653)	(1.098)	(1.163)	(1.141)
High education	.426	-.149	1.197	.597
	(1.404)	(0.689)	(0.809)	(0.657)

Notes: The table presents the parameter estimates for different matching indicators for each location. Standard errors are presented in parenthesis below the estimates. LFP = labor force participation rate.

5.3 Utility Differences by Origins and Destinations

The results in Table 5.2 indicate a utility loss from migrating both independently and as a couple, compared to staying at the origin. For joint migrants, the estimated parameters are an average of the utility received in each destination, without distinction between origins. To further investigate the utility differences between natives at the origin and joint migrants by destination, here I re-estimate equation (7) with a full set of origin-destination parameters for joint migrants. Thereby, I can calculate the utility differences between a couple from each origin staying behind (native) and the same type of couple migrating to location z. Given that transfers are unobserved, this approach is only feasible for joint migrants. For mixed couples, I am unable to identify the spouses' individual utilities in the marriage, and thereby cannot pinpoint any disutility related to the migrant spouse's move. The results for single migrants can potentially give insight into the utility differences faced when moving independently, under the assumption that those that marry

at the destination and those that stay single moved under the same conditions. However, as previously stated, singles' utility differences cannot be estimated precisely given the sample size. Instead, in the next section I will investigate how responsive mixed marriages are to changes in the migration disutility of joint migrants, to give insights on the relative utility costs between joint and marriage migration.

For joint migrant couples, the disutilities are calculated by taking the difference between the native parameter and the migration parameter by origin-destination pair:

$$\Delta_o^d = \lambda_o^N - \lambda_o^d$$

where Δ_o^d denotes the joint migration disutility, or utility loss, of a couple from origin o in destination d, the parameter λ_o^N indicates the utility from native couples by origin, and λ_o^d indicates the utility from joint migrants by origin-destination pairs. Due to data limitations, I restrict the possibility of migration from urban areas with high labor force participation to rural destinations with low labor force participation[14].

Table 5.3: Migration disutilities

	Location			
Couples' Origin	Rural, Low LFP	Rural, High LFP	Urban, Low LFP	Urban, High LFP
Rural, Low LFP	0.00	6.93	0.48	9.20
Rural, High LFP	7.34	0.00	5.54	1.28
Urban, Low LFP	5.01	10.13	0.00	6.13
Urban, High LFP	excl.	3.55	3.96	0.00

Note: Disutilities are calculated as the difference between utility from migration to a destination and utility from staying at the origin.

Table 5.3 provides the results of this exercise. Several things can be noted for joint migrants. Generally, all moves are characterized by utility losses, with moves to rural destinations associated with higher disutilities on average. This reflects the results found in Table 5.2. Rural couples from origins with lower labor force participation face higher disutility from moving to urban destinations with higher compared to those with lower labor force participation. Similar results apply for those from rural areas with higher labor force participation. While the latter might be expected, the former is more counter-intuitive. It implies that couples receive some utility from synergies in the level of the labor markets between the origin and destination, rather than simply from a higher level. These results seem to hold also for couples originating from urban markets. In the following counterfactual analysis, I therefore focus on overall joint migration costs as well as the roles of urban destinations versus those (rural or urban) with higher labor force participation.

[14] As the cells for joint migrants from this origin-destination pair are zero, the Poisson estimator excludes this parameter to ensure identification.

6 Counterfactual Analysis

Recent evidence in the literature on internal migration has indicated that, rather than migration intentions, high migration costs can be a main deterrent of mobility (Bryan and Morten, 2019, Lagakos et al., 2020). Experimental studies have shown that even small monetary incentives can lead to an increase in migration (Bryan et al., 2014, Lagakos et al., 2023). However, these settings are typically focused on seasonal or temporary migration, where the household remains in the (often rural) origin and one (often male) householder leaves to the city for temporary work. It is more difficult to design an experiment that targets permanent relocation of families. Yet, these types of policies could have large effects on overall productivity (Bazzi et al., 2016). In the following, I explore the consequences on the marriage market of a policy that incentivizes mobility of couples disproportionately. These could be, for example, policies that target married couples specifically (such as the Indonesia transmigration program carried out between 1950 and 2000), or that offer support for dependent spouses or families of migrants.

On the other hand, governments may want to navigate migration flows to highly productive destinations and thereby control population dynamics. Typically, such policies aim at restricting access to public services for migrants, with the hukou system in China being a well-known example. Yet, many other countries follow similar practices (Bloom and Khanna, 2007). Such policies may affect joint migrants disproportionally, as they value amenities at the destination more than independent migrants (Imbert et al., 2023). Therefore, marriage migration may be a channel to circumvent these adverse conditions. A second counterfactual exercise will therefore test how deterrents to joint migration into urban or high-productivity locations affect marriage decisions at home and at the destination.

Following Galichon and Salanié (2022), the counterfactual equilibrium matching is computed using the results (1)-(3) from section 3.2 in an iterative projection fitting procedure (IPFP) algorithm. Rearranging the expressions and plugging them into the feasibility constraints (3.1) results in the following two expressions:

$$\mu_{x0} = \left(\sqrt{\frac{N_x}{\sum_{z\in\mathcal{Z}} L_{xz}} + \left(\frac{\sum_{y\in\mathcal{Y},z\in\mathcal{Z}} K_{xyz}\sqrt{\mu_{0y}}}{2\sum_{z\in\mathcal{Z}} L_{xz}} \right)^2} - \frac{\sum_{y\in\mathcal{Y},z\in\mathcal{Z}} K_{xyz}\sqrt{\mu_{0y}}}{2\sum_{z\in\mathcal{Z}} L_{xz}} \right)^2$$

$$\mu_{0y} = \left(\sqrt{\frac{M_y}{\sum_{z\in\mathcal{Z}} P_{yz}} + \left(\frac{\sum_{x\in\mathcal{X},z\in\mathcal{Z}} K_{xyz}\sqrt{\mu_{x0}}}{2\sum_{z\in\mathcal{Z}} P_{yz}} \right)^2} - \frac{\sum_{x\in\mathcal{Y},z\in\mathcal{Z}} K_{xyz}\sqrt{\mu_{x0}}}{2\sum_{z\in\mathcal{Z}} P_{yz}} \right)^2$$

with $K_{xyz} = exp(\frac{\Phi^{\lambda}_{xyz}}{2})$, $L_{xz} = exp(\alpha^{\delta}_{x0z})$, and $P_{yz} = exp(\gamma^{\tau}_{0yz})$. The parameters λ, δ, and τ are adjusted according to the counterfactual scenario tested, as explained below.

