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Does Migration Empower Married Women?^{*†}

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Abstract

Household migration can affect labor market opportunities differently for the two spouses, both because of gender-specific differences between the skills of migrants and the skills that are in demand in the host country, and because of differences in the extent of gender-based labor market discrimination between the country of origin and the host country. Standard bargaining theory suggests that, if household migration leads to a comparative improvement in labor market opportunities for married women, it should be beneficial to them. We show that, if renegotiation possibilities for migrant women are limited, the opposite may be true, particularly if women are specialized in household activities and the labor market allows more flexibility in their labor supply choices. Evidence from the German Socio-Economic Panel indeed shows that, holding everything else constant, improvements in relative wages for migrant women do not translate into better outcomes for them.

KEY WORDS: International Migration, Marriage, Renegotiation, Gender

JEL CLASSIFICATIONS: F2, D1

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1 Introduction

One of the concerns often raised in the debate about globalization is that, even if it may produce economic benefits from an aggregate perspective, it may leave behind some categories of individuals—precisely those already facing adverse economic circumstances. In particular, some of the voices speaking against globalization (e.g. members of transnational feminist networks, such as the US-based International Association for Feminist Economics or the EU-based Network Women in Development) have stressed gender-specific concerns. Such concerns are particularly acute in the case of international migration, which is one of the most significant facets of globalization:¹ “[...] female migrants continue to be particularly vulnerable to gender-based discrimination. Stated very simply, the problems faced by migrant women are compounded by their being both women and migrants” (Moreno-Fontes, 2002).

In this paper, we examine the intra-household distributional effects of international economic migration. There are several channels through which migration can have differential effects across genders. In particular, family relocation tends to affect labor market opportunities differently for the two spouses, both because of gender-specific differences between the skills of migrants and the skills that are in demand in the host country, and because of differences in the extent of gender-based labor market discrimination between the country of origin and the host country. Moreover, since women are still more centrally involved in childrearing, any migration-related changes in childcare opportunities (e.g. separation from family members with whom childcare can be shared) would affect men and women differently.

Migration, however, is not an exclusively individual choice: individuals typically belong to a household, and the decision to migrate and take advantage of improved market opportunities is a collective choice that affects all household members.² Thus, for migrant couples, gender-specific outcomes do not just depend on the direct effects that migration produces on each spouse, but also on how these effects translate into intra-household bargaining outcomes.

¹The number of international migrants has grown steadily in the past four decades to an estimated 175 million in 2000—49% of whom were women (United Nations, 2004). Most people migrate, either temporarily or permanently, from poorer countries to take advantage of opportunities in richer countries. For example, hourly manufacturing earnings in Mexico (not PPP-adjusted) are on average 10% of the corresponding earnings in the United States (U.S. Bureau of Labor Statistics).

²The first to stress that spouses might be “tied” in their relocation decisions was Mincer (1978).

In our analysis, we focus on the differential effects that migration generates across spouses through changes in their labor market opportunities and hence in their relative wages. Since much of the economic migration we observe worldwide takes place from countries where gender-based labor market discrimination is more acute to countries where there is more wage equality between genders,³ there is a presumption that female migrants should on average experience a relative wage improvement compared to their husbands. Standard bargaining models of marriage that abstract from commitment (e.g. Becker, 1974; McElroy and Horney, 1981; Bourguignon and Chiappori, 1992) predict that such an improvement should increase women’s bargaining strength and hence be beneficial to them. Thus, at first sight, economic theory seems to suggest that, although migration can produce differential effects across genders, these effects should not *per se* adversely affect female migrants. On the contrary, moving to a country where their labor market opportunities improve relative to their husbands’ should empower migrant women *vis-à-vis* their partners, enabling them to experience comparatively larger gains.

However, economic theory also suggests that, in the context of a long-term contractual relationship, it may be ex-ante efficient to limit renegotiation possibilities in order to prevent partners to renege ex post on what was an ex-ante optimal course of action. To counter the adverse effects of renegotiation, couples will then typically rely on mechanisms that achieve long-run commitment—such as formal marriage arrangements sanctioned by legal institutions and social norms.

The existence of long-term commitment mechanisms that limit renegotiation of the marriage contract raises the possibility of strongly asymmetric intra-household migration outcomes. In all cases, migration will be beneficial to all household members in an ex-ante sense: to the extent that individuals voluntarily enter into a long-run marriage contract, this must produce an ex-ante Pareto gain; the possibility of migration would be accounted for ex ante and would simply expand the overall ex-ante expected surplus. Yet, under certain realizations, household surplus may be distributed very unequally across household members; and to the extent that there exist systematic gender asymmetries within households—arising from traditional gender roles and gender-based labor market discrimination—we could expect that there may be a systematic gender gap in migration outcomes.

We explore these issues using a simple theoretical model of intra-household bargaining—based on Chen, Conconi, and Perroni (2007)—that is able to generate testable pre-

³Recent empirical studies (surveyed by a 2001 World Bank report) indicate that on average the raw gender wage gap is smaller in developed countries than in developing countries (World Bank, 2001).

dictions about the gender-specific distributional impacts of joint migration for married couples. This is closely related to existing models of intra-household bargaining, but extends these constructs to account for the possibility of long-run renegotiation-proof arrangements, as well as migration choices. According to this model, holding everything else constant, the impact of a relative wage increase for a married migrant woman depends crucially on the extent to which renegotiation is constrained: if the marriage contract is renegotiable, the wage increase will improve her bargaining position and thus be beneficial to her; if instead renegotiation is not feasible, she may be adversely affected, since an ex-ante optimal arrangement may dictate a higher market effort and a comparatively lower surplus for the spouse who experiences a wage increase.

The extensive literature that has studied migration decisions has shown that individual migrants are not randomly drawn from the population. Some papers have stressed self-selection effects based on skill levels, with high-skilled individuals being more likely to migrate (e.g. Chiswick, 1978; Borjas, 1987); others have focused on selection effects in terms of risk-attitudes, with migration being more likely the less risk averse individuals are (Heitmueller, 2005). Our theoretical model of intra-household bargaining suggests that selection effects could also apply to migrant *couples*. In particular, a strong marriage works as an insurance device, effectively making the couple less risk averse. Couples that can rely on mechanisms that limit renegotiation should thus be more likely to migrate than couples for whom renegotiation possibilities are less limited. In turn, this selection effect implies that, everything else being the same, migrant women should be more likely to suffer from an adverse effect of an own-wage increase, since they are more likely to be in marriage contracts that limit renegotiation.

The model's predictions are tested using survey data from the German Socio-Economic Panel (GSOEP). This is a representative longitudinal study of private households in Germany since 1984, covering both Germans and resident foreign nationals who migrated in the 1960s and early 1970s, as well as recent immigrants. The dataset gives detailed information for households and household members on a wide range of topics; most importantly, it includes information specifically related to immigrants.

Our empirical analysis focuses on the relationship between relative wages for married migrant women and their reported satisfaction, and, pooling all observations on all couples over years, tries to uncover the factors that influence this relationship. As the GSOEP only includes post-migration information, we cannot directly measure the effects of relative wage changes due to migration. We can nevertheless derive inferences about these effects by looking at the impact of relative wage changes experienced by the spouses after they have migrated to Germany. We use two different samples covering the

period 1984 to 2005: since we are interested in the intra-household effects of migration, we include in the first sample only those who migrated to Germany as a married couple; to isolate migration-specific effects, we then combine the previous sample with similar data for German married couples and compare patterns for Germans and migrants.

The data exhibit a robust pattern for both German and migrant women: a woman's share in total household income is negatively related to her reported satisfaction. However, this effect is significantly stronger for migrant women than it is for German women. We take this pattern as supportive of the hypothesis that renegotiation opportunities are particularly weak for migrant women. Our results thus suggest that, although migration may be beneficial to women, this is not because of the comparative improvement in their labor market opportunities that is likely to accompany migration: on the contrary, everything else being the same, comparatively better wages for migrant women may simply translate into an increase in their market effort, with little relief from household work.

These findings are in line with the sociological studies that have commented on the role of gender in migration and have stressed the importance of traditional gender roles within households, which lead women to bear the “double burden” of market work plus household work: “Participation in the labor force does not automatically improve equality between a migrant and her husband. For some migrant women, labor force participation may increase the burden that they must carry unless they find new alternatives to old roles, particularly those of childcare and housework” (Boyd and Grieco, 2003).

