Marrying Your Job: Matching and Mobility with Geographic Heterogeneity*

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Abstract

This paper examines the interplay between labor markets and marriage markets. I assess the micro and macro implications of geographic and marital selection in a model of marital and location choices where: (i) marriage markets are an endogenous amenity that affects workers' migration choices, and (ii) being married introduces family ties that restrict mobility. Using US data, I show that workers in cities that pay low wages for their occupation (those with higher returns from migration) are less likely to marry and more likely to divorce. Moreover, conditional on marrying, they are more likely to choose partners whose incentives to migrate align with their own. I use these empirical observations to calibrate the model and demonstrate that marital incentives boost the concentration of workers in more productive locations.

Keywords: Migration, Marriage, Divorce, Geography.

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1 Introduction

Households' marital and migration choices are intertwined. First, marriage imposes constraints on the geographic mobility of married households which negatively impacts the labor market outcomes of its members (Mincer, 1978, Costa and Kahn, 2000, Guler, Guvenen and Violante, 2011, Gemici, 2016, Braun, Nusbaum and Rupert, 2021). Secondly, rational and forward-looking individuals take these constraints into account while choosing a partner. In particular, the value of future migration opportunities influences the marriage behavior of individuals, as they trade-off the benefits of marriage with the opportunity cost it imposes in terms of reduced mobility: the higher the pecuniary value of future migration, the less likely individuals are to marry. Third, marriage markets (and their composition) act as local amenities that affect the value that singles draw from different locations (Edlund, 2005, Compton and Pollak, 2007, Gautier, Svarer and Teulings, 2010).

This interplay of marriage and migration choices raises compelling questions: how does the distribution of economic activity affect marriage patterns? Furthermore, how does marriage influence the spatial distribution of the labor force? What are the implications for aggregate productivity?

In this paper, I provide answers to these questions through the lenses of a dynamic, heterogeneous agents model with endogenous marriage and migration. My main findings can be summarized in two points. First, I document that the prospect of future migration causes households to postpone marriage, which results in lower aggregate marriage rates. Second, I show that marriage increases the concentration of the labor force in more productive areas.

Intuitively, as a result of the two-way interaction between marriage and migration, marital selection reinforces location selection, which results in agglomeration-looking effects. On the one hand, the geographic heterogeneity in labor market returns (Moretti, 2012) implies heterogeneity in the opportunity costs of marriage. Workers in low-pay areas have a stronger incentive to postpone marriage to avoid the associated constraints to migration and be free to move to high-pay areas when the opporunity comes. On the other hand, by determining migration flows (Kaplan and Schulhofer-Wohl, 2017, Diamond, 2016), geographic differences in labor market returns affect the composition of marriage markets, increasing the amenity value of markets in high-pay areas. This endogenous response, reinforces the incentive to migrate to high-pay areas.

In the model, presented in section 2, the spatial heterogeneity of labor market returns to working in different occupations drives the pecuniary incentive to migrate while marital status, marriage market conditions, and idiosyncratic preferences determine non-pecuniary costs and benefits. Marriage markets are characterized by search frictions and matching probabilities are a function the local distribution of singles. As a consequence, matching probabilities are endogenously determined by migration. Workers are fully rational and forward looking. Upon matching in the marriage market, they decide whether to marry taking into account both the advantages of marriage (returns to scale in consumption and enjoyment of the marital union) and its cost (reduced mobility). The latter is a function of a worker's labor market condition (determined by their occupation and current location), such that whether a match results in marriage depends on the location where the match occurs.

A simplified version the model delivers three testable implications: (i) workers who work in a city that pays low wages to their occupation relative to other cities are less likely to marry than those in high-pay locations; (ii) conditional on marrying they are more likely to choose partners whose pecuniary incentives to migrate are aligned with their own, that is if places that are desirable for one party are also desirable for the other; (iii) if married they are be more likely to divorce. Intuitively, workers in low-pay cities can substantially increase their income by relocating to more productive labor markets. In other words, the pecuniary value of future migration is high. If they are single, they will be less willing to accept the the mobility restrictions that come with marriage or, if they marry, they can reduce the impact of marriage on mobility by choosing partners facing similar migration incentives. Moreover, once married, their marriage will be less stable as the outside option of being single with fewer mobility restrictions is more attractive.

In Section 3, I use the American Community Surveys (ACS) from 2008 to 2017 to test the model implications. For the empirical analysis, I develop a statistic that reflects the pecuniary value of future migration opportunities. Using metropolitan statistical areas to define local markets (I refer to them as "cities"), I construct occupation-specific rankings of cities based on the average salaries paid to the specific occupation. The statistic is constructed such that high values are assigned to workers that live in cities that rank low in the ranking for their occupations. Intuitively, these are the workers who face high pecuniary returns from migration.[1] I estimate logit models for the yearly probability of marriage and divorce to show that, after controlling for observable demographics, workers with high migration values are as much as 18% less likely to marry than those with low values, and 20% more likely to divorce. I also find evidence of assortative mating over the constructed statistic, which suggests that marriage is more likely when migration incentives are aligned.

The empirical evidence suggests the presence of an interaction between labor and marriage markets. To examine their interplay in a setting that allows for endogenous responses and equilibrium adjustments, in Section 4 I calibrate the model to repro-

[1] The validity of this statistic is verified in Online Appendix E, which shows that workers with higher migration values are more likely to relocate, choosing on average cities that pay higher wages.

duce the empirical correlations found in Section 3. The calibrated model is used in the following sections as a laboratory to study the aggregate implications of the joint determination of migration and marital choices.

Section 5 analyses a version of the model where marriage markets are shut down to study how marriage affects the geographic distribution of the labor force. The main finding is that marriage increases the concentration of the labor force in more productive cities. As measured by the Herfindahl-Hirschman index, the geographic concentration of workers increases on average by more than 40% for each occupation. This is the result of two forces. First, the marriage market is a local amenity that attracts singles. Due to endogenous migration, marriage market conditions in more productive cities are more favorable since potential partners are richer and more likely to marry (future migration opportunities are less valuable). Secondly, since being married restricts mobility, some workers are prevented from relocating. Interestingly, this second effect contributes as well to increasing the geographic concentration of workers. Family ties, in fact, not only prevent workers in low-pay cities to migrate to high-pay cities, but also workers in high-pay cities from moving away. Since, in equilibrium the group of workers in high-pay cities is larger, the second effect outweighs the first. The increase in the geographic concentration of workers induced by marriage raises aggregate income (a proxy of productivity) by 1.8%. About half of this growth is due to the amenity value of the marriage market and the other half to the migration constraints coming from family ties. This counterfactual exercise delivers a more general message: a reform (or a change in technology) that affects marriage markets can have implications for the spatial distribution of the labor force, with implications for productivity.

In section 6, I analyze the relationship between marriage and labor market outcomes. I simulate the income profiles of thousands of workers in the baseline model and I compare them to the income they would receive in a world where marriage is not permitted. This comparison allows to quantify the opportunity cost of marriage in terms of forgone wage growth from migration. Unlike the existing literature (Gemici, 2016), which often overlooks the sorting into marriage, my model allows me to directly control for the selection effect. The experiment suggests that marriage substantially reduces geographic mobility. In a world without marriage, the probability that households migrate at least once over their life cycle is about 70% higher than in the baseline. Moreover, by entering an early marriage, men (women) give up as much as 8% (6%) of wage growth because of reduced mobility.

Having examined the micro- and macroeconomic implications of how marriage markets influence migration, section 7 considers the opposite direction of causality by looking at how the prospect of migration affects marriage market behavior. I consider a version of the model where migration is not allowed. Without migration, yearly marriage rates increase on average by 2% since reduced mobility no longer enters the marriage decisions. Not surprisingly, marriage rates increase more among workers in low-pay cities, by as much as 9%.

The counterfactual analysis carried out in sections 5, 6, and 7, shows that marriage has a strong impact on the geographic distribution of the labor force. This suggests that any government policy that affects marriage markets can have consequences for the spatial distribution of the labor force, with implications for productivity. In section 8, I provide examples with respect to two scenarios: first, I show that tax reform that incentivizes marriage increases the concentration of workers in high-pay cities by endogenously making marriage markets more attractive; second, I show that a reform that reduces the cost of divorce (e.g. the introduction of unilateral divorce) has little effect on aggregate income while increasing both marriage and divorce rates.

Related literature.

This paper mainly builds upon two strands of the literature, the first dealing with the migration choices of married households and the second studying the marriage markets.

Following the work of Mincer (1978), economists have recognized that the presence of family ties imposes constraints on the geographic mobility of households with consequences for the labor market outcomes of its members. Since then, several researchers have studied the interaction between the labor supply and the migration decisions of married households. Costa and Kahn (2000) focus on the location choices of college-educated couples, arguing that the joint location constraint causes them to disproportionately relocate into large cities with thicker labor markets. In a mostly theoretical contribution, Guler, Guvenen and Violante (2011) examine the joint job search problem of couples and find that, by restricting geographic mobility, family ties worsen the labor market outcomes of married individuals relative to those of singles. In an attempt to quantify these effects, Gemici (2016) estimates a structural model of migration with a dynamic framework of intra-household bargaining; her findings suggest that, compared to singles, married workers experience lower wage growth over their working life. Braun, Nusbaum and Rupert (2021) use this mechanism to explain the observed fall in the migration rates of married households. All of these papers take marriage as given. In my work, I explicitly model the marriage market and marriage decisions within an equilibrium framework. This allows to directly control for selection into marriage and to study how migration affects marriage market outcomes, a topic that has been somewhat overlooked.

A small portion of this literature tries to link the migration patterns of singles to marriage. Compton and Pollak (2007), for instance, suggest that educated singles are attracted to large cities by the greater availability of potential mates. Similarly, Edlund (2005) and Gautier, Svarer and Teulings (2010) find that, in the Swedish and Danish contexts, singles are more likely to move to big cities because of better marriage opportunities. By incorporating these mechanism in a structural model, my work allows me to quantify the distributional effects of marriage markets as local amenities on the spatial distribution of labor supply.

The literature on marriage markets is vast. A substantial part of it studies the determinants of the increase in assortative mating (Becker, 1973, 1974*a*,*b*) on education and income over time and its implications for inequality (Schwartz, 2010, Fernandez and Rogerson, 2001, Greenwood et al., 2014, 2016, Chiappori, Salanié and Weiss, 2017, Eika, Mogstad and Zafar, 2019, Calvo, Lindenlaub and Reynoso, 2024). A few studies discuss assortative mating on other dimensions, such as age (Choo and Siow, 2006, Diaz-Gimenez and Giolito, 2013) and ethnicity (Siow, 2015), while others look at the implications of institutional changes, such as divorce laws, on household's behavior (Voena, 2015) and marriage (Reynoso, 2024).

This paper sets itself apart from the existing literature in that it highlights a non-trivial dimension of assortative mating, as couples in which the spouses face different geographic wage distributions (i.e., have dissimilar incentives to migrate) are characterized by lower marital surpluses relative to couples facing similar wage distributions. Unlike most of the literature, in which the characteristic that drives marital sorting is either innate or determined early in life, in my model the sorting attribute is endogenous (due to migration) and dynamically changing. To the best of my knowledge, the only other paper that provides some evidence of sorting on this dimension is Venator (2025).

Finally, this paper contributes to a growing literature that studies the interaction of location choices with other households choices such as labor supply (Frank, 1978, Moreno-Maldonado, 2022, Le Barbanchon, Rathelot and Roulet, 2020) and fertility (Coeurdacier et al., 2019, Moreno-Maldonado and Santamaria, 2024). To the best of my knowledge, only a handful of other papers consider the joint determination of marriage and location choices, namely Alonzo, Guner and Luccioletti (2023), Mao and Wen (2025), and Fan and Zou (2022). The first two study the the evolution of the geographic distribution of economic activity along with changes in the structure of US households over time. The third, similar to this paper, focuses on how joint marriage and location decisions affect the spatial dispersion of economic activity. Interestingly, their main finding is that marriage acts as a dispersion force with negative effects on productivity, which is in contrast with the results of this paper. My work differs from Fan and Zou (2022) on several dimensions and, while a comprehensive comparison would be too lengthy to fit within this article, it is sufficient to point out that most of the differences stem from modeling choices: a static spatial equilibrium model in which the location choices are taken before the opening of a frictionless marriage market à la Choo and Siow (2006) in Fan and Zou (2022) versus a dynamic heterogeneous agents model in which migration and marriage choices are repeated over time in this paper.[2]

2 Model

In this section, I develop a stationary-equilibrium, heterogeneous-agents model of perpetual youth (Blanchard, 1985) with endogenous marriage and migration. There are L locations indexed by $\ell \in \{1, 2, ..., L\}$. Each agent in the model is characterized by their occupation j_g, their city of residence ℓ, and an idiosyncratic preference for local amenities ξ_g, where $g = m, f$ indicates gender. Let $x_g = \{\ell, j_g, \xi_g\}$ be the state of the agent.

The within-period timing structure, which is discussed in details in the next sections, is composed of three phases. At the beginning of each period, the marriage market operates. It is assumed that only singles search on the marriage market and that they are randomly matched to individuals of the opposite sex living in the same city (i.e., marriage markets are local). Upon matching, the prospective spouses observe each other's characteristics and decide whether to marry or not.