A fixed-point algorithm (IPFP) is employed to find equilibrium expressions of (μ_{x0}, μ_{0y}). The steps of the algorithm are the following:

1. taking an initial guess of μ_{x0},
2. update values of μ_{0y} using current values of μ_{x0},
3. update the values of μ_{x0} using the current values of μ_{0y},
4. go back to step 2 until convergence.

Once a solution for the expressions (μ_{x0}, μ_{0y}) is achieved, we can find the new equilibrium matching patterns from:

$$\mu_{xyz} = K_{xyz}\sqrt{\mu_{x0}\mu_{0y}},$$

$$\mu_{x0z} = L_{xz}\mu_{x0},$$

and

$$\mu_{0yz} = P_{yz}\mu_{0y}$$

Comparing the matching patterns under observed and counterfactual utilities allows for the quantification of the substitutability of key choices of interest: staying and marrying at home, migrating together, or marrying elsewhere.

6.1 Role of Joint Migration Disutility

To understand the role of joint migration on marriage market decisions, I simulate several policy scenarios in which the utility to jointly migrate becomes less "costly" in utility terms. For this, I use the concept of migration disutility established above and gradually add part of the native utility to that of migrants.

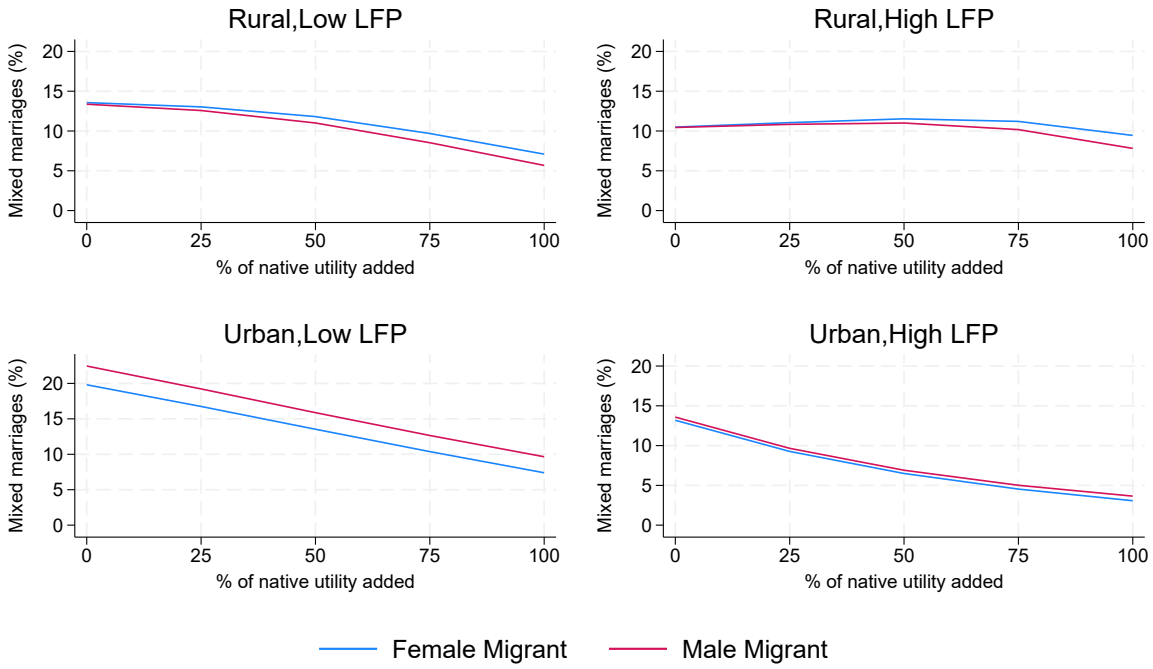
Recall that the baseline disutility from joint migration is $\Delta_o^d = \lambda_o^N - \lambda_o^d$. Then the counterfactual disutility $\Delta_o'^d$ is the baseline disutility reduced by a factor $x \in [0.25, 0.5, 0.75, 1]$ of the native utility:

$$\begin{aligned} \Delta_o'^d &= \Delta_o^d - x\lambda_o^N \\ \Delta_o'^d &= \lambda_o^N - (\lambda_o^d + x\lambda_o^N) \end{aligned} \tag{8}$$

Gradually adding part of the native utility (25, 50, 75 and 100%) allows me to explore the trajectory of trade-offs made given different levels of migration disutility. The extreme case where the entire native utility is added mimics a scenario where joint migrants receive

the same utility as if they were staying at their origin, plus the utility they receive from a specific destination. However, from a policy perspective, it seems plausible that any interventions to incentivize internal migration would only partly offset the disutility faced by couples. For example, money transfers for migrants would ease the cost of migration, but would not affect the role of networks at the origin. On the other hand, facilitating networks for migrants at the destination would not fully offset other costs faced by joint migrants.

Figure 9: Effect of reduced joint migrant disutility on mixed marriages by location