2 Theory

In this section we outline a simple theoretical framework that delivers predictions about the relationship between the characteristics of the marriage contract and the intra-household distributional effects of migration.

2.1 *Renegotiation and Wages*

The discussion in this subsection builds on the two-period model of sequential intra-household bargaining and renegotiation described by Chen, Conconi, and Perroni (2007). Implications for migration outcomes are discussed in the next subsection.

Consider a given household with two spouses, denoted by A and B . Each spouse $i = A, B$ has a total time endowment equal to unity, which can be used for market

activities (l^i), or leisure ($h^i = 1 - l^i$). Each individual is characterized by a given market productivity, w^i (the market wage rate). Utility of spouse i depends on consumption, c^i , and leisure, h^i :

$$U(c^i, h^i), \quad (1)$$

where U is strictly concave (reflecting risk aversion), and where

$$c^A + c^B = w^A l^A + w^B l^B. \quad (2)$$

Suppose that the only uncertainty the couple faces is about ex-post market wage outcomes. At time 0, before a certain wage state s with market wages $w^A(s), w^B(s)$, and probability $\pi(s)$ is realized, the spouses enter into a contract specifying consumption and leisure levels, $c^i(s)$ and $h^i(s)$, in each possible state. Focusing on the case of utilitarian bargaining, ex-ante choices will be aimed at maximizing the additively linear ex-ante bargaining objective

$$EU^A + EU^B, \quad (3)$$

with

$$EU^i \equiv \sum_s \pi(s) U^i(c^i(s), h^i(s)), \quad i = A, B, \quad (4)$$

subject to

$$EU^i \geq \overline{EU}^i, \quad i = A, B, \quad (5)$$

where \overline{EU}^i is expected utility for spouse i outside the marriage. Note that, under this specification, optimal choices are fully separable across states, implying that the ex-ante optimal choices for state s coincide with the solution to the problem of maximizing

$$U^A(c^A(s), h^A(s)) + U^B(c^B(s), h^B(s)). \quad (6)$$

After a given state is realized (at time 1), however, the spouses can renegotiate the terms of the agreement. The ex-post renegotiation outcome in state s is the solution to the problem of maximizing

$$U^A(c^A(s), h^A(s)) + U^B(c^B(s), h^B(s)) \quad (7)$$

subject to the resource constraint (2) for state s

$$U^i(c^i(s), h^i(s)) \geq \bar{u}^i(s) - \mu^i, \quad i = A, B, \quad (8)$$

where $\bar{u}^A(s)$ and $\bar{u}^B(s)$ are the values of outside options in state s —which are positively related respectively to $w^A(s)$ and to $w^B(s)$ (i.e. $d\bar{u}^i(s)/dw^i(s) > 0$)⁴—and the μ 's are nonnegative parameters that capture the extent of the costs for rematching for each spouse. Let the solution to the above problem be denoted by $\tilde{c}^i(s), \tilde{h}^i(s)$, $i = A, B$, and let $\bar{u}^i(s) \equiv U^i(\tilde{c}^i(s), \tilde{h}^i(s))$. Note that if the μ 's are very large, such solution will be insensitive to changes in the outside options.

Then, at time 0, taking ex-post renegotiation into account, the spouses will select actions for all states in order to maximize (6) subject to the resource constraints (2) for each state s and to the no-renegotiation constraints

$$U^i(c^i(s), h^i(s)) \geq \bar{u}^i(s) - \lambda^i, \quad i = A, B, \quad \forall s, \quad (9)$$

where the λ 's are nonnegative renegotiation penalties that must be incurred by each party for renegeing on the course of action previously agreed upon. If utility is concave in its arguments, then any ex-ante opportunity (arising from positive renegotiation penalties) to tie down ex-post choices will be exploited to achieve smoothing of outcomes across states (i.e., insurance).

When the λ 's are zero, this problem degenerates into a set of unlinked ex-post bargaining problems and no ex-ante agreement is feasible (as in Lundberg and Pollak, 2003). When the values of the λ 's become larger, ex-ante bargaining can prescribe choices which guarantee ex-post joint utility levels at future nodes that deviate from those resulting from ex-post optimal renegotiation choices, thus securing a higher ex-ante expected payoff. As the λ 's approach infinity, full ex-ante commitment becomes feasible, and renegotiation possibilities have no influence on choices. In this framework, any change in the economic environment that affects the value of the outside option, $\bar{u}^i(s)$, $i = A, B$, will only have an effect on bargained outcomes if the values of the λ 's and the μ 's are not too large.

When the λ 's and the μ 's are small enough that both (8) and (9) are binding, an individual's welfare will always be positively related to his or her outside option and therefore to his or her wage (i.e. $du^i(s)/dw^i(s) = d\bar{u}^i(s)/dw^i(s) > 0$), implying that a

⁴The value of the outside option, $\bar{u}^i(s)$, in each state results from a matching equilibrium in the marriage market—a process which we need not explicitly model here, but which will always have the property that a higher wage results in a (weakly) better match outcome for the individual involved.

comparative improvement in a spouse's market position will always result in a comparative improvement for her. This is the standard prediction that a bargaining framework would generate in the absence of pre-commitment mechanisms and frictions.

In the opposite extreme case of no renegotiation, with the λ 's and/or μ 's approaching infinity, the ex-ante problem degenerates into the maximization of (6) subject to (2). Adopting a dual representation of preferences, we can represent this as the maximization, by choice of utility levels u^A and u^B (omitting s for simplicity) of $u^A + u^B$ subject to the resource constraint

$$E^A(w^A, u^A) + E^B(w^B, u^B) = w^A + w^B, \quad (10)$$

where $E^i(w^i, u^i)$ is a strictly convex expenditure function (strict convexity reflecting risk aversion)—a function of prices (the opportunity cost of leisure, w^i , and of the price of consumption, equal to unity) and of the utility level. Totally differentiating (10) with respect to u^A, u^B and w^A , while at the same time adjusting w^B so as to hold household earnings constant we obtain a relationship between changes in w^A and w^B that leave the budget unchanged:

$$\frac{dw^B}{dw^A} = -\frac{E_w^A - 1}{E_w^B - 1} = -\frac{l^A}{l^B}. \quad (11)$$

As shown in Chen, Conconi, and Perroni (2007), by combining (11) with the first-order conditions for an optimum one can derive an expression for the compensated effect on utility of a wage change:

$$\frac{du^A}{dw^A} \frac{w^A}{u^A} = -\frac{w^A E_u^B}{u^A l^B} \frac{E_{uw}^A l^B + E_{uw}^B l^A}{E_{uu}^A E_u^B + E_{uu}^B E_u^A} < 0. \quad (12)$$

Thus, if renegotiation is not feasible, a compensated increase in the relative earning power of a household member will adversely affect that individual. This is because it is ex-ante efficient to prescribe that individuals with comparatively higher earning power should work more; and since consumption and leisure are complements—implying that the marginal utility of consumption is comparatively lower for individuals working more—and to the extent that individuals are not too risk-averse ex ante, higher effort should not be compensated with higher consumption.

This adverse effect will be larger in absolute value the less risk-averse the individuals are: risk aversion means that individuals will not find it optimal ex ante to commit to a choice dictating strongly asymmetric intra-household outcomes in some realizations. This can be seen by focusing on the following constant-relative-risk-aversion/constant-

elasticity-of-substitution specification:

$$U(c^i, h^i) = \frac{1}{1-\rho} \left((1-\theta)^{1/\sigma} (c^i)^{(\sigma-1)/\sigma} + \theta^{1/\sigma} (h^i)^{(\sigma-1)/\sigma} \right)^{(1-\rho)\sigma/(\sigma-1)}, \quad (13)$$

where σ is the elasticity of substitution between consumption and leisure (constant in this specification), θ is a labor share parameter, and ρ is the coefficient of relative risk aversion (also constant). Then, for $w^A = w^B = 1$ (and $l^A = l^B = l = 1 - \theta$), we have

$$\left(\frac{du^i}{dw^i} \frac{w^i}{u^i} \right)_{w^A=w^B=1} = -\theta \frac{1-\rho}{\rho}. \quad (14)$$

The negative effect of a compensated own-wage increase is decreasing in the degree of risk aversion, ρ .⁵

Under full commitment, comparative specialization by women in household production, in conjunction with institutional constraints on labor supply, will tend to make this negative own-wage effect comparatively larger for women. Other things equal, intra-household specialization reduces the labor market supply of a woman relative to that of her husband: if, for example, we model specialization as a reduction in a woman's (spouse A 's) total time available for market work and leisure from 1 to $1 - k$ (where k represents homework), then for $w^A = w^B$ an optimum implies $l^A < l^B$. Individuals engaged in full-time market activities have typically little scope for adjusting their level of labor supply at the margin, whereas part-time workers enjoy more working-hours flexibility.⁶ On the other hand, lower bounds on working hours may prevent part-time working women from making marginal downward labor supply adjustments in response to a comparative reduction in their wage.