Following the marriage market, the labor market operates. In this phase, households are hit with some probability by a shock ("mobility shock") that allows the household to relocate to another specific city (e.g., a job offer from a different city). Given this shock, households decide whether to move or not, and married households can also divorce.

Finally, households receive their income and consume. After consumption and before moving to the next period, workers may change occupation according to an exogenous matrix of transition probabilities.[3]

[2] Fan and Zou (2022) use data from the 2000 Census to estimate their model. In 2000 there was a negative correlation between city size and the local fraction of married households. Through the lenses of a frictionless marriage market à la Choo and Siow (2006), this negative correlation is only possible if the value of marriage is decreasing with city size, which implies that marriage markets are more attractive in smaller cities, an implication that is not supported by the existing literature (Compton and Pollak, 2007, Edlund, 2005, Gautier, Svarer and Teulings, 2010). This negative marriage-premium in big cities is likely to be driving the results of Fan and Zou (2022). Moreover, as shown by Alonzo, Guner and Luccioletti (2023), the negative correlation between marriage rates and city size has essentially disappeared by 2019, suggesting that their results would look different with more recent data.

[3] Fertility choices are not modeled due to computational constraints. Studying the interaction between fertility and mobility is interesting in its own right, but it is outside the scope of this paper. Since fertility is endogenous, and mobility may influence and be influenced by fertility decisions, I expect that other shocks in the model can partially capture these dynamics indirectly (e.g., a couple drawing a high preference for a city might endogenously decide to have children, anticipating that future migration is unlikely).

2.1 Preferences

I assume that single individuals derive utility from the consumption of private good, c_g, and from their idiosyncratic preferences for local amenities ξ_g. Specifically, the intratemporal utility function is linear and given by $u(c_g, \xi_g) = c_g + \xi_g$. Single households are hand-to-mouth and supply one unit of labor. The market wage w_{g,x_g} is assumed to be exogenous and a function of the worker's gender, occupation, and city of residence. Thus, the budget constraint of singles is $c_g = w_{g,x_g}$. In the case where the single household has just moved or divorced, consumption equals the wage net of the migration and divorce costs described below. It is also assumed that ξ_g evolves over time following an autoregressive process of degree one. Finally, workers may stochastically change occupation between periods and this process is governed by a Markov chain.[4]

The utility gross of moving and divorce costs for a single agent in the consumption phase is

$$V^s_{g,3}(x_g) = w_{g,x_g} + \xi_g + \beta E\left[V^s_{g,1}(x'_g)\right] \qquad g = m, f \tag{1}$$

where $V^s_{g,1}(x_g)$ is the value for a single agent before the opening of the marriage market in the following period, and expectation are taken with respect of future realization of ξ_g and occupational changes. The effective discount factor is $\beta = \tilde{\beta}\omega$, where ω is the survival probability and $\tilde{\beta}$ is the time preference.

Like singles, married individuals derive utility from the consumption of a private good and the enjoyment of local amenities, which are valued differently by each spouse. Unlike singles, they also derive utility from the enjoyment of marriage (marriage bliss). Both spouses value their marriage similarly. The marriage bliss is captured by the idiosyncratic marriage quality parameter ζ which is assumed to evolve stochastically according to an AR(1) process with unconditional mean $\bar{\zeta}$ and variance $\sigma^2_\zeta/(1-\rho_\zeta)^2$ (shocks are realized at the beginning of each period).

Both married men and women supply one unit of labor inelastically. I assume that the budget constraint for married households is given by

$$c_m + c_f = \left(w^\rho_{m,x_m} + w^\rho_{f,x_f}\right)^{\frac{1}{\rho}} \tag{2}$$

where $\rho \in (0, 1]$. As before, moving costs need to be subtracted to the right-hand side of the budget constraint if the couple just moved. The CES aggregator captures economies of scale in consumption since the latter equation implies $c_m + c_f > w_{m,x_m} + w_{f,x_f}$ when $\rho < 1$ (there are no economies of scale when $\rho = 1$).

The intratemporal utility for a married agent is assumed to be linear, and is given

[4] Implementing of full theory of occupational choices is not computationally feasible. The model does not allow for the interdependence of migration and occupational choices. In Online Appendix G, I argue that this assumption is not detrimental to the main results of this paper.

by $u_g(c_g) = c_g + \xi_g + \zeta$ for $g = m, f$. Thus, the value function for a married individual is

$$V^m_{g,3}(x_m, x_f, \zeta) = c_g + \xi_g + \zeta + \beta E[V^m_{g,1}(x'_m, x'_f, \zeta')] \qquad g = m, f \tag{3}$$

where $V^m_{g,1}(x_m, x_f, \zeta)$ is the value function before the opening of the marriage market in the following period, and expectation are taken with respect of future realization of ξ, occupational changes of both spouses, and future realizations of ζ. The level of consumption c_g results from the Nash bargaining problem described below.

2.2 Marriage Contracts

Married households allocate consumption to the two spouses to maximize the Nash bargaining criterion. Ignoring the potential moving costs in the budget constraint, they solve

$$\max_{c_m, c_f} \left(V^m_{m,3}(x_m, x_f, \zeta) - V^0_m\right)^{\eta_m} \left(V^m_{f,3}(x_m, x_f, \zeta) - V^0_f\right)^{\eta_f}$$
$$\text{s.t.} \qquad c_m + c_f = \left(w^\rho_{m,x_m} + w^\rho_{f,x_f}\right)^{\frac{1}{\rho}}$$

where η_m and η_f are the bargaining coefficients, with $\eta_m + \eta_f = 1$, and V^0_m and V^0_f are placeholders for the outside options of the husband and the wife respectively (i.e., the value of divorcing). The exact value of the outside options will depend on whether the household received a mobility shock, as detailed below. The solution to this problem is such that the each spouse gets the value of their outside option plus a share of total surplus determined by their respective bargaining coefficient. It follows that the value function for a married individual in (3) can be rewritten as

$$V^m_{g,3}(x_f, x_m, \zeta) = V^0_g + \eta^g \max\{0, S\}, \qquad g = m, f \tag{4}$$

where S is the marital surplus, and it equals

$$S = \left(w^\rho_{m,x_m} + w^\rho_{f,x_f}\right)^{\frac{1}{\rho}} + \xi_m + \xi_f + 2\zeta + \beta E\left[V^m_{m,1}(x'_m, x'_f, \zeta') + V^m_{f,1}(x'_m, x'_f, \zeta')\right] - V^0_m - V^0_f. \tag{5}$$

The max operator captures the choice of divorcing. Divorce occurs endogenously when the marital surplus is negative.

The surplus equation (5) underscores two key features of marital sorting. First, with $\rho \in (0, 1)$, the surplus exhibits supermodularity in current income, implying that the model generates positive assortative matching on income. Second, the preferences of both spouses over the current and all potential future locations — along with the corresponding income prospects — play a crucial role in determining the current surplus and, consequently, marriage market outcomes. This latter feature, the significance of which will become evident in the counterfactual analyses of Sections 5 to 7, constitutes an important innovation of the model that distinguishes it from the existing literature (Fan and Zou, 2022, Mao and Wen, 2025).

2.3 Labor Market

The labor market is very stylized. There is no unemployment and wages are exogenously fixed (partial equilibrium). The labor market reduces, then, to a location choice. I assume the presence of search frictions: in each period, households may receive a mobility shock with probability χ that allows them to evaluate migration towards one randomly chosen city. This shock can be interpreted as a job offer coming from another city.[5] Upon receiving the shock, each household member draws a preference parameter for the candidate city from the unconditional distribution of ξ, $f_\xi(\xi)$, and migration decisions are made. Importantly, this structure implicitly assumes that workers have no memory of past locations. At the beginning of each period, only the preference for the current city enters the state space and this preference is forgotten upon migration. This modeling choice is driven by practical considerations as including even limited memory would severely increase the size of the state making the numerical solution of the model unfeasible.

Single households

Upon receiving the mobility shock and after drawing the preference parameter for the candidate city, single households migrate if the value of moving is greater than the value of staying. The moving cost is assumed to be a function of income, $\kappa^s(w)$, and it subsumes both pecuniary costs (e.g., shipping costs), the cost of temporary unemployment (since unemployment is not explicitly modeled), and psychological costs.

The Bellman equation for single households is given by

$$V^s_{g,2}(x_g) = (1-\chi) V^s_{g,3}(x_g) + \chi \sum_{\ell'|\ell' \neq \ell} \theta(\ell'|\ell) \int_{\tilde{\xi}_g} \max \left\{ V^s_{g,3}(x_g), V^s_{g,3}(x'_g) - \kappa^s(w_{g,x_g}) \right\} df_\xi(\xi'_g) \tag{6}$$

where $x'_g = \{\ell', j_g, \xi'_g\}$, and $\theta(\ell'|\ell)$ is the conditional probability that the mobility shock comes from city ℓ' while residing in ℓ (clearly, $\sum_{\ell'|\ell'\neq\ell} \theta(\ell'|\ell) = 1$). The policy function associated with the migration choice in equation (6) is $t_g\left(x_g, \ell', \xi'_g\right)$ which equals one if migrating is optimal and zero otherwise.

Married households

Just as singles, married household may or may not receive a mobility shock with probability χ. I discuss the two cases separately.

[5] In a married household the shock can be seen as a job offer to any of the two spouses. Since there is no unemployment, it is irrelevant whether the offer is received by the husband or the wife.

No mobility shock. If a couple does not receive a mobility shock, they chose whether to stay together or divorce. Divorce endogenously occurs whenever the marital surplus defined in equation (5) is negative. Upon divorcing and after having paying a divorce cost which is assumed to be an increasing function of wages $\delta(w)$, each spouse advances to the consumption phase as single and re-enters the marriage market in the following period. Since utility is linear in consumption, the value of divorcing equals the value of entering the consumption phase as a single net of the divorce cost, that is

$$V^0_{g,noof}(x_g) = V^s_{g,3}(x_g) - \delta(w_{g,x_g}) \qquad g = m, f \tag{7}$$

Let S_{noof} be the marital surplus obtained replacing the outside option in (5) with the value of divorce from equation (7). The value for a married agent conditional on not receiving a mobility shock is

$$V^m_{g,noof}\left(x_m, x_f, \zeta\right) = V^0_{g,noof}(x_g) + \eta^g \max\{0, S^{noof}\}. \tag{8}$$

where the max operator describes the divorce choice. The value function for men is similar and thus omitted. The policy function for divorce is denoted by $d_{nof}\left(x_m, x_f, \zeta\right)$, and it equals one if divorce is optimal and zero otherwise.

Mobility shock. When a mobility shock is received, married households have two choices to make: stay married or divorce; move or not move. I assume that, upon receiving the migration shock and observing their idiosyncratic preferences for the candidate city, the two spouses bargain to determine the allocation of consumption conditionally on each migration choice. In both cases, the outside option of the spouses is a costly divorce, after which they can decide on the migration opportunity independently. This structure implicitly assumes that there is commitment on the bargained outcome (i.e., spouses cannot deviate from the bargained allocation after the migration opportunity is taken or forgone).

An important feature of this framework is that, in cases of misaligned preferences—for example, when one spouse has private incentives to move while the other prefers to stay—the spouse whose preference is not realized can be fully compensated ex ante for the lifetime utility losses incurred.

The value of the outside option for both spouses is given by

$$V^0_{g,of}(x_g, x'_g) = \max\left\{V^s_{g,3}\left(x_g\right), V^s_{g,3}\left(, x'_g\right) - \kappa^s(w_{\ell',g,x'_g})\right\} - \delta(w_{g,x_g}) \tag{9}$$

where the max operator captures the migration choice after divorce.

The Nash bargaining solution, implies that the optimal choice is the one that delivers the highest marital surplus. The marital surplus associated with the choice of moving is

$$S^{move} = \left(w^{\rho}_{m,x'_m} + w^{\rho}_{f,x'_f}\right)^{\frac{1}{\rho}} + \xi'_m + \xi'_f + \zeta - k^m(w_{m,x'_m}, w_{f,x'_f}) \\ + \beta E\left[V^m_{m,1}(x'_m, x'_f, \zeta') + V^m_{f,1}(x'_m, x'_f, \zeta')\right] - V^0_{m,of}(x_m, x'_m) - V^0_{f,of}(x_f, x'_f) \quad (10)$$

where $k^m(w_{m,x'_m}, w_{f,x'_f})$ is the moving cost for married couples. The surplus associated with the choice of staying in the current city is

$$S^{stay} = \left(w^{\rho}_{m,x_m} + w^{\rho}_{f,x_f}\right)^{\frac{1}{\rho}} + \xi_m + \xi_f + \zeta + \\ \beta E\left[V^m_{m,1}(x'_m, x'_f, \zeta') + V^m_{f,1}(x'_m, x'_f, \zeta')\right] - V^0_{m,of}(x_m, x'_m) - V^0_{f,of}(x_f, x'_f). \quad (11)$$

Finally, the value for a married agent after receiving a mobility shock is given by

$$V^m_{g,of}\left(x_m, x_f, \zeta, \ell', \xi'_m, \xi'_f\right) = V^0_{g,of}(x_g, x'_g) + \eta^g \max\{0, S^{stay}, S^{move}\}. \quad (12)$$

The value function implies that married households will chose the migration option that maximizes the total marital surplus or divorce if both options deliver a negative surplus. There are two policy functions associated to the latter equation. The first, denoted by $d_{of}\left(x_m, x_f, \zeta, \ell', \xi'_m, \xi'_f\right)$, captures the divorce choice of a couple and equals one if divorcing is optimal for a (x_m, x_f, ζ)-couple holding the opportunity to move to ℓ' with associated preferences ξ'_m and ξ'_f. The second, $t\left(x_m, x_f, \zeta, \ell', \xi'_m, \xi'_f\right)$, captures the optimal migration choice conditional on not divorcing and equals one if migration is optimal and zero otherwise. Notice that, because of the assumptions of linear utility and Nash bargaining, there is always agreement on divorce and migration between the involved parties, and the optimal migration choice of a divorcee is the same of a single with similar characteristics.