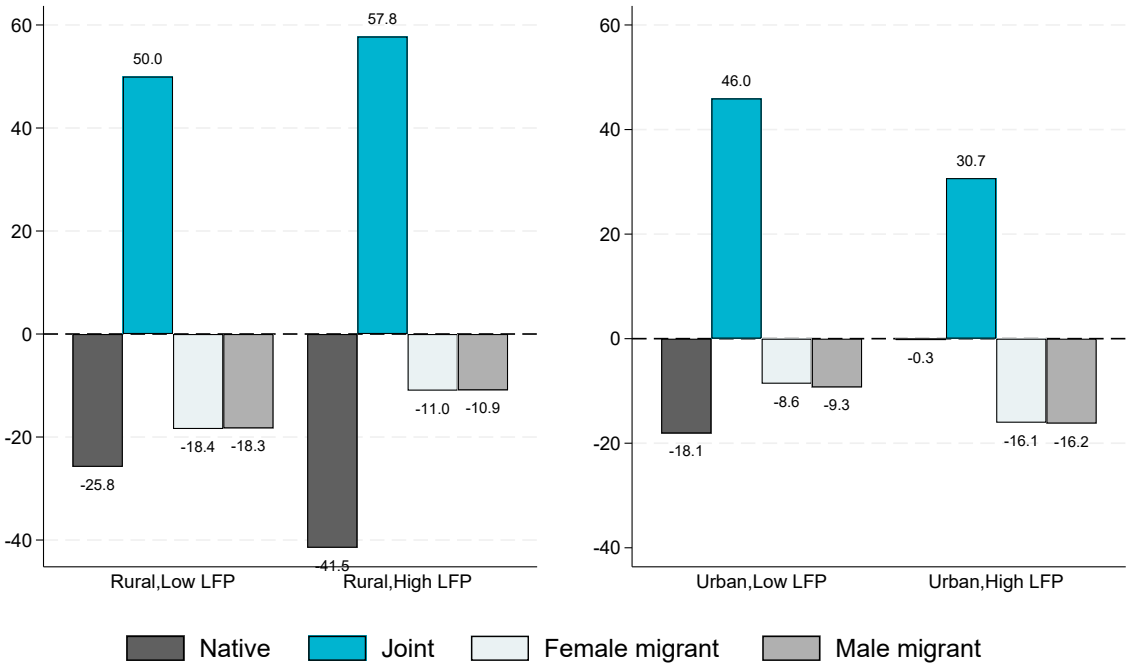


Notes: Graphs depict mixed marriages with either a female or a male migrant, as a share of all marriages in a location. The shares are calculated for counterfactual scenarios where 25, 50, 75, or 100% of the native utility are added to joint migrants' utility, as outlined in equation **??**.

Figure 9 presents the results for mixed marriages from this exercise. It displays changes in mixed marriages with either a male or female migrant spouse in different locations, based on the extent of native utility added to joint migrants' utility. The share of mixed marriages in the scenario with 0% added native utility is equivalent to the baseline prediction. Mixed marriages at baseline make up between 10 and 20% of marriages depending on the location, with the highest share in urban areas with lower labor force participation. Generally, urban areas experience a steeper decline of mixed marriages when joint migration becomes more attractive, with a total drop to around 5%. This implies a decrease in the share of mixed couples by about half in the extreme case. By comparison, the decrease of mixed marriages is less steep in rural areas and only takes effect once joint migrants' utilities reach the maximum. The magnitudes are very similar for mixed couples with either a male or female migrant spouse. These results suggest that mar-

riage migration to urban destinations is more responsive to changes in the utility for joint migration, especially for small benefits to joint migration. In other words, it seems that high disutility from joint migration leads to a large share of men and women entering the marriage market at the destination, especially in urban markets.

Figure 10: Effect of reduced joint migrant disutility on marriage choices by origin



Notes: The graph depicts the difference of the share of each category in the counterfactual to their baseline shares. The calculations are based on the 100% counterfactual scenario, where the entire native utility is added to joint migrants' utility.

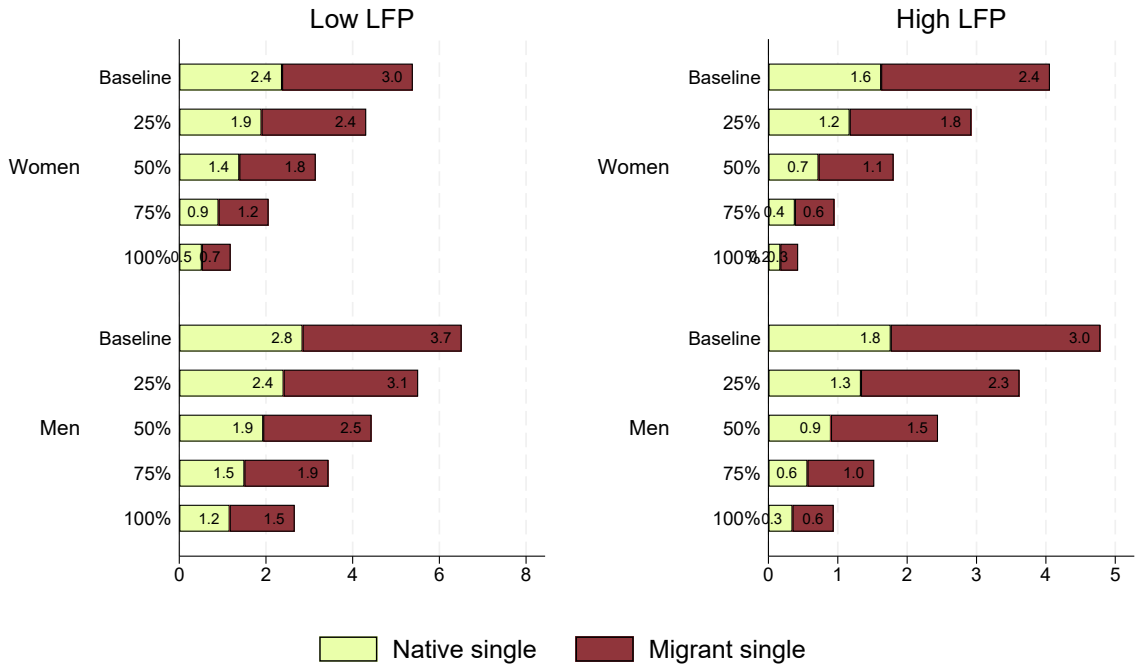
To further investigate which origins are primarily affected, Figure 10 depicts the effect of increasing the joint migrant utility (by 100% of native utility) on marriage choices in each origin.[15] The figure shows that the policy incentivizes joint migration from all origins, with a larger share of joint migrants forming in rural origins. These changes emerge both through reductions in the share of men and women migrating to marry away from home, and from couples forming at home that would have stayed at the origin. As the utility difference from staying at home and migrating together is now equalized, they are more likely to move away. Therefore, the downward trends of mixed marriages at the destination are not only due to a decrease in marriage migrants, but also due to new couples marrying at home and becoming joint migrants.

Lastly, we can observe how increasing utility from joint migration affects the outside option of staying single. As Figure 11 shows, for rural men and women this leads to a reduction in singlehood, both native and migrants. This means that even more couples

[15]Figure A.4 in Appendix A presents the results for each partial utility added. It shows that the effects grow proportionally with the amount of utility added.

form than before, as they now have the option to migrate together. The same results are seen in urban origins with lower labor force participation rates (Figure 12), albeit to a lesser extent and only at higher rates of utility added. Single migrants from these locations are rare to begin with, and those that would stay only select into marriage once the joint migration utility is sufficiently high. Similarly, singles in urban locations with better labor markets are largely unaffected, likely because the gain from migrating with a spouse does not compensate the utility they receive from staying in their original labor market.