As shown in Chen, Conconi and Perroni (2007), under full commitment by both spouses asymmetries in the welfare effects of relative wage changes—with wives being more likely to suffer from an own-wage increase compared to their husbands—can arise from a combination of traditional gender roles and institutional labor market constraints. In cases of less-than-full commitment, asymmetric welfare effects across genders can

⁵For $\rho > 1$ we have $U < 0$, and so a positive elasticity implies a negative effect, which then becomes increasing in ρ .

⁶Recent empirical labor literature (e.g. Stewart and Swaffield, 1997) has stressed the importance of institutional constraints on hours worked. Bonin *et al.* (2003) focus on the German labor market and find that the own-wage elasticity regarding participation and hours worked is positive for both men and women but is larger for wives than for husbands. The empirical link between gender-based specialization, employment status, and labor supply elasticities is documented in Blundell *et al.* (2000).

also arise because of systematic differences in rematching costs and/or renegotiation costs across genders. These asymmetries could, for example, derive from the greater involvement by women in childrearing, which makes it harder for women with children to remarry.

Summarizing, a spouse is more likely to experience an adverse effect from a compensated own-wage increase the stronger is commitment to the marriage. Moreover, within-household specialization, labor market constraints and asymmetries in the degree of rematching and renegotiation costs imply that such a scenario is more likely for women than for men.

2.2 Migration

Although our previous analysis does not specifically refer to migration, it can be applied to obtain predictions about migration outcomes.

Consider the following formalization of migration choices under full commitment. Suppose that at time 0 the couple faces an irreversible migration opportunity, and that both spouses must agree to it—i.e. each spouse can individually veto it. There are S states corresponding to different wage realizations (in either the origin country or the destination country) for potential migrants: a subset, S^M , of these states represents wage realizations that can be taken advantage of only upon migration; whereas the subset S^N represents possible realizations in the country of origin. Let then $\widehat{EU}^i(S^N)$ represent the expected utility for i with no migration, resulting from the solution of a bargaining problem as previously described. Also, suppose that each individual incurs a migration cost ϕ . Then the migration choice can be formalized as the maximization of the with-migration bargaining objective

$$EU^A(S^M) + EU^B(S^M), \quad (15)$$

subject to the relevant post-migration no-renegotiation constraints and to

$$EU^i(S^M) \geq \widehat{EU}^i(S^N) + \phi, \quad i = A, B. \quad (16)$$

If the above problem has a feasible solution (i.e. if the feasible set defined by (16) is non-empty), migration will take place.

When the variation in post-migration outcomes is greater than that in pre-migration outcomes—i.e. migration is riskier than non-migration—then (16) is more likely to be satisfied the less risk averse individuals are. What this implies is that the migrant couples we observe will not be randomly selected with respect to their characteristics: other

things equal, migrants are more likely to be low-risk-aversion individuals. This is in line with evidence suggesting that migrants are likely to be less risk averse than the average non-migrant population (e.g. Heitmueller, 2005).

Notice that in our framework commitment to the marriage can act as an insurance device for spouses facing a (comparatively riskier) migration option. Thus, for the same degree of risk aversion, individuals who can rely on mechanisms that limit renegotiation should be more likely to migrate than couples for whom renegotiation possibilities are less limited.

Finally, if migration is to a country where the outside options are comparatively more favorable to women, then the post-migration no-renegotiation constraint (equation (16) above) is more likely to be binding for women than for men; in turn, this implies that migrant couples should be those for which rematching and renegotiation costs are particularly high for the woman.

Combining the above predictions concerning the self-selection of migrants with the results of our previous discussion, we can immediately draw the implication that migrant women should be comparatively more likely to experience adverse effects than non-migrants; this is because they should belong to less risk averse and more commitment-prone households (and possibly more so for the female than for the male spouse), implying more adverse effects of a compensated improvement in their relative wages.⁷

To summarize the conclusions from our discussion in this section: to the extent that marriage is open to renegotiation, we should expect that migration to a country that offers comparatively better labor market opportunities for women should improve their relative position within households. If, however, renegotiation opportunities are limited by institutional mechanisms that achieve long-term commitment, then a relative increase in a woman's earning position may not help her, as it may result in increased market and household effort without having any relevant impact on her bargaining strength. We should also expect an own relative wage increase to be more likely to affect women

⁷In our discussion of migration choices we have shown that commitment can limit the spouses' ability to veto *specific* migration opportunities; we have thus neglected the possibility that pre-commitment may limit a spouse's ability to veto migration in general. In other words, before a specific migration prospect materializes, the couple may find it optimal to pre-commit to take advantage of *any* joint migration opportunities that may arise, even if this means violating (16) in some realizations, i.e. even if it means lowering the continuation expected utility of one of the two spouses. This adds yet another reason for expecting migrants to be comparatively more commitment prone.

adversely in comparison with men, because women are more involved in household production and hence in part-time market work—which allows more labor supply flexibility at the margin. Finally, we should expect migrant women to be more likely to experience adverse effects, because they are more likely to belong to households characterized by strong commitment and low risk aversion.

3 Data

This section describes the dataset and samples we use for our estimation, as well as the variables involved.

3.1 Dataset

We rely on a dataset from the German Socio-Economic Panel (GSOEP), a yearly survey-based representative longitudinal study of private households in Germany since 1984. Germany has been by far the most popular European destination country for emigrants in last fifty years; almost 9% of the German population is foreign born (OECD, 2003).

The survey collects information on all household members, including Germans living in the old and new German Länder, Ethnic Germans who migrated in mass from Eastern countries after the Second World War, foreigners who have entered the country in the 1960s and early 1970s, and more recent immigrants to Germany. In 1994/1995 an additional subsample of 500 immigrant households was included in the dataset to capture the massive inflow of immigrants of the late 1980s. The dataset covers a wide range of topics including household composition, employment, earnings, health, etc. Most importantly for our purposes, the survey contains specific information related to immigrant couples, such as year of migration and marital status upon migration.⁸

Unfortunately, although the GSOEP contains very detailed information about migrant households, it does not include pre-migration information. Therefore, we cannot directly study the effect of relative wage changes due to migration on spouses' satisfaction and the selection bias effects predicted by our theory. We can, however, derive inferences about the intra-household effects of changes in labor market opportunities by

⁸It should be stressed that the GSOEP, being a survey of resident private households, is not representative of illegal immigrants (who have no official residence) and asylum seekers (who tend to reside in institutionalised housing).

focusing on relative wage changes that have occurred after the spouses have migrated together to Germany.

We use two different samples covering the period 1984 to 2005 (the most recent available data): since we are interested in the intra-household effects of migration, we include in the first sample only those who migrated to Germany as a married couple. Those couples are selected using information about their year of marriage and their year of migration to Germany. This means that we exclude from the analysis all second-generation migrants (who were born in Germany but do not have the German nationality), those who migrated single or got married with German nationals.

When constructing the first sample, we drop those immigrants originating from other industrialized countries, as we want to focus our analysis on couples who migrated from countries where wages and labor market conditions are significantly different from those in Germany.⁹ We know that gender-based wage discrimination patterns are markedly different between Germany and the countries of origin as well as across countries of origin.¹⁰ We also know that there exist significant gender-specific differences between the skills of migrants and the skills that are in demand in the host country.¹¹ It is therefore likely that, upon migration, many of the women in our sample would have experienced significant changes in their relative wages compared to their husbands.

The second sample combines the previous sample with similar data for German married couples, who are selected using information on the year of their first marriage and are still together today. By using the combined sample, we are able to compare patterns for Germans and migrants, thus isolating migration-specific effects.