Putting all the possible outcomes of married households together, the Bellman equation describing the value for a married agent before the realization of the mobility shock is given by

$$V^m_{g,2}\left(x_m, x_f, \zeta\right) = (1-\chi)\, V^m_{g,noof}\left(x_m, x_f, \zeta\right) \\ + \chi \sum_{\ell'|\ell' \neq \ell} \theta\left(\ell'|\ell\right) \int_{\xi'_m} \int_{\xi'_f} V^m_{g,of}\left(x_m, x_f, \zeta, \ell', \xi'_m, \xi'_f\right) df_{\xi}\left(\tilde{\xi'}_m\right) df_{\xi}\left(\tilde{\xi'}_f\right). \quad (13)$$

2.4 Marriage Market

At the beginning of each period, single men and women participate to the marriage market. Within each city, they are randomly matched. Let μ_{g,x_g} be the mass of single agents of gender g and in state x_g, and $\mu_{\ell,g} = \int_{x_g|\ell} \mu_{g,x_g} dx_g$ be the total mass of singles of gender g in city ℓ. The total number of (x_m, x_f)-matches that occur in ℓ is given by

$$M_{x_m,x_f} = \underbrace{\lambda\left(1+\mathbf{1}\{j_m = j_f\}\gamma\right)}_{I} \underbrace{\mu_{\ell,m}^{\alpha}\mu_{\ell,f}^{1-\alpha}}_{II} \underbrace{\frac{\mu_{m,x_m}}{\mu_{\ell,m}}\frac{\mu_{f,x_f}}{\mu_{\ell,f}}}_{III}. \tag{14}$$

The matching function displays constant returns to scale and is composed of three terms.[6] The first (I) is the overall matching efficiency. If the coefficient γ is bigger than zero, matches within occupations are more likely. The second term (II) captures how the number of matches is affected by the gender balance of the market. The last term (III) implies that the total number of matches between any two types is proportional to the fraction of single men and women of the same types that populate the local economy. The resulting matching probabilities are given by $\phi^m_{x_f,x_m} = \frac{M_{x_m,x_f}}{\mu_{m,x_m}}$ for men and $\phi^f_{x_m,x_f} = \frac{M_{x_m,x_f}}{\mu_{f,x_f}}$ for women.

Upon matching, a value for marriage quality ζ is drawn from the stationary distribution of ζ. The value of a single woman at the beginning of the marriage market phase, i.e. at the beginning of each period, is given by

$$\begin{aligned} V^s_{f,1}(x_f) = \left(1 - \int_{x_m|\ell} \phi^f_{x_m,x_f} dx_m\right) V^s_{f,2}(x_f) \\ + \int_{x_m|\ell} \phi^f_{x_m,x_f} \int_{\zeta} \left[\left(1 - m\left(x_m, x_f, \zeta\right)\right) V^s_{f,2}(x_f)\right. \\ \left. + \, m\left(x_m, x_f, \zeta\right) V^m_{f,2}\left(x_m, x_f, \zeta\right)\right] df_{\zeta}(\zeta)\, dx_m \end{aligned} \tag{15}$$

where $m(x_m, x_f, \zeta)$ is the policy function for marriage and it equals one if marriage is profitable for both spouses, that is if

$$\begin{aligned} V^s_{m,2}(x_m) &\leq V^m_{m,2}(x_m, x_f, \zeta) \\ V^s_{f,2}(x_f) &\leq V^m_{f,2}(x_m, x_f, \zeta). \end{aligned} \tag{16}$$

Since $V^m_{m,2}(x_m, x_f, \zeta)$ and $V^m_{f,2}(x_m, x_f, \zeta)$ are increasing in ζ, the latter conditions imply a threshold rule for marriage. The value function for single men it is analogous to that of women and, thus, omitted.

2.5 Stationary distribution

Let the total mass of men and women (married and single) in the economy be denoted by M and F, and let $\tilde{\mu}_{,x_m,x_f,\zeta}$ be the mass of married households of type (x_m, x_f, ζ)

[6] Constant returns to scale in marriage markets are empirically supported by Botticini and Siow (2007).

living in ℓ. It must be that

$$\int_{x_f} \left(d\mu_{f,x_f} + \int_{x_m,\zeta} d\tilde{\mu}_{x_m,x_f,\zeta} \right) = F \tag{17}$$

and similarly for men

$$\int_{x_m} \left(d\mu_{m,x_m} + \int_{x_f,\zeta} d\tilde{\mu}_{x_m,x_f,\zeta} \right) = M. \tag{18}$$

The stationarity conditions are defined imposing time invariance to the distribution of single and married households. The corresponding equations are reported in Appendix A (equations 24 to 29).

2.6 Equilibrium

In equilibrium, all agents act optimally with respect to their marriage and mobility choices taking the endogenous matching probabilities as given. The equilibrium is defined as a consistency requirement between the matching probabilities and the stationary distribution.

Definition. *A stationary equilibrium consists of*

(i) a set of value functions for singles $\left\{V^s_{m,t}, V^s_{f,t}\right\}_{t=1,2,3}$ *and married households* $\left\{V^m_{m,t}, V^m_{f,t}\right\}_{t=1,2,3}$*,*

(ii) a set of policy functions for the migration choices of singles, $\left\{t_g\left(x_f, \ell', \xi'_f\right)\right\}_{g=m,f}$*, and couples,* $t\left(x_m, x_f, \zeta, \ell', \xi'_m, \xi'_f\right)$*, and policy functions for marriage formation,* $m\left(x_m, x_f, \zeta\right)$*, and dissolution,* $d_{nof}\left(x_m, x_f, \zeta\right)$ *and* $d_{of}\left(x_m, x_f, \zeta, \ell', \xi'_m, \xi'_f\right)$ *, and*

(iii) stationary distributions of single, $\left\{\mu_{g,x_g}\right\}_{g=m,f}$*, and married households,* $\tilde{\mu}_{x_m,x_f,\zeta}$*,*

such that:

1. *given the distributions of singles, which determines the matching probabilities in the marriage market, the value functions solve equations (1) through (15), with associated policy functions;*

2. *given the policy functions, the distributions of single and married households are stationary, i.e., they solve equations (24) through (29) in Appendix A.*

The following proposition formally states the existence of the equilibrium.

Proposition (Existence). *Under regularity conditions, a stationary equilibrium exists.*

Proof. See Online Appendix H.

I do not provide a formal proof of the uniqueness of the equilibrium and, thus, the model is open to the existence of multiple equilibria. Nevertheless, in the practical application, I find that, for a given set of parameters, the model always converges to the same stationary equilibrium suggesting that the equilibrium is unique, at least locally.

2.7 Testable Implications: Insights from a Simplified Model

What are the predictions of the model regarding the agents' behavior in the marriage market? Here, I use a stripped down version of the model to derive some testable implications on the behavior of agents with respect to marriage and divorce. I provide empirical support for these in the next section. The results from the next section will be used to calibrate the model in section 4.

Consider a static version of the model ($\beta = 0$) with 2 cities. With no loss of generality, assume that: (i) all households always receive a mobility shock ($\chi = 1$); (ii) preferences ξ for all cities are known in advance; (iii) divorce costs are lump-sum and equal to δ; (iv) there are no moving costs, and (vi) there are no returns to scale in consumption ($\rho = 1$).

Implications for marriage.

To characterize the marriage behavior, consider a man and a woman that have been matched in the marriage market. Two scenarios are possible. In the first, the private incentives of both parties are aligned, i.e. both would either prefer to migrate to the other city or to stay in the current one if single. By equation (16), marriage occurs whenever $\zeta \geq 0$. In the second scenario, the two agents disagree. With no loss of generality, consider the case where the man prefers moving and the woman prefers staying. The marriage condition becomes

$$\zeta + \max\{ \underbrace{\Delta w^f + \Delta \xi^f}_{\text{Wife's loss from moving}<0} , \underbrace{-\Delta w^m - \Delta \xi^m}_{\text{Husband's loss from not moving}<0} \} \geq 0 \tag{19}$$

where the Δ operator indicates the difference in the associated variable between the candidate city and the current city (e.g., Δw^m is the change in labor income that the man would incur by moving to the new city). The max operator describes the optimal choice of the married household with respect to migration where the first term corresponds to migrating and the second to staying. The marriage condition now requires the marital bliss to be high enough to compensate for the wife's private loss from migrating or the husband's loss from not migrating.

Comparing the marriage conditions in the two scenarios, one can conclude that marriage is less likely if there is disagreement on migration. Notice that, ceteris paribus, the above condition is less likely to hold as Δw^m increases. As the pecuniary gains from moving increase, marriage becomes less likely. Generalizing to the full model, this example provides two testable implications: (i) marriage is less likely if the pecuniary value of the migration option (i.e. the potential income gains from migration) are higher, and (ii) marriage is more likely the more aligned are the migration incentives of the spouses.[7]

Implications for divorce.

The intuition for divorce follows a similar logic. For a couple that is already married and whose members' individual migration incentives are not aligned, divorce is optimal if the maximal marital surplus of the couple facing the migration choice is negative. That is, if

$$\zeta + \max\{ \underbrace{\Delta w^f + \Delta \xi^f}_{\text{Wife's loss from moving}<0}, \underbrace{-\Delta w^m - \Delta \xi^m}_{\text{Husband's loss from not moving}<0} \} + \delta < 0. \tag{20}$$

where δ is the cost of divorce. Other things equal, this condition is more likely to be met if Δw^m increases. This is the third testable implication: the probability of divorce increases with the pecuniary value of migration.

3 Empirical Evidence

The model from the previous section predicts that the pecuniary gains from future migration affects current marriage market decisions. Here, I provide empirical evidence in support of the model predictions. Some of the results will be used in the next section to calibrate the model.

The empirical strategy consists in developing a proxy for the pecuniary value of migration, i.e. the value of the option to migrate in the future, which I label "Migration Value" and relating it to marriage market outcomes. I show that:

1. the probability of marriage decreases with the pecuniary returns from migration;
2. marriage is more likely to occur between spouses with aligned migration incentives;
3. the probability of divorce increases with the pecuniary returns from migration.

[7] In this example, I ignored the possibility of divorcing right away. With no uncertainty, since divorce is costly, marriage never occurs if immediate divorce is the optimal choice.

It is worth keeping in mind that, although I control for several observables, including education, age, and income, the results presented here are still subject to omitted variable bias due to the endogenous sorting of workers in space. Consequently, they should not be interpreted as causal. The scarcity of valid instruments or natural experiments to explicitly control for the endogeneity problem justifies the use of the structural model to study causality.

3.1 Data

I use a dataset spanning a decade (2008-2017) constructed from the American Community Survey (ACS), as sourced from IPUMS-USA (Ruggles et al., 2024). This sample provides the large cross-section needed to characterize local labor and marriage markets, and sufficient information to study migration and family formation. In particular, the dataset includes information regarding the migration patterns of respondents in the year preceding the survey, and their transition into or out of marriage.[8] I restrict the sample to include individuals between the ages of 25 and 55 who are either single, divorced, or married.[9] The age restriction is imposed to mitigate the influence of retirement as well as to avoid the potential biases arising from the frequent occupation changes among young workers (Papageorgiou, 2013, Gervais et al., 2016, Menzio, Telyukova and Visschers, 2016). Moreover, I restrict the sample to white individuals to avoid the confounding effects of varying labor and marriage market conditions across racial groups.[10] Finally, I consider only workers who supply positive labor and I perform robustness checks including all workers for which the last occupation is observed.

I consider 209 metropolitan statistical areas (MSAs) from the U.S. Office of Management and Budget as the relevant geographic units and I refer to them interchangeably as "cities". The occupational system I employ consists of 95 occupations and is based on a partial aggregation of the classification developed by Dorn (2009). This classification has been designed to maintain a high level of detail while ensuring that all occupations are sufficiently represented in all cities.[11] A full cross-walk from Dorn's system to the one used in this paper is available on request.

[8]The ideal dataset would be a large panel of households containing detailed demographic information and data on migration and family formation. To the best of my knowledge, the majority of readily available panel datasets are either too small in the cross-section or do not contain enough geographic or demographic information.

[9]An individual is married if their reported marital status is "married". Following the existing literature (Lundberg and Pollak, 2013, Gemici, 2016), I consider formal marriage to be the relevant family bond. In Online Appendix F, I show that the migration behavior of cohabiting individuals in romantic relationships is closer to that of singles than to married individuals, indicating that formal marriage is the best way to define families in the context of geographic mobility.

[10]Table 9 in Online Appendix D shows that marriage markets are highly segmented along racial lines suggesting that the sample restriction is not detrimental to the analysis.

[11]I exclude mining occupations because of their high geographic concentration.