Figure 11: Singles at origin by policy scenario (rural origins)

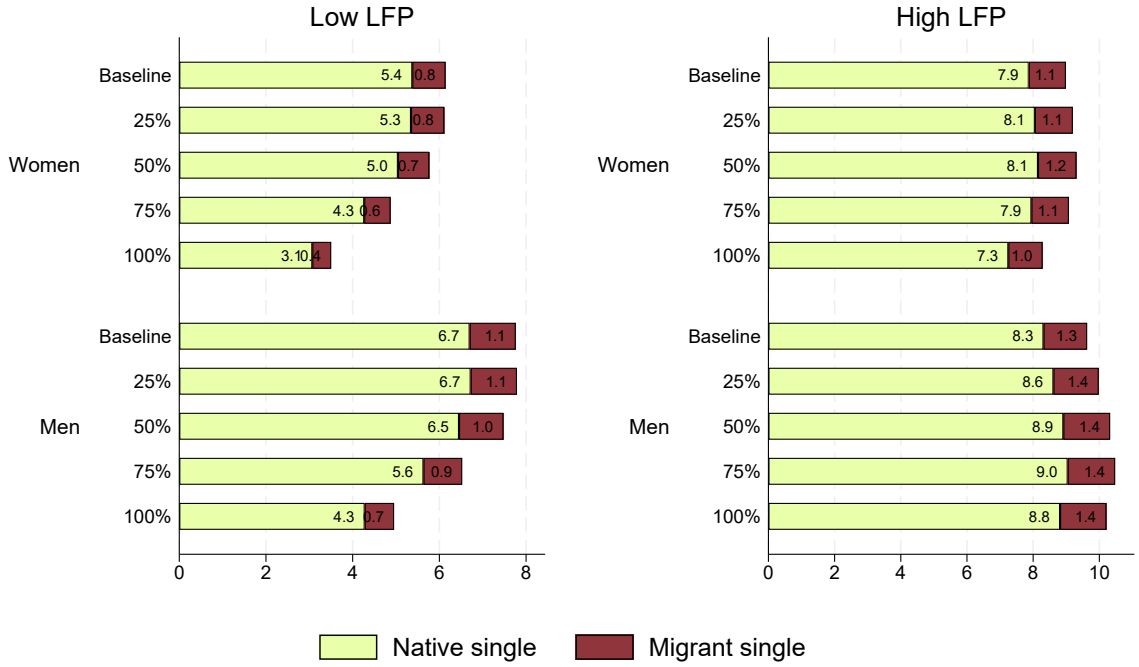


Notes: The graph depicts the shares of single men and women that stay or migrate under baseline conditions and when joint migration disutility is decreased by 25, 50, 75 or 100% of the native marriage utility. LFP = labor force participation rate.

6.2 Role of Destination Characteristics

As shown in Figure 9, the type of destination plays a role in the responsiveness of mixed marriages to joint migration incentives. To investigate further how different traits – urban location or high economic activity – interact with the selection into joint- or marriage migration, I employ a second set of counterfactual exercises. In particular, I restrict joint migration as a channel to enter either urban destinations or those with high labor force participation, using the parameters for joint migration from origin o to destinations $d = \{UL, UH\}$ or $d = \{RH, UH\}$:

Figure 12: Singles at origin by policy scenario (urban origins)



Notes: The graph depicts the shares of single men and women that stay or migrate under baseline conditions and when joint migration disutility is decreased by 25, 50, 75 or 100% of the native marriage utility. LFP = labor force participation rate.

$$\lambda_o'^{UL} = \lambda_o'^{UH} = -\infty \tag{9}$$

$$\lambda_o'^{RH} = \lambda_o'^{UH} = -\infty \tag{10}$$

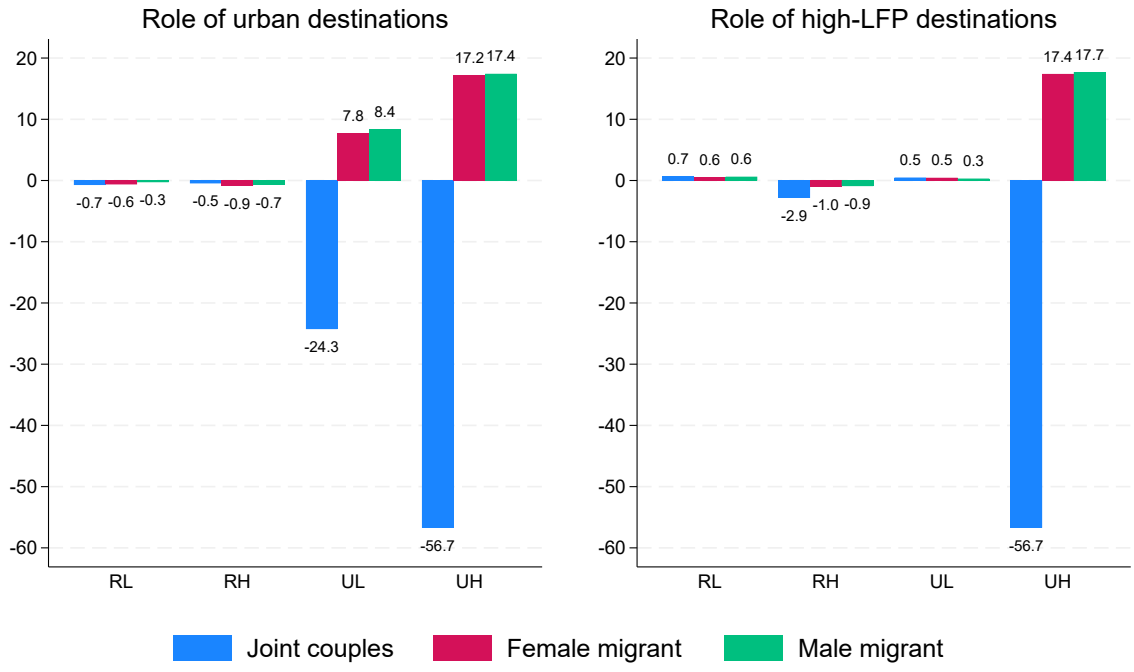
Thereby, we can quantify the "joint migration channel" to urban or high-economy destinations as compared to entering independently. Given that the previous findings suggest a high preference for matching at the origin, once migration is restricted couples may be more inclined to form and stay at home. Alternatively, those who move together at baseline may choose a different destination or find a spouse at a preferred location. This boils down to a trade-off between matching at the origin and migrating to urban or high-economy destinations. Shutting down the option to migrate together to certain destination may trigger overall equilibrium effects in all locations.