⁹We thus exclude migrants from all other European Union countries as well as from the United States, Switzerland, Japan, Australia and Canada.

¹⁰According to Blau and Kahn (2003), the average gender wage gap in Germany is less than 20%, whereas in Turkey the estimated wage gap is about 50% (Selim and Ipek, 2002). Moreover, according to a report by the World Economic Forum (WEF), which ranks nations on five criteria, including equal pay and access to jobs, Turkey is in the bottom ten countries for gender equality, while Germany is in the top ten countries. In contrast, Eastern (and Southern) European economies are seemingly characterized by a lower extent of gender-based wage discrimination. This observation, however, could be consistent with the presence of gender-based occupational discrimination, i.e. women being underrepresented in high-paying occupations that are characterized by comparatively greater gender-based wage discrimination (Olivetti and Petrongolo, 2005).

¹¹For example, in many sectors (e.g. childcare and elderly care, domestic work, work in restaurants, hotels and manufacturing clothing companies) demand for female migrant workers far outweighs the demand for male migrant workers (see United Nations, 2005).

[Tables 1 and 2 here]

As can be seen from Table 1, about 16% of all migrant couples to Germany are from Poland and ex-Yugoslavia, 15% from Russia and 14% from Turkey, with most of the others coming from Eastern European countries. Pooling all couples over all years, we end up with a total of 5,627 available observations, of which 910 (which correspond to 144 individuals) refer to Polish couples and 785 (corresponding to 127 individuals) refer to Turkish couples. By cross-referencing individual records, we are able to construct a dataset for 393 couples who migrated jointly from poorer countries (see Table 2).¹² The extended dataset further includes 4,443 German couples.

3.2 *Variables and Estimation*

The names and definitions of the variables used in our regressions are listed in Table 3. To capture migration outcomes for women, we focus on self-reported satisfaction—our dependent variable. This is measured as the response to the following survey question: “How satisfied are you with your life today, all things considered?”; it ranges from 0 (completely dissatisfied) to 10 (completely satisfied). This is a subjective measure of utility, since people are asked to evaluate their level of well-being with regard to actual and past experience, and in comparison to others. For a thorough discussion of this measure, see Frey and Stutzer (2002).¹³

[Table 3 here]

The use of self-reported satisfaction in empirical work has been widely criticized on the grounds that people’s subjective assessments are unreliable. As a result, cross-sectional regressions on happiness are usually thought of as being biased whenever unobservable characteristics, such as a person’s innate cheerfulness, are correlated with

¹²Note that Table 1 reports an odd number of individuals for some countries of origin (column 3). This is because the spouses of some migrant couples do not always hold the same nationality (e.g. the wife originates from Russia and her husband from Georgia).

¹³This measure raises a difficult question of interpretation. Namely, when comparing across respondents, should this be interpreted as reflecting a subjective ranking within the whole population or as reflecting a subjective ranking within a peer group with which the individual identifies? In the latter interpretation, reported changes should be taken as relative utility changes ($\Delta u/u$) rather than absolute changes (Δu).

observed variables included in the regressions, such as education. One advantage of the GSOEP lies in its panel structure, as the same people can be followed over time. Panel regressions can therefore be estimated, with a separate dummy variable included for each person in the sample. This allows to overcome the bias that is suspected to affect cross-sectional regressions.¹⁴

The explanatory variable of interest is a spouse's relative wage, measured as the ratio of the respondent's wage (per hour) and of the sum of the two spouses' hourly wage, denoted by *Wage share*. This is meant both as a measure of comparative bargaining strength and as a measure of the spouse's potential contribution to household income. Our dataset contains information on monthly gross earnings (including overtime pay) and on the number of hours worked per week during the last month. The wage we calculate for each spouse is thus gross monthly earnings divided by the number of hours worked per week, further divided by 4.3 to obtain gross earnings per hour (Dustmann and van Soest, 1997).

As stressed before, the above variables only capture post-migration outcomes. Thus, we cannot directly measure the effects of relative wage changes which have occurred upon migration. Our methodology is thus to derive inferences based on the effects of relative wage changes experienced by migrant couples after moving to Germany. We then pool all observations on all married couples over years, and investigate the effects of within-household relative wage differentials on self-reported satisfaction by men and women.

The regressions include a number of controls which refer to (standard) individual characteristics considered in the "happiness" literature (see, among others, Ferrer-i-Carbonell and Frijters, 2004): age, age squared, years of education, and health status of the respondent and of his/her spouse. We also include various household characteristics: household income, number of household members, number of children, a dummy for having children and a dummy for having young children (less than ten years old). The income measure we use is total annual household income. This variable is probably a better measure of economic well-being than monthly household income since it includes irregular income components such as Christmas bonuses etc. In order to

¹⁴Clark and Oswald (2002) compare panel to cross-sectional regressions of happiness and find that the results obtained from using both methodologies are very similar, suggesting that the bias in cross-sectional analysis may not be as severe as expected. In this paper, we report results of panel regressions. We also ran the same regressions in cross-section, i.e. excluding person fixed effects, and the main results remained unchanged.

compare income over time, household income is deflated to 2000 prices. Year, German Länder and individual fixed effects are also included in all regressions. As we estimate panel regressions, we drop individual characteristics that do not vary over time.

The theoretical analysis presented in Sections 2-3 above gives rise to the following set of predictions: (i) women are more likely to be affected adversely than men following a (compensated) increase in their relative wages, both because they are more involved in household production and in part-time work—implying more flexibility in their labor market responses—and because they tend to face higher rematching and renegotiation costs; (ii) the sign and magnitude of the welfare effects of a comparative own-wage improvement depend on the extent of commitment to the original marriage contract; in turn, this depends on the size of the renegotiation and rematching costs incurred by the spouses; (iii) migrant women should be more likely to experience adverse effects than German women, because they are more likely to belong to households characterized by low risk aversion and strong commitment, and to face a heavier work burden at home.

To test the first prediction, we interact the explanatory variable *ln Wage share* with a female dummy, denoted by *Fem*, to detect whether women are indeed more negatively affected than men by an improvement in their relative wages.

To test the second prediction, we interact female relative wages with three sets of variables. The first set of variables are meant to capture the degree of intra-household commitment. This is to verify that the extent to which spouses can renegotiate the terms of their marriage contract affects the relationship between relative wages and self-reported satisfaction. Two of these variables relate to social norms limiting the extent of renegotiation (the λ 's in the theoretical model described above). The first is attendance to religious events (denoted by *Religion*)¹⁵—since this may be positively related to religious and cultural sanctions associated with marriage. To distinguish between different types of religion, we also compute a dummy variable for non-Christian faiths, denoted by *Non Christian*.¹⁶ The second variable capturing social norms is denoted by *Enclave* and

¹⁵This variable is derived from the answer to the following survey question: “How often do you go to church or attend religious events?”

¹⁶The dummy is equal to one for countries of origin where the main religion is non-Christian and zero otherwise. Note that the GSOEP also asks individuals about their belonging to a religious community. The answers provided only allow us to identify Christian faiths, and unfortunately, this question is only asked in 1990, 1997 and 2003. As a robustness check, we computed the correlation between the dummy for being from a non-Christian country of origin and the dummy for belonging to a Christian community; as expected, this correlation is negative but small (equal to -0.13).

tells us if there are other foreigners living in the same neighborhood as the respondent (although we do not know if they are of the same nationality or not). The other two commitment variables relate to the extent of rematching costs. These include *Age* and the one associated with young children (less than four years of age), denoted by *#Child 04*.¹⁷

Notice that all variables are expressed in such a way that an increase in the value of the variable indicates stronger commitment (i.e. stricter social norms and higher rematching costs).

In order to verify whether a possible adverse effect of a relative wage increase for a woman is associated with an increase in her labor market effort, we also interact the female wage share with three variables that are meant to capture the degree of flexibility of labor supply responses. To measure flexibility on the extensive margin, we construct a variable, denoted by *Full-time*, capturing changes from part-time to full-time work status that are positively associated with wage increases. To measure flexibility on the intensive margin, we use *Overtime* work—measured as the weekly number of overtime hours divided by the number of hours “agreed” with the employer. We also use the variable *Flex*, which is defined as the ratio of agreed working hours to desired hours as reported by the respondents (for a more detailed description of these variables, see the next subsection).