I complement the ACS data with CPS-ASEC data (Flood et al., 2023) for the same period to compute additional statistics and moments for calibration, to which I apply the same sample restrictions.

3.2 Measuring the pecuniary value of migration

My proxy for the pecuniary value of future migration opportunities is based on a series of occupation-specific rankings of cities, where high-ranking cities are those that pay on average higher wages to the specific occupation.[12]

To construct these rankings, I estimate the following wage equation

$$\log w_{i,\ell,j,t} = \alpha_{\ell,j} + \boldsymbol{\beta} \boldsymbol{X}_{i,\ell,j,t} + \epsilon_{i,\ell,j,t} \tag{21}$$

where $w_{i,\ell,j,t}$ is the real hourly wage of worker i living in city ℓ who works in occupation j in year t. Real wages are computed following Moretti (2013). The coefficients of interest are the city-occupation wage premia ($\alpha_{\ell,j}$), and $\boldsymbol{X}_{i,\ell,j,t}$ is a set of controls that include dummies for education, a quadratic function of potential experience for each occupation, and dummies for gender, marital status and year. [13]

I use the estimated values of $\alpha_{\ell,j}$ to construct occupation-specific rankings of cities across occupations. Intuitively, the value of future migration opportunities is higher for individuals who, conditional on their occupation, live in a low-ranking city.[14]

Given these rankings, I define my measure of the value of the migration option as follows: the lowest level of the measure (1) is assigned to workers residing in cities that rank among the top 20% for their occupation; a value of 2 is assigned to workers living in a city among the subsequent 20% of cities, and so forth, up to the highest level which is 5. Table 1 shows some examples of high and low ranking cities for a subset of occupations.

One potential issue with the estimated fixed effects is selection bias.[15] This is not a major concern for my results as they rely on the ordinality of the fixed effects rather than their cardinality. As long as correcting for selection does not entirely account for the geographic variation in occupational wages, an eventuality that is not supported by the literature (Moretti, 2004, D'Costa and Overman, 2014, Dahl, 2002, Baum-Snow and Pavan, 2012, Dauth et al., 2022), or drastically alter the rankings (the 5-levels de-

[12]In this respect, this approach relates to that of Kaplan and Schulhofer-Wohl (2017), who exploit changes in the dispersion of location-occupation premia to study migration flows.

[13]Education levels are (i) high-school graduates and below, and (ii) some college and above. Potential experience is computed as (age - years of schooling - 6).

[14]See Online Appendix D for more details about the distribution of the estimated fixed effects and the rankings.

[15]I cannot apply, in this context, the correction procedure developed by Dahl (2002). This technique does not allow to separately identify the intercept of the wage equation from the intercept of the control function, which makes cross-city comparisons unfeasible.

Occupation	Low migration value (1)	High migration value (5)
Financial managers	New York-Newark-Jersey City Bridgeport-Stamford-Norwalk San Francisco-Oakland-Hayward	Albuquerque El Paso Lafayette
Programmers	San Jose-Sunnyvale-Santa Clara San Francisco-Oakland-Hayward Seattle-Tacoma-Bellevue	Jackson Naples-Immokalee-Marco Island Clarksville
Lawyers and judges	Washington-Arlington-Alexandria New York-Newark-Jersey City Los Angeles-Long Beach-Anaheim	Palm Bay-Melbourne-Titusville Tucson Waco

Table 1: Examples of high and low migration value occupation-city pairs.

sign of my measure is meant to provide robustness), my results remain valid.

In Online Appendix E, I validate my measure by showing that singles with a higher value of migration are more likely to migrate and tend to relocate to higher-ranked cities. Similar patterns are observed for married households, where the migration probability is increasing in both the migration value of husbands and wives.

3.3 Marriage, Divorce, and the Pecuniary Value of Migration

According to the model predictions, the size of pecuniary returns from migration affects they way workers select in and out of marriage. By relating marriage market outcomes to my measure of the value of migration, I provide evidence in support of the model predictions. I show that individuals with higher pecuniary gains from migration exhibit lower marriage rates and higher rates of divorce. Moreover, conditional on marrying, they are more likely to select partners with aligned migration incentives.

3.3.1 Higher Migration Gains Reduce Marriage Propensity and Increases Sorting

The first testable prediction defined in section 2 is that higher potential gains from migration are associated with lower propensities to marry. To test this prediction, I estimate, separately for men and women, a logistic probability model regressing the yearly probability of marriage (I focus on first marriages) on a set of dummies for the five levels of the measure of migration value, with controls for individual characteristics and local marriage market conditions. In the baseline specification, I include as controls: a dummy for education, a quartic in age, logged own wage (which proxies for unobserved ability), city size, local sex ratios, the geographic dispersion of occupation-specific wage premia, and year fixed effects.[16]

[16] Tables 10 and 11 in Online Appendix D show robustness checks including occupation and state fixed effects, and robustness including all individuals for which an occupation is reported, even if they supply no work.

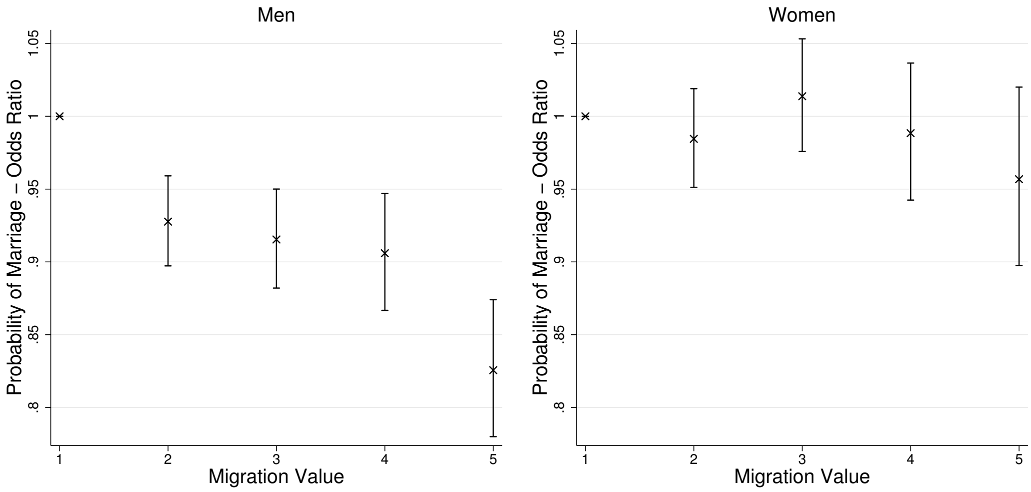

Figure 1: Yearly probability of marrying for different levels of migration value (odds ratio relative to level 1 with 95% confidence intervals). The average yearly probability of marrying is 9.9% for men and 10.2% for women.

Figure 1 shows the results for both men and women. It plots the odds-ratio of the probability of marriage for each level of migration value. A men with a high migration value is almost 20% less likely to marry than a low-value man every given year. To get a sense of how these gaps translate into marriage differences over the lifecyle, I perform a back-of-the-envelope calculation using the estimated logit regression to obtain the predicted probability of marrying before a given age. The result, shown in Figure 11 in Online Appendix C, reveals that the yearly marriage gap translates into a 9 percentage points difference in the probability of having married at least once by age 33.

For women, the baseline estimates display a smaller drop in marriage rates (up to 5%) and the estimated coefficients are not statistically significant. Nevertheless, Table 11 in appendix D shows that, by including occupation fixed effects as controls, one obtains a stronger and statistically significant negative relation between marriage rates and migration value (low migration value women are about 10% less likely to marry than high-value women). This suggests that occupations play an important role in the selection into marriage of women.

The second prediction of the model is that individuals should prefer to marry partners with similar attitudes towards migration. In other words, the model predicts that high migration value individuals should disproportionately marry each other, and even more so if their best destinations are similar (e.g. if they work in the same occupation). To assess the degree of assortative mating over the pecuniary gains from migration, I use a modified version of the measure developed by Eika, Mogstad and

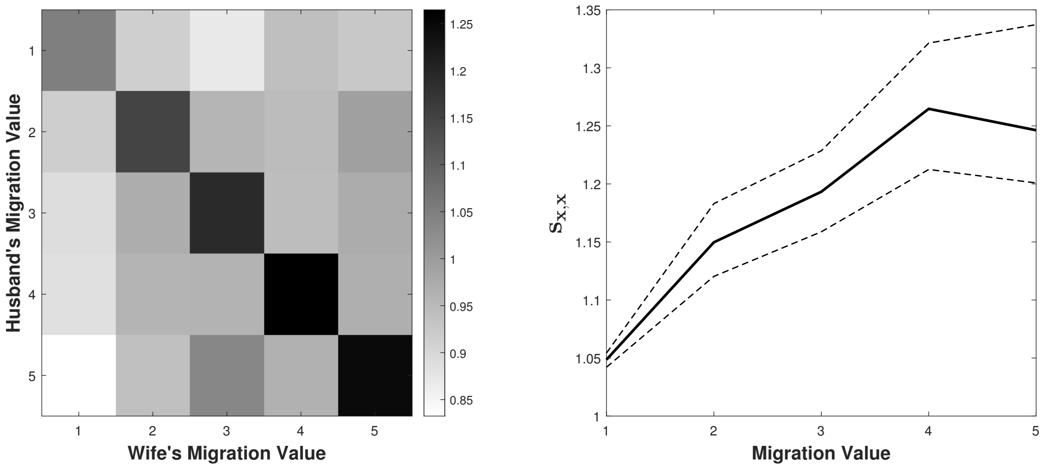

Figure 2: Assortative mating over the value of migration. The left panel shows all the computed values, while the right panel focuses on the diagonal values and include 95% confidence intervals.

Zafar (2019). Considering the subset of newlyweds, I compute

$$s_{h,w} = \frac{P(h,w)}{\sum_{\ell} P(h|\ell)P(w|\ell)P(\ell)} \tag{22}$$

where the numerator is the probability of observing a couple in which the husband's value of migration is h and the wife's is w, and the denominator is the probability of observing the same type of couple in a counterfactual distribution in which marriages are formed randomly within a city. The latter is equal to the sum of the probabilities of observing such a couple in each city c under random marriage, $P(h|\ell)P(w|\ell)$, weighted by the fraction of couples living in the city $P(\ell)$. A value of $s_{h,w}$ above one implies that marriages of type (h, w) are more common than what we would observe under random matching. The inverse is true if $s_{h,w} < 1$. The advantage of using this measure of assortative mating over other alternatives is that it allows to explicitly control for the composition of local marriage markets. [17]

Figure 2 shows the computed values of $s_{h,w}$. The left panel plots the the measure of marital sorting for each combination of migration values. It shows that there is positive assortative mating as all the values on the diagonal are above one while off-diagonal they tend to be below 1. The right panel of the figure focuses on the diagonal elements, i.e., it shows assortative mating for $h = w$ and includes bootstrapped confidence intervals. While there is no obvious quantitative interpretation of the level differences in the computed values of $s_{h,w}$, the increasing profile suggests that assortative mating rises with the value of the migration option of the spouses. Intuitively, the motivation to marry someone with aligned migration incentives increases when the potential gains from migration are higher. In Online Appendix C, Figures 12-14 show

[17]For a discussion on different measures of assortative mating, see Chiappori et al. (2025).

that these findings are robust to the inclusion of all couples (newlyweds and not) in the sample, and to controlling for the age and education of the spouses.

About 15% of newlywed couples in which both spouses have the same migration value (8% of all new marriages) is composed by couples working in the same occupation. Although this is in line with the predictions of theory, it raises the question of whether the observed marriage patterns are driven by reasons other than the interaction of marriage and migration. If this was the case, under the assumption that these other reasons are independent of geography, one should observe that the probability of marrying someone in the same occupation is independent of the value of migration, after controlling for personal characteristics and local marriage market conditions. To test this hypothesis, I regress the probability that a newlywed works in the same occupation as their spouse on dummies for migration value, controlling for the fraction of same-occupation workers available in the marriage market and other individual characteristics.[18] Results for men and women are shown in Tables 12 and 13 respectively in Online Appendix D, along with some robustness checks. The probability to marry within an occupation is increasing with the value of migration for both men and women. This supports the hypothesis that considerations linked to geographic mobility are an important determinant of occupationally homogeneous marriages.

3.3.2 Higher Migration Gains Increase Divorce Risk

The model predicts that high migration value individuals are more likely to divorce because the outside option of being single and free to move is more attractive to them. To investigate this prediction, I estimate a logit model regressing the probability of divorce on a set of dummies representing the five levels of the migration value and individual controls.[19] As for the marriage regression, Figure 3 reports the estimated odds ratios. For both men and women, the probability of divorce is increasing in the value of migration. The positive relation is stronger for men as the probability of divorcing within a year is 15-20% higher for level-4 and level-5 men than it is for level-1 men. For women, the difference is just above 10%. Tables and robustness checks are in Online Appendix D.

To further support the view that some divorces are linked to the prospect of migration, I look at the migration behavior of divorcees. One implication of the model is that a migration shock (e.g. a job offer from a different city) can trigger a divorce because of disagreements between spouses on whether to migrate or not. If this is true, migration probabilities should be relatively high among divorcees. While the reasons

[18]Controls include: a quartic in age, education of both spouses and their interaction, wage of both spouses and their interaction, and year fixed effects.