Results of this counterfactual exercise are presented in Figure 13. The graph on the left relates to equation 9 (only urban affected) and the one on the right to equation 10 (rural and urban high-economy locations affected). They present the changes in the shares of joint migrant or mixed couples with a female or male migrant in the 4 locations: rural (R) or urban (U) with low (L) or high (H) labor force participation. By construction, joint migration to urban (in the left panel) and high-economy destinations (in the right

panel) drops fully. When joint migration to urban destinations is restricted, this leads to a jump in mixed marriages by around 8 to 17 percentage points, depending on the level of the labor market. These effects are very similar for couples with a female or a male migrant. By contrast, joint migration to rural destinations is unaffected. In other words, there is no change in terms of destinations by migrant couples if they cannot enter urban areas. Rather, they do not form in the first place and men and women are more likely to enter the marriage market in urban destinations.

When restricting access to both rural and urban destinations with better labor markets (right panel), the drop in joint migrants is again compensated mainly by both male and female marriage migrants. However, this is only true for urban destinations, where the share of mixed marriage with a male or female migrant again rises by around 17 percentage points. On the contrary, restricting entry into rural high-type destinations does not lead to an increase in the share of mixed couples. If anything, the share of mixed couples slightly reduces, likely because the share of native couples not able to move to urban destinations now grows.

Figure 13: Effect of destination characteristics on joint and mixed marriages by location



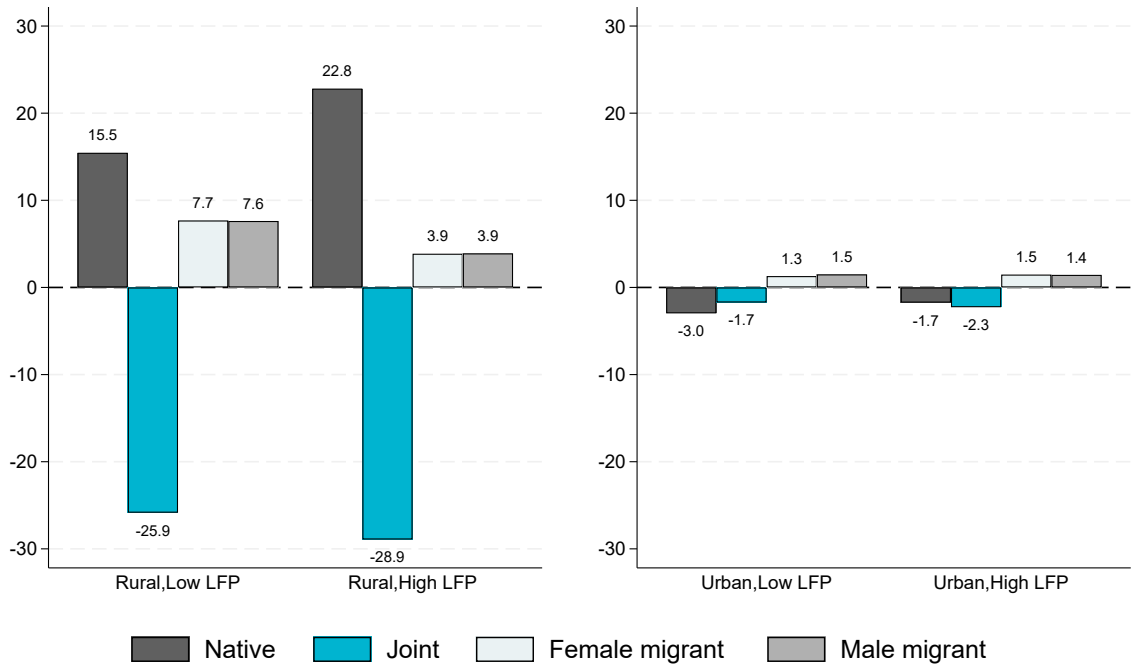
Notes: Changes from the baseline are calculated as percentage point differences in the share of a type of couple in each location. The graph on the left relates to equation 9 and the one on the right to equation 10. Locations are either rural (R) or urban (U) and have either low (L) or high (H) labor force participation rate.

These results suggest that urban destinations, and in particular those with better labor markets, draw in more marriage migrants when joint migration is impossible. On the contrary, rural locations with higher labor force participation seem to be more attractive

for joint migrants, and are not chosen through marriage migration as a substitute.

Figures 14 and 15 examine these choices from the perspective of origin. Starting with the scenario where joint migration to any urban destination is restricted, Figure 14 highlights how rural- and urban-born men and women change their marriage and migration choice compared to before. The majority of the changes observed in the destinations seem to stem from rural-born men and women. In particular, the share of couples matching and staying at home increases by around 15-22 percentage points, depending on the labor force participation rate at origin. Those from rural origins with better labor markets are more likely to stay. On the contrary, rural-born men and women from places with lower labor force participation are more likely to select into marriage migration as a response. In comparison, urban-born do not adjust their marriage choices by a lot, and only marginally increase their marriage migration. This implies that the increase in mixed marriages observed in urban areas is primarily driven by rural marriage migrants.