The last set of interactions used to test prediction (ii) above are meant to capture the extent of the burden of household work carried by married women. These include the following five variables: absence of nearby relatives, captured by a dummy if the migrants did not have any family living in Germany prior to moving, denoted by *No Family*; a variable stating how often people visit family and relatives or receive visits (*No Visits*); the variable *No Cleaner*, capturing that external household help is never used; and two dummy variables, *Until 85* and *Until 91*, capturing changes in maternity legislation in Germany.¹⁸

¹⁷In Germany pre-school is known as “Kindergarten”. Attendance can start at the age of three, but the vast majority of children only starts Kindergarten at the age of four (e.g. Spiess *et al.*, 2003; Ondrich and Spiess, 1998).

¹⁸In Germany, maternity leave legislation consists of three parts: maternity protection, protected maternity leave, and maternity benefits (see Schonberg and Ludsteck, 2006). In 1986 and 1992 important changes were introduced in the legislation, making it more favorable to women: since 1986, all mothers receive maternity benefits for at least six months, regardless of their employment status before birth; since 1992, women are entitled to a total of three years of protected leave. The entitlement to these benefits follows the principle of territoriality. The parent’s and the child’s place of residence or usual stay in Ger-

To test the prediction that migrant women are more likely to be negatively affected by a relative improvement in their labor market opportunities compared to German women (prediction (iii) above) we introduce an interaction between the female wage share and the dummy variable *Migrants*. We then interact female relative wages for migrant and German women with some of the household and individual characteristics (e.g. degree of religiosity and type of religion of the respondent, availability of family and external help at home) to explore the reasons behind the different effects observed for migrant women.

Note that some of those variables are used both as interactions and as controls.¹⁹ The correlation matrix for the controls included in the regressions is reported in Table 4 below.

[Table 4 here]

Tables 5 and 6 give descriptive statistics for some key variables at the household and individual levels. In comparison with German natives, migrant households are larger and have lower total incomes; at the individual level, both migrant women and men are significantly less educated, have lower wages and are more religious (i.e. attend religious events more frequently). There are some specific differences with respect to men and women: in comparison with their German counterparts, migrant women report significantly lower satisfaction and poorer health; for men, there is no significant difference in reported satisfaction and health is higher (though only at the 5% level) for migrant men.

[Tables 5 and 6 here]

many is a precondition for entitlement. Foreign nationals need one of the following residence permits: for employment purposes, for humanitarian reasons, for spouses, or for family reunification purposes if the family member has residence in Germany.

¹⁹It is not possible to include all variables both as interactions and as controls because not all of them are available for the same individuals, as indicated by the different number of observations we can use in each regression. When attempting to include all variables as controls, one is left with no observations. We have thus proceeded as follows: we have always included the standard control variables used in the happiness literature (reporting the coefficients for these variables in the lower panel of our regression tables); whenever we have interacted a variable with *ln Wage share*, we have also included it as a control (reporting the coefficient for this variable in the middle panel of our regression tables and the coefficient for the interaction term in the top panel).

4 Empirical Findings

Since the dependent variable—self-reported satisfaction—varies between 0 and 10, albeit discretely, in what follows we present results from OLS estimations. Similar results are obtained using ordered probit estimations (not reported). In order to account for the survey design of the data, observations are weighted using sampling weights and standard errors are adjusted for clustering across voting districts.

4.1 Migrants

We first focus only on those migrant couples in which both spouses work and initially run a specification that includes, in addition to all the standard controls, the relative wage share, $\ln Wage\ share$. This allows us to examine the effects of compensated relative wage changes within migrant households. Notice that, although we cannot directly control for the source of the variation in relative wages, the inclusion of individual fixed effects allows us to control for any differences in match quality across individuals, which could be systematically correlated with wages.

Recall that a standard bargaining model that abstracts from frictions would predict a positive and significant coefficient for the relative wage share, for both spouses. Contrary to this prediction, the coefficient in column 1 of Table 7 below is negative and significant at the 1% level, suggesting the existence of some renegotiation constraints. To examine whether the effects differ across genders, in column 2 we distinguish between female and male migrant spouses and find that the effect is positive for men but negative for women. This seems to indicate that, holding everything else constant, improvements in the comparative value of outside options—which are positively associated with improvements in relative earning power—may actually be detrimental to migrant women.

[Table 7 here]

Our theory predicts this finding to be associated with large renegotiation and/or re-matching costs. Columns 3 to 8 report results for specifications where the female wage share is interacted with variables that can be thought of as proxies for commitment (through social norms and/or rematching costs). As belonging to non-Christian faiths (mainly Islam in the sample) may impose stronger social norms on couples that abide to their principles, we interact the *Non Christian* dummy with the wage share for migrant

women. The coefficient on this interaction is negative and significant (column 3), indicating that stricter social norms associated with being of non-Christian faith worsen the negative impact of an own-wage improvement on the reported well-being of migrant women.

The interaction with *Religion* is negative and significant too (column 4), which corroborates our finding above regarding the effect of belonging to non-Christian faiths. However, this negative effect of religious attendance appears to be significant for non-Christian women only (column 5). Enclave effects (column 6) are as expected: belonging to a more tightly-knit community (endowed with comparatively stronger social norms) significantly raises the negative impact of an increase in the wage share (and is also directly associated with lower levels of reported satisfaction).

Columns 7 and 8 of Table 7 report results for specifications where the female wage share is interacted with variables associated with rematching costs. Estimated coefficients for these interactions are (mostly) highly significant and tend to have the expected negative sign. In particular, age worsens the adverse effect of an own-wage improvement for female spouses and so does the number of young children (aged between 0 and 4).^{20, 21} The other controls included in the regressions tend to have effects as expected. Individuals in richer households and in good health (both own health and health of the partner) tend to be more satisfied with their life. Being more educated and having children are in most cases not significant in explaining own well-being. Finally, consistently with the findings of previous literature, the partial correlation between own age and life satisfaction is U-shaped.

Table 8 reports results for the regressions in which we interact the female wage share with three variables capturing the degree of labor market flexibility. This is to test the prediction of our theoretical model that, with weak renegotiation, a negative own-wage impact should be associated with a positive labor supply adjustment. We separately look at flexibility on the intensive margin and on the extensive margin. The results of these estimations indicate that the negative effect experienced by women from a relative

²⁰The empirical literature on marriage has indeed found that rematching costs associated with having children from a previous marriage can be larger for women, particularly when the children are still young (e.g. Koo *et al.*, 1984; Duncan and Hoffman, 1985; Bumpass *et al.*, 1990; Chiswick and Lehrer, 1990; Martinson, 1994).

²¹One might suspect the number of children to be endogenously determined with reported satisfaction. We tried to instrument the number of pre-school children by its two-year lagged value and our findings remained unchanged. The results are available upon request.

own-wage increase is indeed associated with a positive labor supply adjustment.

[Table 8 here]

In order to capture labor supply adjustments on the extensive margin, we look at changes in participation from part-time to full-time status that are positively associated with wage increases.²² When the female wage share is interacted with the variable so obtained (column 1 of Table 8), we obtain a negative and significant effect, as expected.

To capture labor supply adjustments on the intensive margin, we interact the wage share variable with the ratio of agreed working hours to desired hours as reported by respondents (denoted by *Flex*), which we take as a symptom of lower bounds on working hours; and with *Overtime* work, which we take as an indication of the degree of upward flexibility in marginal labor supply responses. The interaction with *Flex* (column 2 of Table 8) is negative and significant (at the 10% only). The interaction with *Overtime* (column 3 of Table 8) is negative and significant, suggesting that the adverse effect of a wage share increase on women's reported satisfaction is stronger the larger is the proportion of overtime hours worked.

Finally, our theoretical model predicts that migrant women who are more specialized in household activities are more likely to be negatively affected by an improvement in their relative wages, since this would only exacerbate the double burden of household and market work they must bear. To test this prediction, we interact the female wage with variables capturing how involved women are in household activities and how costly these are (Table 9).