[19]Controls include: dummies for education and the presence of children under 5, own wage, a quartic in age, the geographic dispersion of occupation-specific wage premia, and year fixed effects.

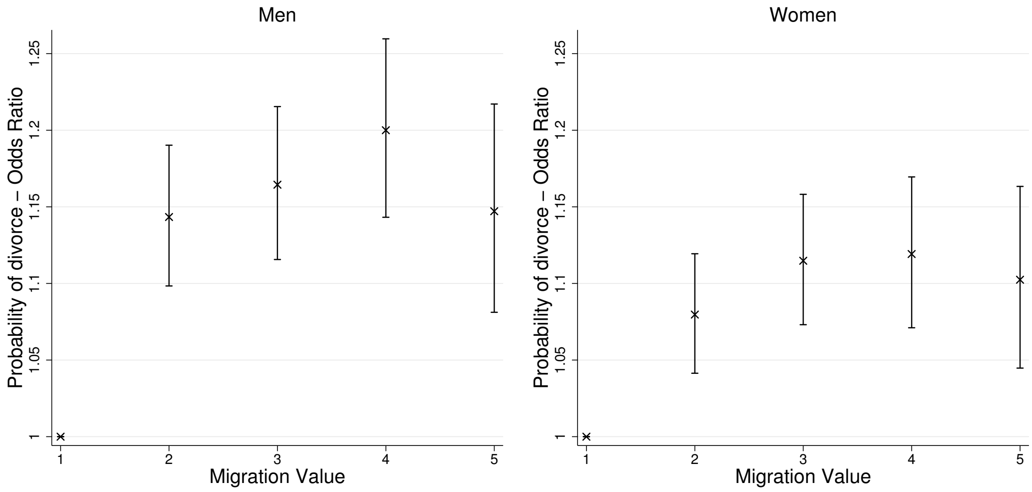

Figure 3: Average probability of divorcing as a function the migration value (odds ratios relative to level 1 with 95% confidence intervals). The left panel reports the results for men and the right panel for women. The average probability of divorce is 1.3% for men and 1.7% for women.

for migration are not observable in the data, I can compare the migration propensities of divorcees to that of single and married individuals. I estimate a series of gender-specific logit models for the probability of migration on a dummy for divorcees and several individual controls.[20] Table 16 in Online Appendix D shows the estimates for the coefficient on the dummy for divorcees (odds-ratio) for four distinct comparisons: (i) singles (never married) vs recent divorcees (less than one year); (ii) singles vs all divorcees; (iii) all married vs recent divorcees; (iv) married vs all divorcees. The results show that divorcees are always more likely to migrate than both married and single individuals with this difference being larger for recent divorcees.

The empirical evidence provided in this section supports the model predictions about how the prospect of future migration and the associated pecuniary gains affect marriage and divorce. In the following section, these correlations will be used to calibrate the structural model. The calibrated model will then be employed to analyze the causal mechanisms behind these observations and to extrapolate the aggregate implications of the interaction between migration and marriage markets.

4 Model Calibration

This section describes the calibration of the structural model. I start by briefly addressing the computational and data challenges and, then, I describe the calibration

[20]Controls include: a quadratic function of age, wages, geographic dispersion of occupation-specific wages, presence of children, and education.

process.

4.1 Curse of Dimensionality

The numerical solution of the model is a burdensome exercise. Due to the size of the state space, parameterizing the model to match the number of cities and occupations used for the empirical analysis (209 cities and 95 occupations) is unfeasible. To decrease the size of the state space, I cluster similar cities together and represent each group as a unique city in the model.

For the model to do a good job at replicating the data, one needs to preserve covariance structure of wages across cities since all the model dynamics stem from wage heterogeneity across cities and occupations. To this purpose, I cluster the 209 original cities into 25 fictitious locations such that cities with similar estimates of the city-occupation fixed effects, $\alpha_{\ell,j}$ in eq. (21), belong to the same group. The clustering process involves two steps: first, I perform a principal component decomposition on the city-occupation premia and, then, I perform k-means clustering on a subset of the principal components to obtain 25 clusters. The number of clusters has been chosen as a compromise between the need for a reduced state space and the necessity to preserve the covariance structure of wages. The details of this procedure are reported in Online Appendix J and the resulting partition of MSAs is available on request.

Despite the reduction in the size of the state space, the solution and calibration of the model still necessitate considerable computational power.[21] To perform these tasks, I exploit the computational resources provided by the Digital Research Alliance of Canada. Online Appendix I describes the algorithm employed to compute the stationary equilibrium for a given set of parameters.

4.2 Wages and Occupational Changes

In the model, wages are exogenous and heterogeneous with respect to gender and occupations. In reality, other factors also affect wages, notably education. Moreover, these sources of heterogeneity can induce additional marital sorting. Ideally, one would like to explicitly model these sources of wage heterogeneity but, in this setting, it is not computationally feasible. Nevertheless, I can still account for the effects of these factors that come through wages. To do so, I compute the wage distribution to be fed to the model taking into account the demographic composition of each occupation. I first estimate the wage equation (21) using the model cities as the geographic unit of interest. Then, I divide the sample by occupation and, for each subgroup, I compute the predicted wage for each city. Model wages for men are obtained as the

[21] Using 10 cores and 40GB of memory, the algorithm, implemented in Fortran with OpenMP for parallel computing, takes about 5 hours to find the stationary equilibrium for a given set of parameters.

average predicted wage for each city and occupation.[22] The wages for women are obtained subtracting the estimated wage gap (19.3%).

Occupational mobility occurs exogenously according to two gender-specific transition matrices. These matrices are computed from yearly CPS-ASEC data from 2008 to 2017 applying the same sample restrictions as in the main sample. The initial occupation of each worker is drawn from the stationary distribution of the Markov chain for their gender. As shown in Figure 16 in Online Appendix C, this distribution is very close to the distribution of occupations obtained from the ACS sample.

4.3 Functional forms

To calibrate the model, one needs to specify functional forms for the migration shocks and the for the costs of migration and divorce. I assume that a mobility shock can come from any city with equal probability, namely

$$\theta\left(\ell'|\ell\right) \equiv \theta = \frac{1}{L-1}.$$

Moreover, I assume that migration and divorce costs are linear functions of household income, that is

$$\kappa^s(w) = \kappa^s w; \qquad \kappa^m(w_m, w_f) = \kappa^m(w_m + w_f); \qquad \delta(w) = \delta w.$$

4.4 Calibration

There are 16 parameters to be chosen but not all the parameters can be directly identified from the data. Six of these are taken from the literature or set to reasonable values. The rest of the parameters are chosen to match moments related to marriage and migration obtained from the micro data.

Preset Parameters

The list of preset parameters and their values are reported in Table 2. Each period in the model corresponds to a calendar year. To conform with the empirical analysis, I assume that agents enter the market at age 25 and they expect to remain in the labor and marriage markets for 30 years on average (this determines ω). I calibrate the economies to scale in consumption for married households (ρ) to match the McClements scale.[23]

[22] The predicted wages are measured as log hourly wages. Yearly wages are obtained by multiplying hourly wages by the average number of hours worked by men and women each year.

[23] According to the McClements scale, a person living alone spends 61% of what a childless couple spends to obtain the same level of consumption. In this model, the total expenditures of a married household equals $x = w^M + w^F$. Under the assumption that both spouses have the same consumption c and the same wage w we have that $2c = (w^\rho + w^\rho)^{\frac{1}{\rho}} = 2^{\frac{1}{\rho}} w = 2^{\frac{1}{\rho}} \frac{x}{2}$ which, using $c = 0.61x$, gives

Parameter	Meaning	Value	Source
η	Bargaining Power	0.5	Equal bargaining power for spouses
α	Curvature of matching function	0.5	No gender bias in matching probabilities
λ	Matching efficiency	0.151	Goussé, Jacquemet and Robin (2017)
$\tilde{\beta}$	Time preference	0.98	Voena (2015)
ρ	Economies of scale in consumption	0.777	McClements scale
$1-\omega$	Death probability	1/30	A 30-year lifespan

Table 2: Preset parameters.

The matching function is calibrated to be unbiased ($\alpha = 0.5$) and the scale parameter λ, which cannot be separately identified from the average marriage quality $\bar{\zeta}$, is chosen to align with the yearly matching probabilities estimated by Goussé, Jacquemet and Robin (2017). The bargaining power parameter η is set to 0.5, such that both spouses have the same bargaining power. Finally, the time preference parameter ($\tilde{\beta}$) is set to 0.98, taken from Voena (2015).

Moment Matching

The remaining parameters, the vector $\mathbf{\Pi} = \left(\chi,\ \kappa^s,\ \kappa^m,\ \delta,\ \gamma,\ \rho_\xi,\ \sigma_\xi,\ \bar{\zeta},\ \rho_\zeta,\ \sigma_\zeta\right)'$, are chosen to match a set of empirical moments. Let $\boldsymbol{\phi}_{\textbf{data}}$ be the set of empirical moments and $\boldsymbol{\phi}_{\textbf{sim}}(\mathbf{\Pi})$ be the set of simulated moments. The vector $\mathbf{\Pi}$ is chosen as the solution to

$$\min_{\mathbf{\Pi}} \left(\boldsymbol{\phi}_{\textbf{data}} - \boldsymbol{\phi}_{\textbf{sim}}(\mathbf{\Pi})\right)' \left(\boldsymbol{\phi}_{\textbf{data}} - \boldsymbol{\phi}_{\textbf{sim}}(\mathbf{\Pi})\right). \tag{23}$$

I target 19 moments that describe the migration and marriage behavior of workers. To characterize the latter, I estimate the logit probability models for marriage and divorce described in section 3 on simulated data for men, and use the coefficients on the dummies for the measure of migration value as calibration targets (i.e. the coefficients plotted in Figures 1 and 3). I also include as targets the average marriage and divorce rates of men, the fraction of same-occupation marriages, and the median duration of marriages, all computed from the ACS sample. To characterize migration behavior, I include the average migration rate of couples and single men and the set of average changes in the measure of migration value conditional on migrating which, as discussed in Online Appendix E, delivers information on the direction of migration. Intuitively, conditional on moving the value of future migration opportunities changes and, in particular, it declines if a worker moves to a city which pays higher wages to their occupation.

As it is usually the case with structural models, the identification of structural parameters is jointly determined by several variations in the data. Nevertheless, it is possible to give a clear, partial equilibrium intuition of how every single parameter is

$\rho = \frac{\log(2)}{2\log(2)+\log(0.61)} = 0.777.$

Parameter	Meaning	Value
χ	Probability of a mobility shock	0.05
κ^s	Cost of moving (singles)	0.47
κ^m	Cost of moving (couples)	0.49
δ	Cost of divorcing	0.21
γ	Matching function bias	3.72
ρ_ξ	Persistence of preference shock	0.08
ρ_ζ	Persistence of bliss shock	0.81
Parameter	Meaning	Value (Thousands of Dollars)
σ_ξ	S.d.of preference shock	62.29
$\bar{\zeta}$	Mean of bliss shock	-17.19
σ_ζ	S.d. of bliss shock	3.45

Table 3: Internally calibrated parameters.

identified in the data. This discussion is carried out in Appendix B.

4.5 Results

Parameters and Moments Fit

Table 3 lists the calibrated parameters. The labor market friction parameter, χ, is set to 0.05 which implies that each household gets a mobility shock roughly once every 20 years. The low value of χ is needed to match the low migration rate, especially because of the lack of life-cycle effects that would otherwise naturally reduce the migration rates without needing strong frictions. Moving costs amount to 47% of yearly income for singles and 49% for couples. In the stationary distribution, the cost of migration is on average \$20,951 for singles and \$37,806 for couples. Divorcing costs a worker 21% of their annual income. For the average divorcee, this amounts to \$9,143.[24] The matching function bias parameter γ is set to 3.72. In a marriage market in which an equal number of single men and women are evenly spread across occupations, this value implies that, conditional on any match occurring, a single worker has a 4.8% probability to be matched to a individual in the same occupation.[25] The estimated mean value of the bliss shock, ζ, is -\$17,191. Negative values for such a quantity are not uncommon in the literature. A negative mean for the bliss shock is needed to counteract the gains from economies of scale in consumption.

Figure 4 shows the fit of the model with respect to the subset of moments concerning the relation between the pecuniary value of migration and migration, marriage,

[24]A real-world benchmark for the monetary cost of divorce, mentioned also by Voena (2015), is provided by the Rosen law firm fee calculator. According to it, the legal fees associated with a divorce by agreement (the most common kind) range between \$6,000 (for marriages involving no children and few assets), and \$38,000.

[25]In comparison, this value is 1.05% if $\gamma = 0$.