Figure 14: Effect of urban destination on marriage choices by origin

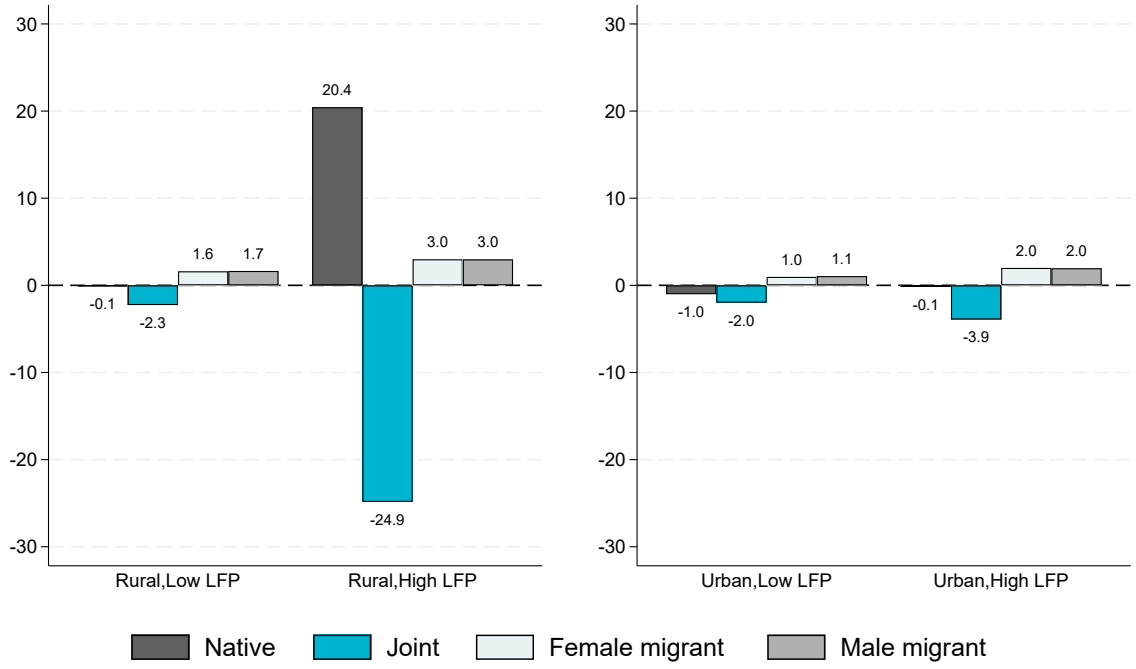


Notes: The graph depicts the difference of the share of each category in the counterfactual to their baseline shares. The calculations are based on the counterfactual scenario where joint migration to urban destinations is restricted.

Figure 15 presents results at the origin for the case where joint migration to destinations with high labor force participation is restricted. For rural origins, those with higher labor force participation rate see similar changes in native and joint migrants, as well as male and female marriage migrants. However, there is limited effect on couples from rural places with lower labor force participation. This is likely because they primarily choose urban locations that have a lower level of labor force as well, given that disutility of mi-

gration between these locations is low (as shown in Table 5.3). Therefore, their preferred urban destinations are no longer restricted and they do not need to adjust their marriage decision.

Figure 15: Effect of high labor force participation on marriage choices by origin



Notes: The graph depicts the difference of the share of each category in the counterfactual to their baseline shares. The calculations are based on the counterfactual scenario where joint migration to destinations with high labor force participation is restricted.

Overall, the results suggest that joint migration restrictions at the destination can have large effects on the marriage market. While some couples may choose other destinations, especially urban entry restrictions lead not only to couples remaining at the origin, but also to more mixed couples forming at the destination. This implies that marriage migration can be an alternative channel to realize migration intentions when joint migration is impossible.

7 Conclusion

This study examines how marriage and migration decisions interact with each other in a setting with large internal migration flows and a high prevalence of marriage. In particular, I provide evidence on the role of matching at origin, and how location characteristics enter into the decisions to migrate jointly or independently (for marriage). Thereby, this paper contributes to our understanding of how migration preferences are integrated into the decision where and whom to marry. By allowing a trade-off between joint migration and

marriage migration, it produces novel insights into the preferences for each migration channel under certain constraints.

The analysis is built on a structural matching model with the options to marry and stay at home, migrate together, or marry someone in a different market. The estimation results suggest that matching at home provides a high value for couples, and that couples migrating together face utility losses compared to those staying at home. The type of destination influences the utility level: couples moving to urban areas are better off, and synergies in the level of labor market activity increase marriage utility.

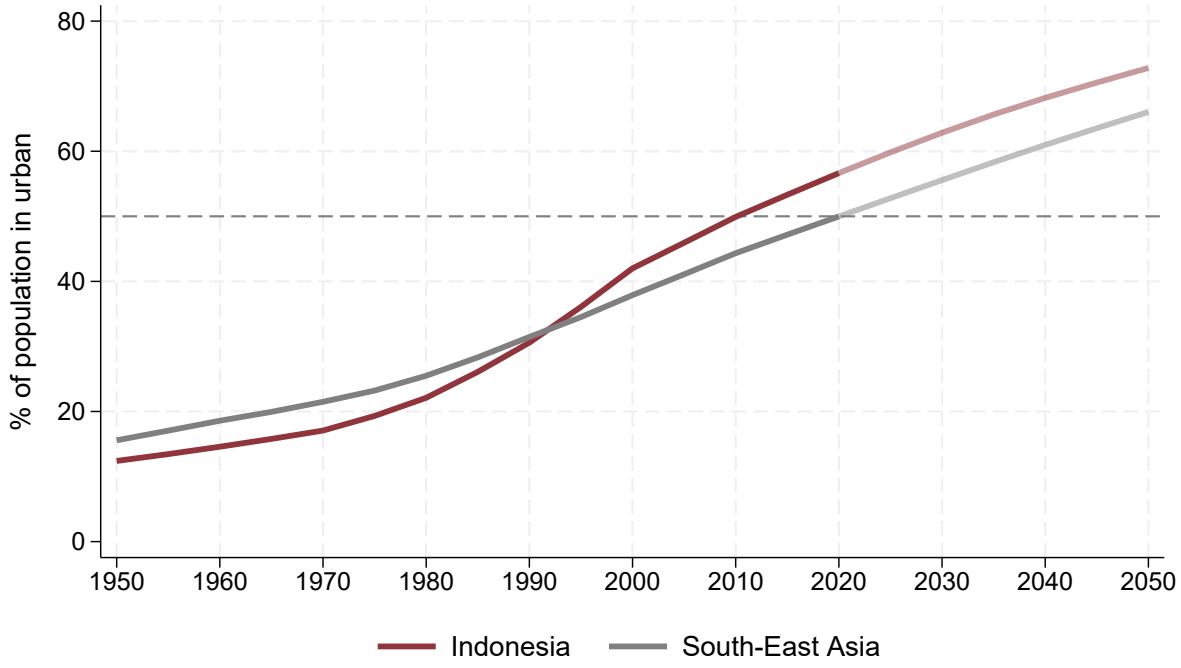
The counterfactual analysis further shows that influencing the utility of joint migrants can affect marriage choices at the origin and at the destination. When joint migration is less costly, less men and women decide to get married at the destination and instead find a spouse at home to migrate together. This affects primarily rural origins and urban destinations. On the other hand, restricting joint access, especially to urban areas, increases mixed marriages. These results suggest that costly migration for couples can affect both men's and women's decisions to marry someone based on more favorable location characteristics.