[Table 9 here]

The negative impact of an increase in the wage share for migrant women is stronger for women who migrated to Germany without any family around (column 1) and who do not receive regular visits from family and relatives (column 2), a finding that can be interpreted as reflecting the importance for migrant women of being able to share the burden of household work with relatives and friends. In column 3, we interact the

²²The variable *Full-time* is constructed as follows: we exploit available information in the GSOEP on (i) the month of the survey; (ii) whether the spouse worked part-time or full-time in each month of the year; (iii) the wage in the previous month. This allows us to construct a dummy variable that takes a value of 1 if the spouse switched from part-time to full-time status. We then multiply this dummy with the growth in wage per hour in the period during which the change in employment status occurred.

female wage share with the variable that indicates whether external household help is regularly used or not (*No Cleaner*). If women indeed suffer from a double burden of market and household work, then we might expect those women who do not receive external help to report lower levels of satisfaction following a relative own-wage increase. The interaction with *No Cleaner* is indeed negative and significant, lending further support to the above interpretation.

Finally, we investigate whether changes in maternity legislation in Germany have altered the impact of changes in relative wages on women's reported satisfaction (columns 4-5 of Table 9). As mentioned above, maternity leave legislation has become more generous for women since 1986—when all mothers were granted maternity benefits for at least six months—and then again since 1992—when all women were entitled to a total of three years of protected leave. Results indicate that the negative effect of an own-wage increase on the well-being of women was stronger before 1992, suggesting that migrant women may have benefited from the improvement in employment protection, as this may have alleviated the double burden of household and market work they experienced.

As a robustness check, we have performed estimations with a sample that also includes couples where one or both of the two spouses do not work. To do so, we first predicted the potential hourly wage of the non-working spouses using a standard Heckman two-step selection model (Heckman, 1979), using individual health status, number of children and a dummy for being married as exclusion restrictions. The results (not reported) are broadly in line with the ones reported here.

4.2 *Comparison Between Migrants and Germans*

As discussed above, our theoretical model predicts that migrant women should be more likely to experience adverse effects of an improvement in their labor market opportunities than German women. This is because self-selection effects in the migration decision imply that migrant women are more likely to belong to households characterized by low risk aversion and strong commitment. Also, migrant households might be characterized by more traditional gender roles and asymmetries in renegotiation and rematching costs across spouses. This might be particularly the case for migrant couples of Muslim faith who abide by the principles of Sharia law.

To test this prediction, we run a series of regressions on an extended sample that includes both migrant couples and German couples where both spouses work (the second sample). The results are reported in Tables 10-11 below.

[Tables 10 here]

In Column 1 of Table 10 we introduce an interaction between the female wage share and the *Migrants* dummy. The coefficient on the female wage share is negative and significant, again suggesting that the effect of an own-wage improvement lowers self-reported satisfaction for women relative to men; however, as expected, this effect is stronger for migrant women. This seems to indicate that migrant women are indeed more adversely affected than their German counterparts by a comparative improvement in their outside options—presumably because their households are characterized by low risk aversion and strong commitment.

The role of social norms is explored in columns 2-4. In column 2, under the assumption that German women are all Christian, we interact the wage share for migrant women with the *Non Christian* dummy; notice that the coefficient on the interaction term is negative and significant. From this we can calculate the wage share effects for Christian women (relative to their husbands): these are equal to -0.083 for Germans and to -0.125 for migrants, the latter not being significantly different from zero. Since the two coefficients are not statistically different from each other (p -value of 64%), we can conclude that an own-wage improvement does not affect German and migrant women differently if they are both Christian. However, when focusing on non-Christian women, we find that the coefficient for migrants is equal to -1.476 (significant at the 1% level), which is statistically more negative (at the 1% level) than the effect for German women. This suggests that belonging to a non-Christian faith, which we suspect to be characterized by stronger religious and cultural sanctions associated with marriage, strengthens the negative relationship between wages and satisfaction for migrant women, both relative to Christian migrant women and German women.

Columns 3 and 4 provide additional evidence on the role of social norms associated with religion. Column 3 shows that more frequent attendance to religious services worsens the own-wage impact for both migrant and German women (both interactions with *Religion* are significantly negative). Note, however, that attendance to religious events has a different effect for migrant and for German women. To see this, notice that women who never attend (for whom *Religion* = 1), and therefore may be thought of as belonging to households characterized by weaker commitment, the effects of an increase in relative wages on self-reported satisfaction are not statistically different for German and migrant women (p -value of 86%); for those women, the effects (relative to their husbands) are respectively equal to -0.238 and to -0.260 (significant at the 1% and 5% levels, respectively). In contrast, for women who attend religious events on

a weekly basis (for whom *Religion* = 4), the effect of a relative wage improvement is more detrimental to migrant women than it is to German women—the differential effects for German and migrant women are equal to -0.322 and to -0.637 respectively—and significantly so at the 1% level.²³ This again appears to be the case for non-Christian migrant women only (column 4): for those women, the effect of a relative wage change (relative to their husbands) on their reported satisfaction is equal to -0.402 if they never attend any religious events (significant at the 5% level), while it is significantly more negative (at the 1% level) and equal to -1.311 if they attend weekly. In addition, when focusing on women who attend religious events on a weekly basis only, non-Christian migrant women are again significantly more adversely affected than German women by a improvement in their relative wage—the effects are equal to -0.323 and to -1.311 for non-migrant and migrant women respectively, and are significantly different from each other at the 1% level.

[Table 11 here]

Table 11 addresses the role of young children (who tend to be associated with higher rematching costs) and of the extent of the burden of household work carried by married women. Looking at column 1, we can see that having young children does not produce any significant difference in the impact of a relative wage increase between migrant and non-migrant women's well-being: the interaction between the wage share and the number of pre-school children is positive and significant for non-migrant women, but is not statistically different from zero for migrant women. More importantly, the implied effects for both migrant and German women (relative to their husbands) are statistically different from each other (at the 1% level). This is true whatever the number of young children they have (from one to three) and even if they do not have any pre-school children (in which case $\#Child\ 04 = 0$). We are therefore unable to conclude that rematching costs, proxied by the number of young children in the household, affect differently the relationship between relative wages and satisfaction for German and migrant women.

In contrast, not having any family or friends around to help with household work does seem to affect migrant and German women differently (column 2). For women who receive daily visits from family and friends (*No Visit* = 1), the effects of a relative

²³For women who participate in religious events on a weekly basis (*Religion* = 4), the differential effects (relative to the husbands) can be calculated as $(-0.210 - (0.028 \times 4)) = -0.322$ for German women and $(-0.210 + 0.076 - 0.028 - (0.098 \times 4)) = -0.637$ for migrant women.

wage increase are not statistically different between migrant and non-migrant women (the p -value is equal to 0.17). However, the difference becomes significant once we compare German and migrant women who do not regularly receive visits from relatives (*No Visit* = 5): the effect is equal to -2.05 for migrant women, which is significantly more negative (at the 4% level) than the corresponding effect for German women (equal to -0.621).

Column 3 provides evidence on the role of external help in alleviating the burden of household work. The interactions between the migrant and German female wage shares and *No Cleaner* are both negative and significant. For migrant and German women who employ external help (*No Cleaner* = 0), we cannot reject (at the 39% level) that the wage share effects on reported satisfaction are equal. However, when focusing on women who do not employ any external help (*No Cleaner* = 1), the calculated effect is significantly more negative (at the 1% level) for migrant women—the effects being equal to -0.956 for migrant women against -0.084 for German women. This indicates that migrant women are indeed more adversely affected by the burden of household duties than German women are.

Overall, the empirical results presented in this section indicate that, as predicted by our theoretical model, migrant women tend to be more negatively affected by an improvement in their relative earning power compared to German women. The observed difference is stronger for migrant women who are more religious, are non-Christian, and face a heavier household burden.

5 Summary and Conclusion

If married women experience an increase in their labor market opportunities relative to their husbands, bargaining theory suggests that they should experience comparatively more favorable outcomes. However, economic theory also suggests that, if renegotiation possibilities are limited, the opposite may be true: a relative improvement in labor market opportunities for women may only induce them to exert higher market effort, with little relief from household activities and limited compensation.

Our findings indicate that, holding everything else constant, a relative improvement in labor market opportunities does not translate into comparatively better outcomes for migrant wives. This is not to say that married women do not benefit from migration. Indeed, they may benefit more from it than men do. However, if migration benefits married women, it is not because of the comparative improvement in labor market opportunities that they may experience.