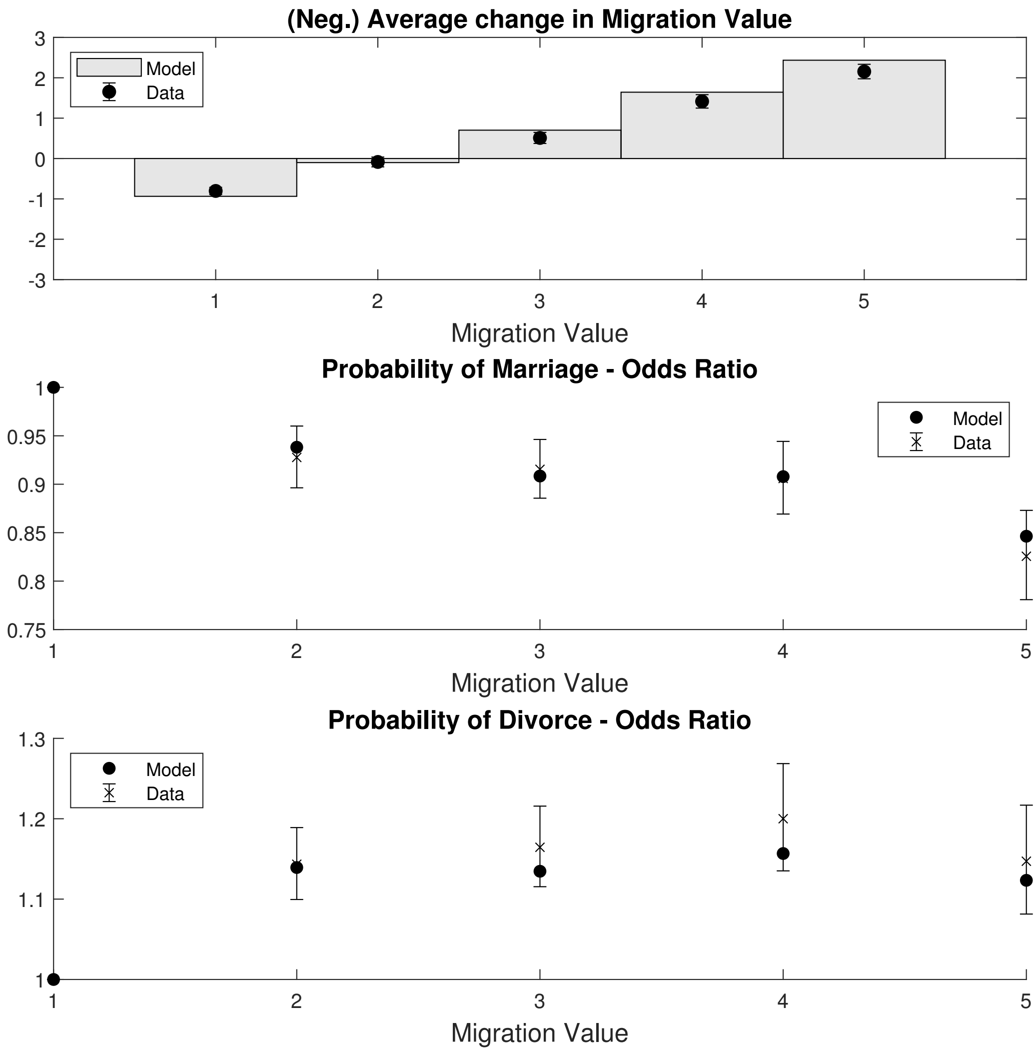

Figure 4: Model fit: targeted moments relative to migration and marriage patterns.

Moment	Model	Data
Average probability of migration (single men)	0.8%	0.8%
Average probability of migration (couples)	0.1%	0.3%
Average probability of marriage (men)	8.8%	9.9%
Average probability of divorce (men)	1.7%	1.3%
Fraction of newlyweds in the same occupation	11.5%	7.9%
Median duration of marriage (years)	14	12

Table 4: Model fit: additional targeted moments.

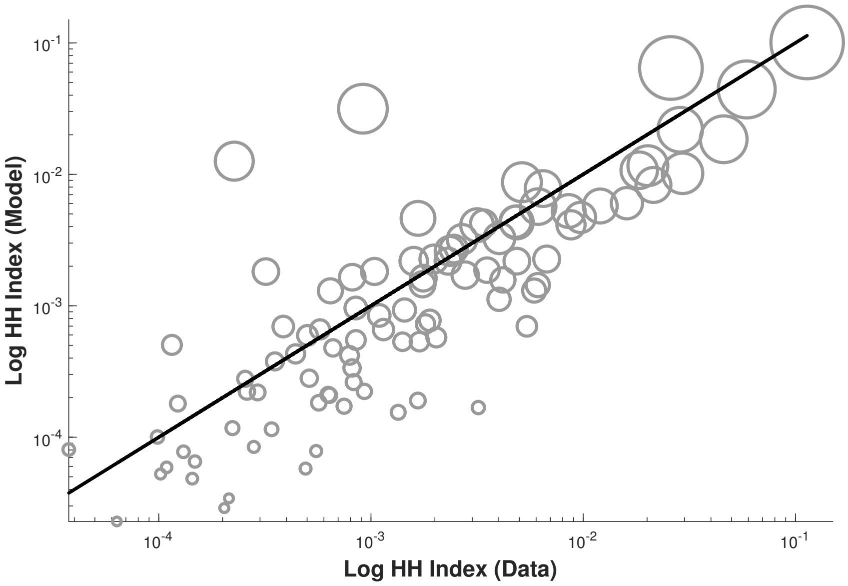

Figure 5: Geographic concentration of employment by occupation, data versus model (HH index, log-log scale).

and divorce patterns. Table 4 shows the remaining targeted moments. Table 17 in Online Appendix D and Figure 17 in Online Appendix C show the same moments for women, which have not been targeted.

Model Fit: Non-Targeted Moments

The calibration process does not make use of any moment from the geographic distribution of workers. This makes the latter the optimal candidate to test the performance of the model. Figure 5, compares a measure of the geographic concentration of employment for each occupation, the Herfindahl–Hirschman (HH) index, computed from the data and the model, and shows that the model can closely match the data.

In addition, Figure 6 shows the model equivalent of the measure of assortative mating from section 3 (eq. 22). The right panel of the figure also reports the empirical values for comparison. The model can closely reproduce the patterns in the data.

Finally, the model is also able to successfully reproduce the ex-post gender wage gap: 26.0% in the data and 26.3% in the model (see Online Appendix K for details).

5 Marriage and the Geographic Distribution of Labor

There are two ways in which marriage can affect the geographic distribution of the labor force. First, being married reduces geographic mobility (Guler, Guvenen and Violante, 2011, Gemici, 2016, Braun, Nusbaum and Rupert, 2021). Depending on the relative timing of marriage and migration, this might cause people to get "stuck" in high-productivity or low-productivity cities, with potentially ambiguous effects on

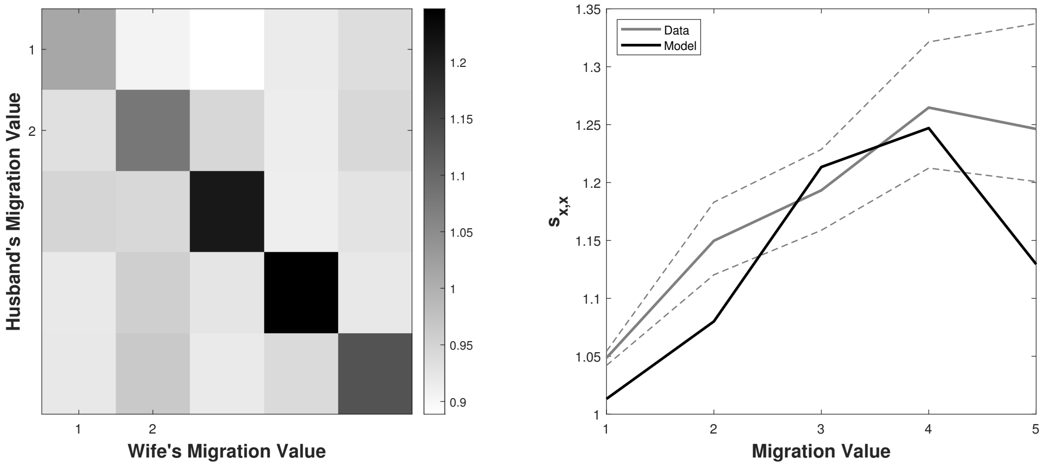

Figure 6: Model-generated assortative mating (corresponding to equation 22). The left panel shows all the values while the right panel focuses on the diagonal elements and compares them to the empirical values.

the geographic distribution of the labor force. Secondly, better marital perspectives constitute a motive for migration (Edlund, 2005, Compton and Pollak, 2007, Gautier, Svarer and Teulings, 2010). Marriage markets are local amenities, the value of which depends endogenously on the migration choices of workers.

In this section, I use the calibrated model to answer the following questions: what is the effect of marriage on the geographic allocation of labor? Does marriage act as an agglomeration force, favoring the spatial concentration of the workforce, or as a dispersion force, making big cities smaller than they would otherwise be? What are the relative contributions of the two channels described above?

To quantify the effect of marriage on the geographic distribution of the labor force, I compute a counterfactual equilibrium in which marriage markets are shut down (Counterfactual 1). In this scenario, both channels are absent. Agents cannot get married, so that family ties do not influence migration. Moreover, since marriage markets are unavailable, they have no amenity value and they do not affect migration choices.

The left panel of Figure 7 reports the size of the model cities in the baseline and counterfactual scenario. The plot shows that, without marriage markets, the population in the economy would be much less concentrated, with 3 of the biggest cities shrinking in size by 30% on average, while all the other cities become 40% bigger on average. The right panel of the figure looks at the changes in the geographic concentration of each occupation, as measured by the Herfindahl–Hirschman index, when moving from the no-marriage counterfactual to the baseline, as a function of the initial concentration. All occupations become substantially more concentrated which suggests that marriage markets act as a strong agglomeration force.

While the lack of a production sector precludes the direct assessment of the implication of the distributional effects of marriage on aggregate productivity, the total

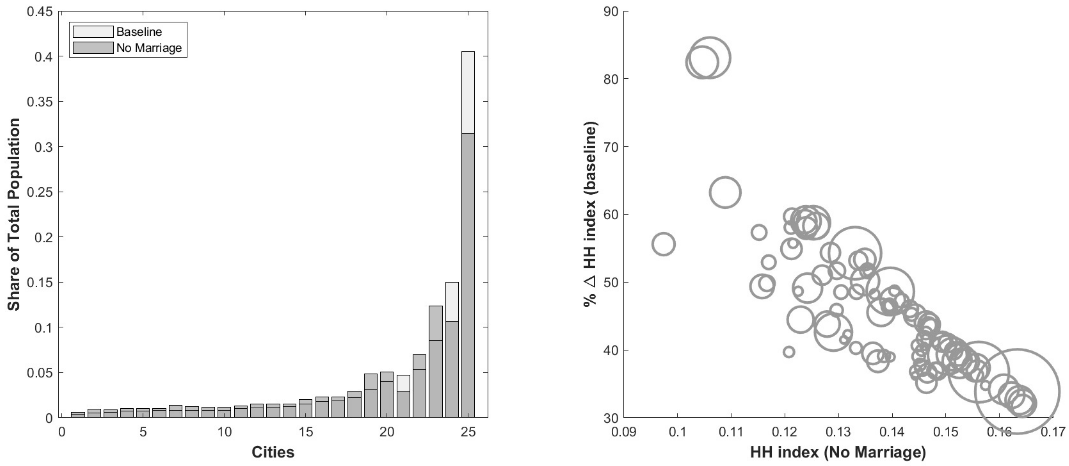

Figure 7: The effects of marriage on the geographic distribution of workers. Left: fraction of the total population residing in each city. Right: change in the geographic concentration (HH index) of employment from the counterfactual with no marriage to the baseline; each bubble is an occupation and the size of the bubble is proportional to the total employment in such occupation.

wage bill can serve as a proxy to estimate the magnitude of these effects. A back-of-the-envelope calculation, reported in the second column of Table 5, shows that the presence of marriage markets causes an increase of total labor earnings of 1.8% over the counterfactual scenario. Since the model does not allow for wage adjustments, I compute boundaries for this figure using estimated wage elasticities from the literature. The lower bound is computed using occupation-specific demand elasticities from Alonzo and Gallipoli (2025), who estimate a standard CES production function with heterogeneous labor inputs. The decreasing marginal productivity of labor implies that a higher geographic concentration of workers delivers lower wages on average. The upper bound is obtained using estimates of the elasticity of wages to city size from the meta-analysis by Melo, Graham and Noland (2009). This elasticity captures agglomeration economies and delivers higher average wages with higher concentration.[26]

How much of the total effect comes from the amenity value of the marriage market? How much from the marital constraints on migration? To disentangle the two effects, I compute a second counterfactual scenario in which agents take into account the possibility of marrying when evaluating migration, but are never actually able to marry (Counterfactual 2). This allows to isolate the effects of the amenity value of marriage markets on the spatial distribution of workers. In practice, to compute the counterfactual distribution, I first compute the value functions and the associated policy functions assuming that the matching probabilities are the same as in the base-

[26]See Online Appendix L for details.

	Counterfactual 2 (no marriage)	Baseline
% Change in total labor earnings over Counterfactual 1 (no marriage, no amenity value)	0.9% (0.2, 1.7)	1.8% (1.3, 2.0)

Table 5: Total labor earnings changes relative to the counterfactual scenario with no marriage markets. The first column refers to the counterfactual scenario in which individuals internalize the marriage market conditions but marriage never actually realizes. The second column refers to the baseline equilibrium.

line equilibrium. This insures that agents factor in the amenity value of the marriage market in their migration choices. Then, given the policy functions, I compute the stationary equilibrium assuming that no match is possible in the marriage market.