The findings of this paper highlight potentially unintended effects of different migration and development policies. In particular, improving urban amenities and living conditions that favor families may disproportionately incentivize couple migration. On the other hand, policies aimed at curbing or navigating the relocation of entire family units may lead to more independent migration and mixed marriages in urban areas. Further research may test how these decisions affect overall population dynamics and household welfare.

Appendix

A Figures

Figure A.1: Urbanization trends in Indonesia and South-East Asia



Notes: Data from UNDP World Urbanization Prospects 2018. The dashed line indicates the 50% threshold of urban population. Indonesia surpassed the regional average for urbanization in the early 1990s, reaching an urban population of over 50% by 2010.

Figure A.2: Selected provinces in the Indonesia Family Life Survey

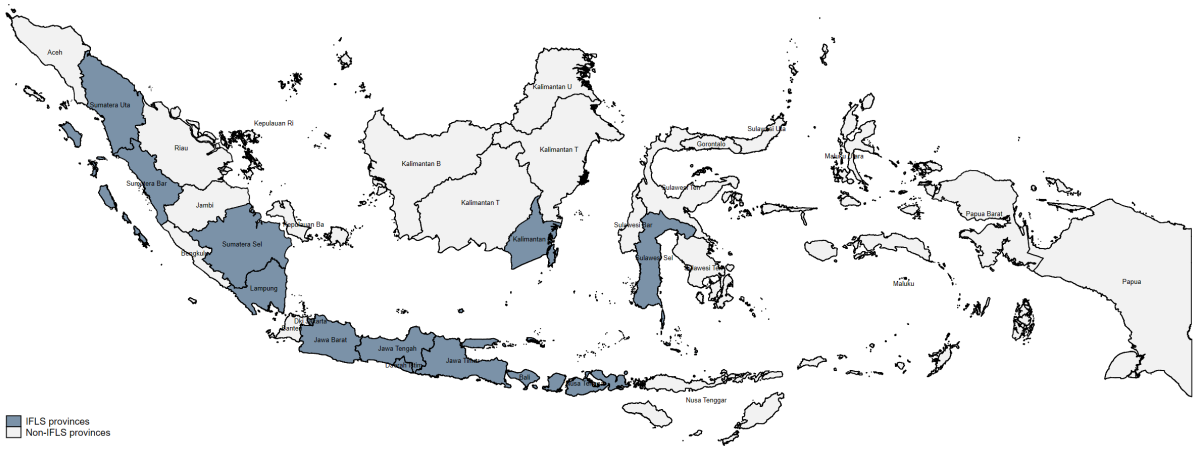


Figure A.3: Distribution of age at marriage for men and women

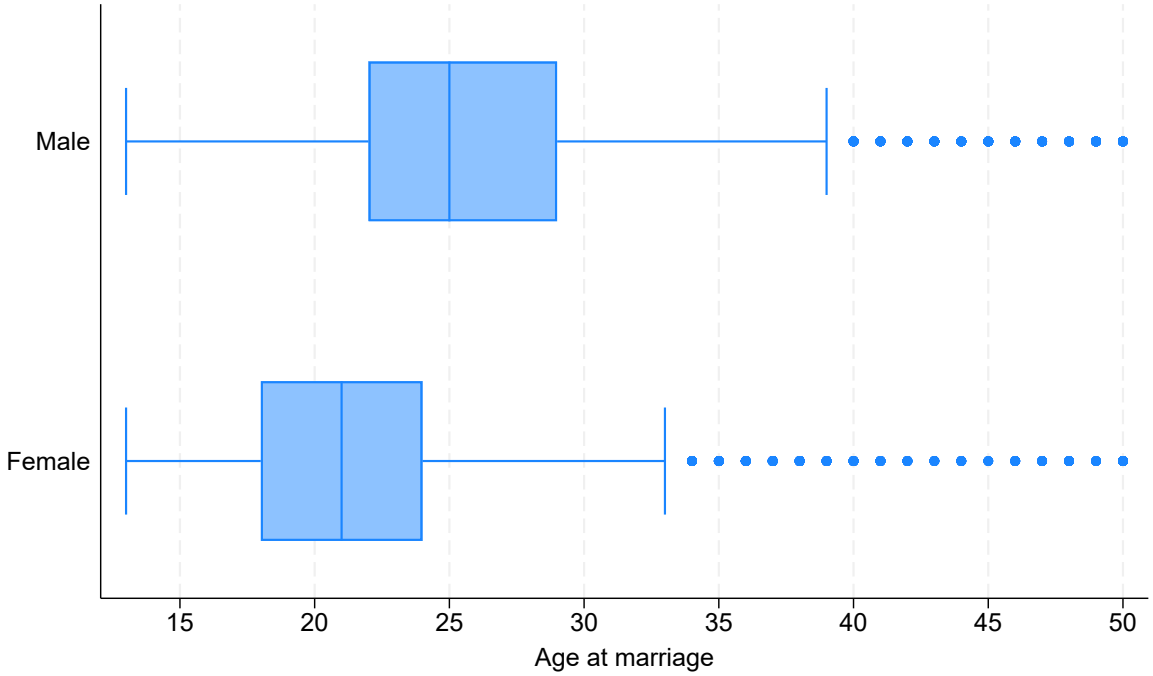
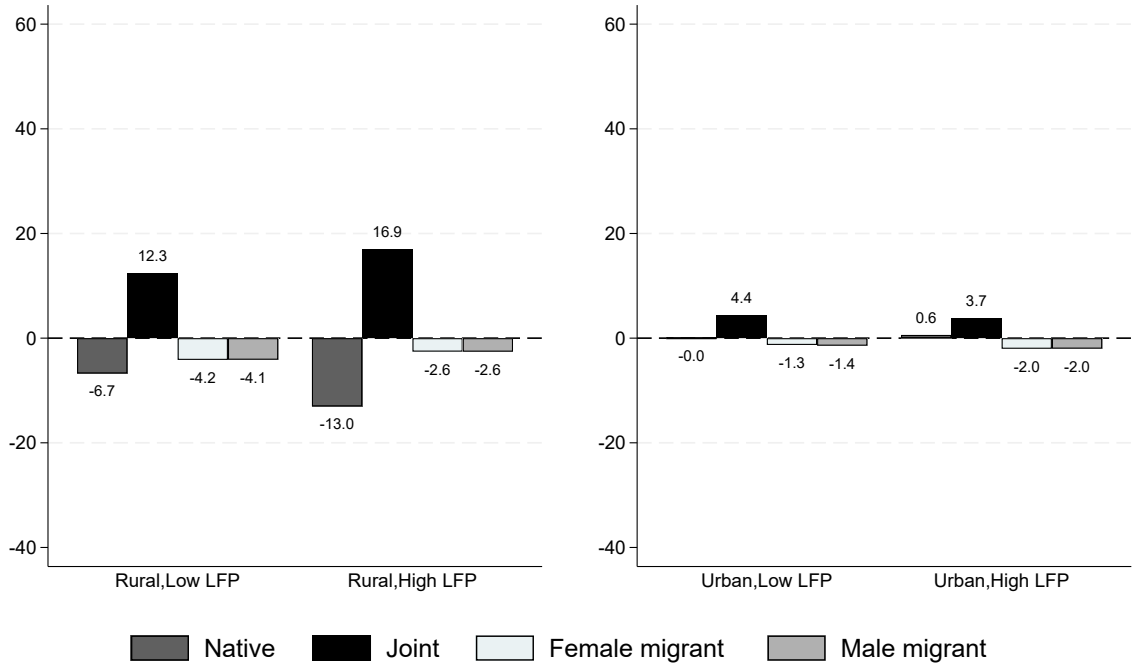
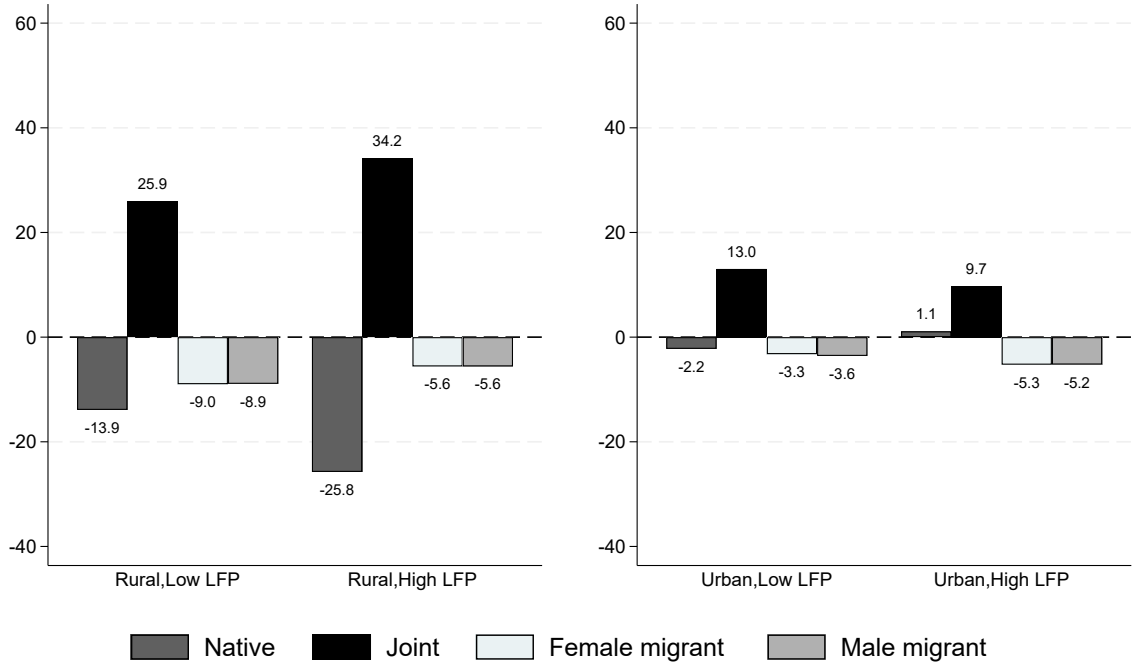