As suggested by many sociological studies that have stressed the continuing relevance for working women of traditional gender roles within the household, a comparative improvement in labor market opportunities for women might just act to increase their “double burden”. Traditional gender roles (a comparative advantage of wives in childcare and other household activities) imply relative specialization in market production by males; under limited renegotiation, this should then imply a negative own-wage effect on a woman’s satisfaction, which increases with the extent to which household production costs are borne by women. Working-hours constraints can also make such negative effect much larger: labor supply responses will be more elastic for part-time working spouses than for spouses working full-time, and gender roles imply that there will be comparatively more women working part-time with a full-time working husband (in line with evidence on aggregate labor supply elasticities across genders). Then, a bargaining model that accounts for the presence of female specialization in household activities and working hours constraints generates predictions that are consistent with the above double burden conjecture.

According to our theoretical model, migrant women should be more likely to experience adverse effects following an improvement in their labor market opportunities than German women. This could be a result of self-selection effects in the migration decision, implying that migrant women are more likely to belong to households characterized by low risk aversion and strong commitment. Migrant households might also be characterized by more traditional gender roles and by larger renegotiation and rematching costs faced by female spouses, which make the negative effect of an own-wage improvement more severe. Indeed, our empirical analysis shows that this negative effect is stronger for migrant women than for German women. Such difference is larger for women of Muslim faith and in particular for very religious Muslim women—suggesting that Islamic marriages might be characterized by stricter social norms and by more traditional gender roles for women. Our regression results also suggest that access to childcare and domestic and family help could be crucial determinants of the migration outcomes for women.

A limitation of our empirical analysis is that the dataset at our disposal only allows us to test our theoretical predictions indirectly. A more direct evaluation of the impact of relative wage changes due to migration on the utility of spouses would require information about pre- and post-migration outcomes for individual couples. Such information would also allow us to examine issues of marriage-related selection bias in migration (e.g. in terms of the degree of marriage commitment and the degree of intra-household specialization).

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Table 1: Origin of Migrant Couples in the Sample

Country of origin	Number of individuals × number of years	%	Number of individuals	%
Poland	910	16.17	144	18.32
Ex-Yugoslavia	907	16.12	109	13.87
Russia	832	14.79	125	15.90
Turkey	785	13.95	127	16.16
Kazakhstan	680	12.08	94	11.96
Romania	395	7.02	54	6.87
Eastern Europe	377	6.70	23	2.93
Croatia	144	2.56	11	1.40
Ukraine	127	2.26	20	2.54
Bosnia-Herzegovina	89	1.58	9	1.15
Kosovo-Albania	54	0.96	10	1.27
Kyrgyzstan	37	0.66	10	1.27
Albania	36	0.64	9	1.15
Kurdistan	36	0.64	6	0.76
Bulgaria	28	0.50	3	0.38
Vietnam	24	0.43	4	0.51
Iran	23	0.41	7	0.89
Chile	22	0.39	1	0.13
Mexico	22	0.39	2	0.25
Hungary	14	0.25	3	0.38
Syria	12	0.21	1	0.13
Pakistan	12	0.21	2	0.25
Uzbekistan	12	0.21	2	0.25
Georgia	12	0.21	1	0.13
Czech Republic	10	0.18	2	0.25
Iraq	10	0.18	2	0.25
Latvia	6	0.11	1	0.13
Azerbaijan	6	0.11	1	0.13
Angola	4	0.07	2	0.25
Argentina	1	0.02	1	0.13
Total	5,627	100	786	100

Source: GSOEP.

Table 2: Household Status of Migrants in the GSOEP

	Total	Male	Female
<u>Total number of migrants</u>	9,802	4,909	4,893
Second generation	2,790	1,364	1,426
Migrated as a married couple	1,030	515	515
Migrated as a married couple (not from rich countries)	786	393	393
Migrated not as a married couple	3,759	1,955	1,804
Do not know	1,437	682	755
<u>Migrated not as a couple</u>			
Got married before migrating	1,552	721	831
Got married the year migrated	198	64	134
Single when migrated	2,009	1,170	839

Source: GSOEP.

Table 3: List of Variables Used as Controls/Interactions

Variables	Definition
Satisfaction	“How satisfied are you today with your life, all things considered?” Varies between 0 (completely dissatisfied) to 10 (completely satisfied)
Wage share	(Real) hourly wage share of each spouse in household hourly wage
HH income	(Real) annual household income (DM)
Fem	Dummy equal to 1 for Female
Yrs education	Education or training (years)
Health	“How satisfied are you today with your health?” Varies between 0 (completely dissatisfied) to 10 (completely satisfied)
Age	Age of respondent (years)
Age Sq/1000	Age of respondent (years), squared/1000
#HH members	Number of persons in household
Child	Dummy for having children
#Children	Number of children in household
#Child04	Number of children in household, aged between 0 and 4
Child010	Dummy for having children younger than 10 years of age
Religion	“How often do you go to church?” Weekly [4], Monthly [3], Less frequently [2], Never [1]
Non Christian	Dummy for countries in which main religion is non-Christian
Enclave	“Are there any foreign families living in your area?” Yes, many [2], Yes, a few [1], No [0]
Flex	Number of hours of work “agreed” with the employer divided by the desired number hours of work per week
Full-time	Dummy equal to 1 for switching from part-time to full-time status from one year to the next, times the yearly growth rate of the hourly wage (positive change only)
Overtime	Number of hours worked overtime per week divided by the number of hours “agreed” with the employer
No Family	“When you immigrated to Germany, was (at least) one member of your family living in Germany?” Yes [0], No [1]
No Visit	“In your free time, how often do you visit or receive visits from family and relatives?” Daily [1], Weekly [2], Monthly [3], Less frequently [4], Never [5]
No Cleaner	“Do you regularly or occasionally employ household help?” Regularly or Occasionally [0] and Never [1]
Until 85/Until 91	Dummy equal to 1 until 1985/1991
Migrants	Dummy equal to 1 for being a Migrant

Source: GSOEP.

Table 4: Correlation Matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) Satisfaction	1	—	—	—	—	—	—
(2) ln Wage share	0.007	1	—	—	—	—	—
(3) ln Wage share \times Fem	0.001	0.692	1	—	—	—	—
(4) ln HH income	0.111	-0.048	0.006	1	—	—	—
(5) Age	-0.189	0.077	0.141	0.010	1	—	—
(6) Age Sq/1000	-0.193	0.077	0.138	-0.012	0.995	1	—
(7) #HH members	0.141	-0.014	-0.028	0.185	-0.411	-0.426	1
(8) Child	0.146	-0.014	0.002	0.043	-0.599	-0.601	0.663
(9) #Children	0.113	-0.015	-0.023	-0.039	-0.602	-0.595	0.766
(10) Child010	0.103	-0.007	-0.018	-0.090	-0.537	-0.507	0.489
(11) Yrs education	-0.046	0.052	0.115	0.194	-0.133	-0.140	0.110
(12) Yrs education, partner	-0.075	-0.127	-0.126	0.196	-0.187	-0.195	0.109
(13) Health	0.489	0.022	0.072	0.108	-0.344	-0.347	0.260
(14) Health, partner	0.379	-0.028	-0.094	0.105	-0.374	-0.378	0.263
	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(8) Child	1	—	—	—	—	—	—
(9) #Children	0.803	1	—	—	—	—	—
(10) Child010	0.452	0.686	1	—	—	—	—
(11) Yrs education	0.197	0.126	0.045	1	—	—	—
(12) Yrs education, partner	0.197	0.125	0.045	0.592	1	—	—
(13) Health	0.260	0.250	0.204	0.037	0.018	1	—
(14) Health, partner	0.263	0.254	0.205	0.019	0.040	0.420	1

Table 5: Descriptive Statistics for Households

	German	Migrant	Germans - Migrants
Real annual HH income (DM)	41,936	34,394	7540 ^a (547)
#HH members	3.17	3.59	-0.42 ^a (0.03)
#Children	0.80	1.00	-0.19 ^a (0.03)

Notes: ^a denotes significance at 1% level. Standard errors in parentheses.