The first column of Table 5 shows the change in total labor earnings relative to the counterfactual equilibrium with no marriage market. The additional incentive to migrate provided by the marriage market amenity, accounts for 52% of the total gain in aggregate earnings generated by marriage markets. Interestingly, and perhaps surprisingly, the remaining 48% of the increase in total earnings must be due to marriage as a constraint to migration. While preventing workers in low-pay cities from relocating to more productive cities, marital ties also prevent workers to move away from high-pay cities, even if their idiosyncratic preferences would dictate so. Since in the stationary distribution, the fraction of workers in high-pay cities largely outnumbers those in low-pay cities, and the former group is more likely to enter marriage and less likely to exit it through divorce, the positive effect of preventing individuals from moving away from high-pay cities is bigger than the negative effect of preventing workers in low-pay cities to move to better places. Thus, the aggregate effect of family ties on total labor earnings is positive.

It is worth stressing that these results are by no means hardwired in the structure of the model as the results would be different for a different set of parameters. Moreover, the exercise carried out in this section highlights the importance of the dynamic interplay of marriage and migration. In the calibrated model, forward-looking agents foresee that marriage constrains mobility, and many are unwilling to enter marriage before having reached their preferred location.

6 The Impact of Marriage on Labor Market Outcomes

By imposing additional constraints to mobility, marriage restricts the ability of workers to take advantage of profitable job opportunities that require geographic relocation. To what extent do family ties reduce the income growth of workers? To answer this question, I compare the migration behavior and income paths of simulated individuals who marry at least once over 30 years (the time span considered in the empirical

		Men	Women
Married at least once	Baseline	9.9%	10.7%
	Counterfactual	16.6%	18.2%
Married at 25	Baseline	5.2%	5.5%
	Counterfactual	12.7%	13.6%
Never Married		9.9%	11.9%

Table 6: Fraction of individuals who migrate at least once over 30 years.

analysis) to those for the same individuals in a counterfactual scenario where they never marry.[27]

Table 6 shows the fraction of workers who move at least once in the baseline and counterfactual simulation, conditional on marital history. In the baseline simulation about 10% of men and women who marry at least once, also move at least once over 30 years. Without the marital bond, this fraction rises to about 17%. This increase in mobility is similar for those who, in the baseline simulation, marry at age 25. In the baseline, only about 5% of men and women end up moving at least once, while this fraction increases by 7-8 percentage points in the counterfactual scenario. The table also reports the fraction of workers who never marry in the baseline that migrate at least once.

Figure 8 shows the average ratio between the income paths of workers in the counterfactual and the baseline simulation for individuals who marry at age 25. In the figure, workers are grouped by the initial pecuniary value of migration. Not surprisingly, the higher are the potential pecuniary gains from migration, the costlier is marriage in terms of lost income growth. Men who start with high migration values at age 25 experience, in the counterfactual scenario, a higher growth in yearly labor income, ending up earning about 4% more by age 35 and 8% more by age 55. For women, the same figure is 4% by age 35, and 6% by age 55. The extent of the gains is lowered for men (women) who are initially in better paying cities. For those who start in the best cities for their occupation, there is, in terms of labor income, a slight gain from entering an early marriage, i.e. the counterfactual income is lower. This is due to the fact that, because of idiosyncratic preference shocks, some married individuals in high-paying cities would receive higher utility relocating to lower-paying cities, but family ties prevent them from doing so. Despite being already sizable, these numbers should be interpreted as lower bounds as the model does not feature within-city income growth, which is substantially larger in bigger cities (Baum-Snow and Pavan, 2012).

[27]To isolate the impact of family ties, I maintain all the migration incentives coming from the model. This implies that, in the counterfactual world, individuals still consider better marriage markets as a local amenity. The difference with the baseline model is that marriage never actually realizes.

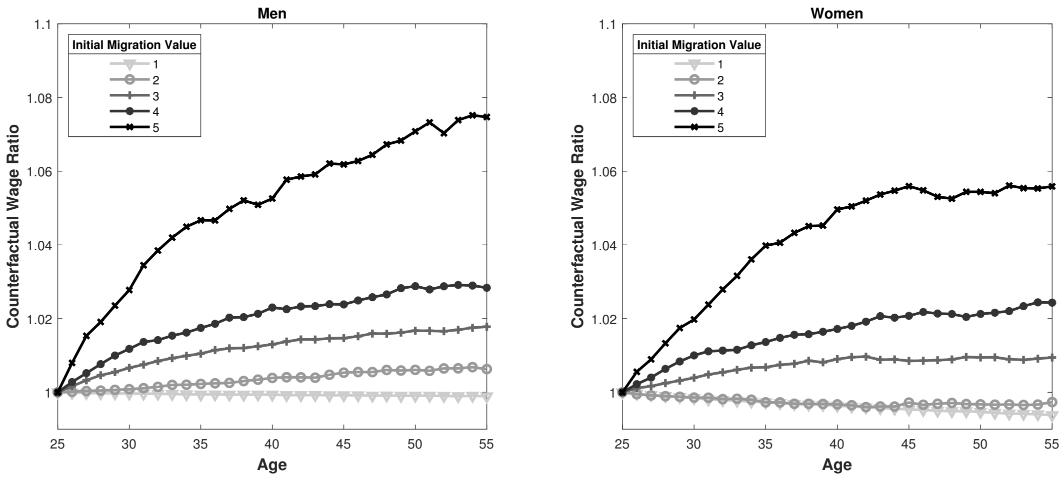

Figure 8: Yearly income gaps in the counterfactual versus the baseline simulation, for individuals who marry at age 25.

7 The Impact of Migration on Marriage Market Outcomes

Having examined the micro- and macroeconomic implications of how marriage markets influence migration, this section explores the reverse causality: the impact of migration opportunities on marriage market dynamics.

To study the effect of migration on marriage, I consider a counterfactual scenario in which agents are not allowed to migrate ($\chi = 0$). Comparing the marriage market outcomes to the baseline model, I can isolate the impact of migration considerations on the marriage choices of individuals. Starting from the equilibrium distribution, I first simulate the counterfactual scenario in partial equilibrium, assuming that the matching probabilities are fixed at the baseline values (a bit improperly, I call this the short-run scenario and label it as "SR"). The short-run scenario delivers information about the nature of marriages in the baseline calibration. Secondly, I allow the matching probability to adjust to the new equilibrium (labeled "LR" for long-run).

Table 7 shows the marriage rates for men and women and reports the percentage change of the counterfactual rates relative to the baseline. In the short-run scenario, the overall yearly marriage rate increases by about 2%. For both men and women, there is substantial heterogeneity across levels of migration value, with the increase in the marriage rate ranging from 1.5% to 4.1%. The increase in the overall marriage rates is driven by the fact that, without migration, many initially unprofitable marriages become suddenly viable. Interestingly, the relative increase in marriage rates as a function of the value of migration is shaped as an inverse U and not monotonically increasing as one would expect. This can be explained by the composition of marriage markets. In low-pay cities the majority of marriages occur between workers that have high preferences for their city and that would not move even if given the opportunity. In other words, there is marital sorting on unobserved preferences since this reduces

	Marriage Rates				
	Baseline (%)	SR (%)	% Change	LR (%)	% Change
			All		
	7.8	8.0	+2.2	8.0	+2.1
Migration Value			Men		
1	8.5	8.7	+1.5	8.6	+0.7
2	7.1	7.3	+3.4	7.4	+4.2
3	6.5	6.7	+3.7	6.8	+4.5
4	7.1	7.4	+3.3	7.6	+6.6
5	5.6	5.7	+1.9	6.1	+8.2
Migration Value			Women		
1	9.1	9.2	+1.5	9.1	+0.7
2	6.8	7.0	+3.4	7.1	+3.7
3	5.7	6.0	+4.1	6.1	+5.4
4	6.1	6.3	+3.1	6.6	+7.1
5	4.1	4.2	+3.6	4.5	+9.3

Table 7: Marriage rates in the baseline calibration and the counterfactual scenario where migration is not allowed.

the probability that a future mobility shock would lead to a costly divorce. Since in the baseline distribution the majority of workers in low-pay cities (high migration value) have a high preference, only a handful of new marriages occur once the migration channel is shut.

After allowing the marriage market to adjust to the new equilibrium (i.e., the long-run scenario), the removal of migration induces an increase in marriage rates that is monotone with respect to the value of migration, with an overall increase of 2.1%. Comparing the long-run scenario with the results from section 3, one can conclude that the migration channel explains roughly half of the observed gap in marriage rates.[28]

Table 18 in Online Appendix D shows a similar table for the fraction of same-occupation marriages. The main takeaway is that a substantial fraction of these marriages, especially among workers with high pecuniary returns from migration, are sustained by the prospect of migration.

Of particular interest are the changes in divorces rate, shown in Table 8. In the short-run, the overall divorce rate increases but the increase is not homogeneous. In fact, among workers with high pecuniary value of migration, divorce rates increase substantially more. This can be explained by the fact that, in the baseline model, the presence of migration induces a form of marital sorting on geographic preferences which is particularly important for workers in low-pay cities. Among them, those who select into marriage are more likely to have a high idiosyncratic preference for the

[28] A caveat is in order. The values in Table 7 are raw averages, no controls are included, and they include all marriages and not just first marriages as in the empirical section.

	Divorce Rates				
	Baseline (%)	SR (%)	% Change	LR (%)	% Change
			All		
	1.9	2.0	+5.5	1.9	+0.8
Migration Value			Men		
1	1.5	1.5	+2.7	1.5	-0.1
2	2.6	2.7	+2.6	2.5	-1.6
3	3.0	3.2	+5.7	3.0	+0.3
4	2.2	2.5	+14.7	2.3	+2.8
5	4.7	6.0	+28.9	4.8	+3.8
Migration Value			Women		
1	1.5	1.6	+2.8	1.5	-0.1
2	2.7	2.7	+2.4	2.7	-1.0
3	3.2	3.4	+5.9	3.2	+0.2
4	2.4	2.7	+15.7	2.4	+2.8
5	4.2	5.6	+32.5	4.4	+5.4

Table 8: Divorce rates in the baseline calibration and counterfactual scenario where migration is not allowed.

current city (i.e. they would not move even if given the chance) and are more likely to marry spouses with similar preferences, since this makes marriages more stable. Once mobility shocks are removed, idiosyncratic preferences do not contribute anymore to the marital surplus which is reduced, making marriages less stable. Moreover, many potential partners that were initially unattainable because of their preference for migration, become suddenly available. As a consequence, the value of singlehood increases, which further reduces the surplus of existing marriages, inducing a wave of divorces.

In the new equilibrium, the long-run scenario, the overall divorce rate is still higher than in the baseline, especially for workers with high migration values, that is workers in low-pay cities. This is due to the fact that, as shown in Table 7, marriage rates increase. Since finding a new partner is easier, being single is more valuable which, in turn, reduces the marital surplus and makes marriages less stable.

8 Government Policies

The counterfactual analysis from the previous sections shows that marriage has a strong impact on the geographic distribution of the labor force. This suggests that any reform or change in technology that affects marriage markets can have consequences for the spatial distribution of the labor force, with implications for productivity. In this section, I consider two scenarios. First, I evaluate a the effects of a tax reform consisting in a transfer to couples financed by taxing singles, which is akin to a reduction in the marriage tax penalty. Secondly, I consider a reduction in divorce costs.

8.1 A Tax Experiment

It is well know that the US tax system is not neutral with respect to marital status. Married couples on average face higher average tax rates than singles (Guner, Kaygusuz and Ventura, 2014), a phenomenon that is often referred to as the marriage penalty. Over time tax reforms have affected the extent of the marriage penalty. For instance, one of the key changes made under the Economic Growth and Tax Relief Reconciliation Act of 2001 was aimed at reducing the marriage penalty by adjusting tax brackets so that the standard deduction and brackets for married couples filing jointly were roughly double those of single filers (Gale and Potter, 2002).

To qualitatively illustrate how such reforms might affect the geographic distribution of the labor force through the marriage market, I consider a simple tax experiment. I introduce in the model a proportional transfer to married couples financed by a proportional tax on the income of singles. In the new stationary equilibrium a 1.5% transfer to couples requires a 4.8% tax on singles to balance the government budget.

Figure 18 in Online Appendix C shows the effects of the tax on the geographic distribution of the labor force. By making marriage relatively more attractive, the tax policy has the effect of increasing the concentration of workers in bigger cities. The increase in concentration occurs for the majority of occupations. A back of the envelope calculation, similar to the one performed in section 5, shows that this corresponds to an increase in total labor earnings of 0.6% (0.5% - 0.9%). The result is intuitive. The tax break makes marriage more attractive and, due to the proportionality of the tax and the transfer, the effect is stronger for marriages in more productive cities. This asymmetric effect makes marriage markets in these cities relatively more attractive to singles, pushing them to migrate and marry there.

8.2 Lower Divorce Costs

Divorcing has become increasingly common in the US since the introduction of unilateral divorce since the 70s (Voena, 2015, Reynoso, 2024). To asses how these regulatory changes might have impacted the geographic distribution of the labor force, I consider the effects of an arbitrary 50% reduction in divorce costs.

Not surprisingly the reduction in divorce costs induces an increase in divorce rates (from 1.7% to 2.3%) and an increase in marriage rates (from 8.8% to 9.8%). Since exiting a marriage is less costly, individuals are more keen on reaping the benefits of marriage even for short periods of time (the median duration of marriage decreases by 2 years).