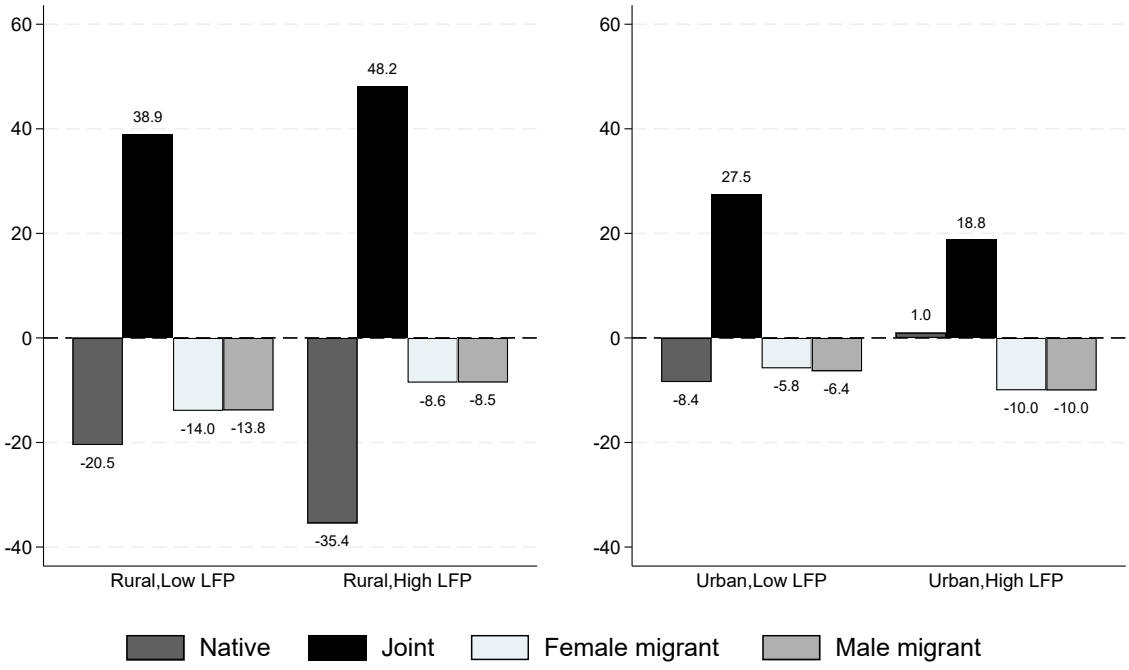
Figure A.4: Effect of partially reduced joint migrant disutility on marriage choices by origin



(a) Changes at 25% of native utility added



(b) Changes at 50% of native utility added



(c) Changes at 76% of native utility added

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