The effect on the geographic distribution of workers is ex-ante ambiguous. Lower divorce costs make it easier for married individuals to take advantage of migration opportunity should they come, which facilitates the relocation of workers in high-pay cities. Yet, as discussed in section 5, marital constraints to mobility contribute to the retention of workers who marry in high-pay cities. It turns out that the two forces balance each other. City sizes are barely affected and so is the aggregate wage bill (-0.01%).

9 Conclusions

The interplay between marriage and mobility affects a variety of economic outcomes both at the micro and at the macro level. This paper establishes and quantifies the micro channels though which this interaction takes place and derives its macro implications with the help of an equilibrium model of marriage markets with endogenous migration. The model shows that the geographic distribution of economic activity affects and is affected by marriage markets. One the one hand, being married introduces family ties that restrict geographic mobility and, on the other, marriage markets are local amenities that affect workers' migration choices. Moreover, the amenity value of marriage markets endogenously responds to migration flows as matching probability depend on the composition of the market.

At the micro level, the model delivers three implications with respect to the behavior of households in the marriage market for which empirical evidence is provided. First, the model predicts that the prospective of future migration reduces marriage rates, especially among workers who stand to gain the most from migrating and, secondly, that divorce rates should be higher among these individuals. Intuitively, workers with high returns from migration are less likely to accept the reduced mobility that comes with family ties. Empirically, I show that workers that live in cities that pay low wages to their occupations compared to other cities (i.e., they have high pecuniary gains from migration) are as much as 18% less likely to marry and 20% more likely to divorce on a yearly basis. Secondly, the model suggests that in order to reduce the costs of family ties in terms of reduced mobility, workers tend to marry partners with similar migration incentives. In this respect, I empirically show that workers with high returns from migration tend to disproportionately marry each other.

The model is subsequently calibrated to replicate the empirical findings and used as a laboratory to asses the macro implications of the interaction between marriage and mobility. First, I compare the calibrated model to a world with no marriage. The model shows that marriage markets increase the concentration of workers in bigger and more productive cities, i.e. it induces agglomeration-looking effects. This is due to two forces: (i) the marriage market is a local amenity that pushes workers towards bigger cities, due to the endogenously more attractive composition of the pool of potential partners; (ii) since marriage introduces constraints to mobility, forward-looking workers tend to migrate to high-pay cities before getting married. Moreover, as marriage is more likely to occur in high-pay cities, it effectively locks workers into bigger cities. This exercise shows that marriage acts as an agglomeration force that increases the total wage bill, a proxy for productivity, by 1.8%.

Secondly, I asses the implications of migration on marriage market outcomes by shutting down the migration channel. The counterfactual shows that without migration both marriage and divorce rates are higher, especially among workers in low-pay cities. Without migration, marriages are on average more profitable as the presence of family ties to mobility becomes irrelevant for the marital surplus. Since marriage and re-marriage are easier, the the value of the outside option of marriage, divorce, becomes more attractive which causes the increase in divorce rates.

This paper's analysis opens the door to several avenues for future research. On the one hand, it shows that policies and technological advancements that influence the value of marriage can significantly impact the geographic distribution of labor, thereby affecting overall productivity. Additionally, the economic forces that determine the geography of wages also shape the dynamics of family formation, which in turn can have profound implications for household composition, inequality (at both aggregate and local levels), and fertility. The interplay between migration and marriage markets presents a rich field for further exploration.

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A Stationary Distribution

This appendix reports the equations defining the stationary distribution of the model. The equations for men and women are similar and I show only the ones for women.

Given the complexity of the transition dynamics, it is convenient to split the problem into three sets of equations: the first describes the distribution dynamics from the inception of the period to after the marriage market phase; the second describes the transition from the latter to after the labor market and the consumption phases; the third describes the dynamics of preference shocks, occupational changes, and death.

Distributions after the marriage market

Let $\hat{\mu}_{g,x_g}$ be the mass of singles of gender g in state x_g after the marriage market phase. This equals the mass of singles that do not marry, either because they do not get matched in the marriage market or because they decide not to marry. For women, this distribution is given by

$$\hat{\mu}_{f,x_f} = \left(1 - \int_{x_m|\ell} \phi^f_{x_f,x_m} dx_m\right) \mu_{f,x_f} + \int_\zeta \int_{x_m|\ell} \phi^f_{x_f,x_m} \left(1 - m\left(x_m, x_f, \zeta\right)\right) dx_m df_\zeta\left(\zeta\right) \mu_{f,x_f}. \tag{24}$$

In this initial phase, married households receive a shock to their marital bliss. The mass of couples of type (x_m, x_f, ζ) after the marriage market is given by the sum of newlyweds and existing couples:

$$\hat{\hat{\mu}}_{x_m,x_f,\zeta} = \phi^f_{x_f,x_m} m\left(x_m, x_f, \zeta\right) f\left(\zeta\right) \mu_{f,x_f} + \int_{\zeta'} \tilde{\mu}_{x_m,x_f,\zeta'} f_\zeta\left(\zeta|\zeta'\right) d\zeta' \tag{25}$$

where $f_\zeta\left(\zeta|\zeta'\right)$ is the conditional distribution of bliss shocks.

Distributions after the labor market

The mass of singles of gender g in state x_g, which includes the current location ℓ, after the labor market phase, $\mathring{\mu}_{g,x_g}$, is given by the sum of singles in the same state who did not move (either because they did not have the chance or did not want to) and those who were living elsewhere and moved to ℓ. In addition, some married individuals might divorce and become single. As for the previously single, divorced individuals might be living in ℓ because they were already living there and did not move (either by choice or by lack of opportunity), or because they moved there from elsewhere. These dynamics are described by the following equation:

$$\begin{aligned}
\mathring{\mu}_{f,x_f} = & \left[(1-\chi) + \chi \sum_{\ell'|\ell'\neq\ell} \theta(\ell'|\ell) \int_{\xi'_f} (1 - t_f(x_f, \ell', \xi'_f))\, df_\xi(\xi'_f)\right] \hat{\mu}_{f,x_f} \\
& + \chi \sum_{\ell'|\ell'\neq\ell} \theta(\ell|\ell') \int_{\xi'_f} t_f(x'_f, \ell, \xi_f)\, f_\xi(\xi_f)\, d\hat{\mu}_{f,x'_f} \\
& + (1-\chi) \int_\zeta d_{nof}(x_m, x_f, \zeta)\, d\hat{\tilde{\mu}}_{x_m,x_f,\zeta} \\
& + \chi \sum_{\ell'|\ell'\neq\ell} \theta(\ell'|\ell) \int_{\xi_m,\xi'_m,\xi'_f,\zeta} d_{of}(x_m, x_f, \zeta, \ell', \xi'_m, \xi'_f)(1 - t_f(x_f, \ell', \xi'_f))\, df_\xi(\xi'_m)\, df_\xi(\xi'_f)\, d\hat{\tilde{\mu}}_{x_m,x_f,\zeta} \\
& + \chi \sum_{\ell'|\ell'\neq\ell} \theta(\ell|\ell') \int_{\xi_m,\xi'_m,\xi'_f,\zeta} d_{of}(x'_m, x'_f, \zeta, \ell, \xi_m, \xi_f)\, t_f(x'_f, \ell, \xi_f)\, f_\xi(\xi_f)\, df_\xi(\xi_m)\, d\hat{\tilde{\mu}}_{\ell',x'_m,x'_f,\zeta}.
\end{aligned} \tag{26}$$

Similarly, the mass of type-(x_m, x_f, ζ) married households living in ℓ after the labor market phase is given by the sum of those couples who did not divorce and did not move (either by choice or by lack of opportunity) and those who moved to ℓ from elsewhere, that is

$$\begin{aligned}
\mathring{\tilde{\mu}}_{x_m,x_f,\zeta} = & \Bigg[(1-\chi)(1 - d_{nof}(x_m, x_f, \zeta)) + \chi \sum_{\ell'|\ell'\neq\ell} \theta(\ell'|\ell) \\
& \int_{\xi'_m} \int_{\xi'_f} (1 - t(x_m, x_f, \zeta, \ell', \xi'_m, \xi'_f)) \\
& (1 - d_{of}(x_m, x_f, \zeta, \ell', \xi'_m, \xi'_f))\, df_\xi(\xi'_m)\, df_\xi(\xi'_f)\Bigg] \hat{\tilde{\mu}}_{x_m,x_f,\zeta} \\
& + \chi \sum_{\ell'|\ell'\neq\ell} \theta(\ell|\ell') \int_{\xi'_m,\xi'_f} (1 - d_{of}(x'_m, x'_f, \zeta, \ell, \xi_m, \xi_f)) \\
& t(x'_m, x'_f, \zeta, \ell, \xi_m, \xi_f)\, f_\xi(\xi_m)\, f_\xi(\xi_f)\, d\hat{\tilde{\mu}}_{x'_m,x'_f,\zeta}.
\end{aligned} \tag{27}$$

Preference shocks, occupational changes, and death

Finally, at the end of each period a fraction $(1-\omega)$ of households dies and they are replaced by an equal number of singles with occupations drawn from a given distribution with probabilities $f_{j_g}(j_g)$. Those who survive receive a preference shock and potentially change occupation. The mass of single women at the end of the period is

$$\begin{aligned}
\mu_{f,x_f} = & \omega \sum_{j'_f} \pi(j_f|j'_f) \int_{\xi'_f} f_\xi(\xi_f|\xi'_f)\, d\mathring{\mu}_{f,x'_f} \\
& + (1-\omega) f_{j_g}(j_g) f_\xi(\xi_f) \left[\int_{x_f|\ell} d\mathring{\mu}_{f,x_f} + \int_{x_m,x_f,\zeta|\ell} d\mathring{\tilde{\mu}}_{x_m,x_f,\zeta}\right].
\end{aligned} \tag{28}$$

where $f_\xi\left(\xi_f|\xi'_f\right)$ is the conditional distribution of ξ. For married households we have

$$\tilde{\mu}_{x_m,x_f,\zeta} = \omega \int_{\xi'_m}\int_{\xi'_f} f_\xi\left(\xi_m|\xi'_m\right) f_\xi\left(\xi_f|\xi'_f\right) d\mathring{\tilde{\mu}}_{\ell,x'_m,x'_f,\zeta} \tag{29}$$

B Identification

As it is usually the case with structural models, the identification of the parameters is jointly determined by several variations in the data. Nevertheless, it is possible to give a clear, partial equilibrium intuition of how every parameter of this model is identified in the data.

Migration costs, κ^s and κ^m, are identified by the average moving rates of married and single households. Similarly, the cost of divorce, δ, and the average of the bliss process, $\bar{\zeta}$, are identified by the average divorce rate and the average marriage rate respectively. The median duration of marriages identifies the persistence of the bliss shock, ρ_ζ. The parameter γ, which determines the extent to which occupational homogamous matches are more likely to be formed in the marriage market, is identified by the fraction of newly formed same-occupation couples.

The probability of getting a mobility shock, χ, and the standard deviation of the preference shock, σ_ξ, are identified by the average change in the pecuniary value of future migration opportunity upon migration, which provides information on the direction of migration (see Online Appendix E). The overall level of these changes identifies χ. If mobility shocks are frequent, given the presence moving costs, households have an incentive to wait for an offer from a very high-pay city, which delivers bigger changes in the value of future migration opportunities conditional on moving. If migration shocks are rare, households are more likely to migrate as soon as they get an offer from a city that pays even marginally more to their occupation. Thus, changes in the value of migration will be smaller on average. The standard deviation of the preference shock, σ_ξ, is identified by the differences in the average change in the value of future migration as a function of the value of migration in the original city. The standard deviation of the preference shocks determines the relative importance of idiosyncratic preferences and pecuniary returns in determining the migration patterns. If it is high enough, workers migrate based solely on their preferences and wages would play no role. In this case, households would move randomly and the average change in the value of migration would reflect this, with the households with the lowest migration value gaining, on average, by 2.5 categories (i.e. they move on average to places with much lower wages paid to their occupation), and households with the highest values dropping as much. Conversely, as this standard deviation falls towards zero, wage differentials become relatively more important causing households to move on average more and more towards high-pay cities. This implies that the average change in the value of migration falls for all moving households, but by less for those already living in good cities (who would rarely move and only among the best cities) than for the others (who would find it profitable to move almost anywhere).

The standard deviation of the bliss shock, σ_ζ, is identified by the differences in the marriage probabilities across individuals with different levels of migration value. For a high standard deviation, the impact of mobility considerations on marriage decisions is dwarfed by the size of the shock. In this case, the model will produce no differences in the marriage rates across levels of migration value. For lower values of σ_ζ, mobility considerations become more and more important, and the model generates a higher differential in marriage rates between high and low migration value households.

Finally, the persistence of the preference shock, ρ_ξ, is similarly identified by the differences in the divorce rates. On the one hand, given the high value of the migration option, marriages involving spouses in low-pay cities are characterized by lower surpluses and are less stable. Moreover, because of the endogeneity marriage, spouses in such matches tend to have higher-than-average preference shocks for the current location. A lower persistence of the preference shock means a faster reversion to the mean and thus a faster fall in the marital surplus for these couples, which makes divorce more likely. On the other hand, marriages involving individuals with low migration values can be profitable even for lower-than-average preferences for the current city. The faster mean reversion will then make migration-induced divorces less likely. In other words, increasing the persistence of the preference shock reduces the difference in the probability of divorce across households.