Table 6: Descriptive Statistics for Individuals

	German		Migrant		Men - Women,		Migrants		Germ. - Migr.,		Germ. - Migr.,	
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
Satisfaction [0,10]	7.37	7.44	7.30	7.19	-0.072 ^b (0.03)	0.109 (0.11)	0.251 ^a (0.07)	0.070 (0.08)	-0.181 (0.11)			
Real hourly wage	30.31	21.89	25.15	18.26	8.41 ^a (0.24)	6.89 ^a (0.85)	3.63 ^a (0.52)	5.16 ^a (0.72)	1.52 ^c (0.88)			
Wage share	0.58	0.42	0.58	0.42	0.16 ^a (0.01)	0.17 ^a (0.01)	0.002 (0.01)	-0.002 (0.01)	-0.004 (0.01)			
Yrs education	12.40	11.75	11.98	11.26	0.65 ^a (0.04)	0.73 ^a (0.16)	0.50 ^a (0.11)	0.42 ^a (0.12)	-0.07 (0.16)			
Health [0,10]	6.98	7.05	7.17	6.51	-0.07 ^c (0.04)	0.66 ^a (0.15)	0.54 ^a (0.13)	-0.18 ^b (0.09)	-0.73 ^a (0.15)			
Age	45.65	42.99	44.98	43.01	2.65 ^a (0.16)	1.97 ^a (0.49)	-0.01 (0.37)	0.68 ^c (0.35)	0.68 (0.51)			
Religion	1.95	2.07	2.23	2.31	-0.125 ^a (0.02)	-0.09 (0.08)	-0.24 ^a (0.06)	-0.28 ^a (0.06)	-0.036 (0.09)			

Notes: ^a, ^b and ^c denote significance at 1%, 5% and 10% levels respectively. Standard errors in parentheses.

Table 7: Reported Satisfaction – Migrants

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
In Wage share	−0.193 ^a (0.053)	0.546 ^a (0.132)	0.586 ^a (0.116)	0.339 ^a (0.118)	0.344 ^b (0.118)	1.323 ^a (0.168)	0.540 ^a (0.122)	0.583 ^a (0.134)
In Wage share×Fem	—	−1.302 ^a (0.177)	−0.510 ^a (0.092)	−0.341 (0.203)	−0.303 (0.203)	−4.214 ^a (0.275)	−0.302 (0.410)	−1.342 ^a (0.184)
In Wage share×Fem×Non Christ.	—	—	−1.414 ^a (0.184)	—	—	—	—	—
In Wage share×Fem×Religion	—	—	—	−0.087 ^a (0.022)	0.016 (0.034)	—	—	—
In Wage share×Fem×Religion×Non Christ.	—	—	—	—	−0.280 ^a (0.044)	—	—	—
In Wage share×Fem×Enclave	—	—	—	—	—	−2.644 ^a (0.394)	—	—
In Wage share×Fem×Age	—	—	—	—	—	—	−0.023 ^b (0.010)	—
In Wage share×Fem×#Child04	—	—	—	—	—	—	—	−0.220 ^a (0.031)
Religion	—	—	—	0.018 (0.023)	0.016 (0.023)	—	—	—
Enclave	—	—	—	—	—	−0.474 ^a (0.047)	—	—
Age	−0.467 ^a (0.066)	−0.465 ^a (0.062)	−0.493 ^a (0.063)	−0.592 ^a (0.071)	−0.598 ^a (0.074)	−0.272 ^b (0.103)	−0.501 ^a (0.067)	−0.474 ^a (0.062)
#Child04	—	—	—	—	—	—	—	−0.309 ^a (0.045)
Child	0.120 (0.161)	0.089 (0.166)	0.099 (0.168)	0.297 ^b (0.144)	0.286 ^c (0.145)	−0.777 ^a (0.236)	0.092 (0.165)	0.052 (0.172)
#Children	−0.228 ^a (0.079)	−0.179 ^b (0.080)	−0.196 ^b (0.079)	−0.300 ^a (0.021)	−0.307 ^a (0.020)	0.274 ^b (0.108)	−0.180 ^b (0.080)	−0.151 ^c (0.083)
In HH income	0.406 ^b (0.183)	0.505 ^a (0.177)	0.515 ^a (0.174)	0.753 ^a (0.094)	0.699 ^a (0.087)	2.567 ^a (0.069)	0.518 ^a (0.175)	0.480 ^b (0.184)
Age Sq/1000	3.814 ^a (0.703)	3.852 ^a (0.654)	4.125 ^a (0.665)	6.197 ^a (0.846)	6.222 ^a (0.867)	1.593 (1.168)	4.122 ^a (0.698)	3.950 ^a (0.665)
#HH members	−0.066 (0.086)	−0.070 (0.084)	−0.064 (0.078)	0.120 ^b (0.049)	0.120 ^b (0.047)	0.119 (0.260)	−0.068 (0.083)	−0.042 (0.077)
Child010	−0.360 ^a (0.041)	−0.328 ^a (0.040)	−0.334 ^a (0.041)	−0.482 ^a (0.016)	−0.480 ^a (0.015)	−1.012 ^a (0.134)	−0.341 ^a (0.041)	−0.324 ^a (0.040)
Yrs education	0.011 (0.008)	0.010 (0.008)	0.019 ^b (0.007)	−0.052 ^a (0.011)	−0.050 ^a (0.011)	−0.256 ^a (0.029)	0.015 ^c (0.008)	0.006 (0.008)
Yrs education, partner	−0.107 ^a (0.015)	−0.108 ^a (0.014)	−0.114 ^a (0.013)	−0.157 ^a (0.012)	−0.164 ^a (0.012)	−0.008 (0.018)	−0.112 ^a (0.014)	−0.112 ^a (0.014)
Health	0.203 ^a (0.019)	0.196 ^a (0.020)	0.194 ^a (0.020)	0.247 ^a (0.031)	0.247 ^a (0.030)	−0.002 (0.008)	0.193 ^a (0.020)	0.196 ^a (0.019)
Health, partner	0.043 ^b (0.018)	0.035 ^c (0.018)	0.032 ^c (0.018)	0.042 ^a (0.012)	0.038 ^a (0.012)	0.358 ^a (0.010)	0.035 ^c (0.018)	0.035 ^b (0.017)
R ²	0.694	0.697	0.699	0.76	0.761	0.97	0.697	0.697
Observations	1428	1428	1428	759	759	212	1428	1428

Notes: ^a, ^b and ^c denote significance at 1%, 5% and 10% levels respectively. Standard errors in parentheses.

Observations are weighted using sampling weights, standard errors are adjusted for clustering across voting districts.

Individual, year and German Länder fixed effects are included in all cases.

Table 8: Reported Satisfaction – Migrants

	(1)	(2)	(3)
In Wage share	1.323 ^a (0.238)	−0.300 ^b (0.145)	0.195 (0.332)
In Wage share×Fem	−2.724 ^a (0.284)	0.331 ^c (0.167)	−0.785 ^a (0.267)
In Wage share×Fem×Full-time	−3.197 ^a (0.804)	—	—
In Wage share×Fem×Flex	—	−0.220 ^c (0.121)	—
In Wage share×Fem×Overtime	—	—	−0.393 ^a (0.142)
Full-time	−1.254 ^b (0.542)	—	—
Flex	—	−0.409 ^b (0.163)	—
Overtime	—	—	−0.061 (0.079)
Age	−0.542 ^a (0.131)	−0.501 ^a (0.083)	−0.265 ^a (0.057)
Child	0.120 (0.338)	−0.077 (0.191)	0.294 ^a (0.032)
#Children	−0.349 (0.231)	−0.173 ^c (0.102)	−0.138 ^a (0.041)
ln HH income	0.233 (0.300)	0.986 ^a (0.168)	−0.276 (0.193)
Age Sq/1000	4.870 ^a (1.315)	4.364 ^a (0.772)	1.750 ^b (0.675)
#HH members	−0.020 (0.180)	−0.275 ^c (0.164)	0.450 ^a (0.085)
Child010	−0.545 ^a (0.063)	−0.409 ^a (0.046)	0.182 ^a (0.041)
Yrs education	0.035 ^a (0.012)	0.016 ^a (0.005)	0.006 (0.016)
Yrs education, partner	−0.145 ^a (0.014)	−0.109 ^a (0.014)	−0.005 (0.010)
Health	0.201 ^a (0.026)	0.172 ^a (0.027)	0.152 ^a (0.018)
Health, partner	0.018 (0.016)	0.041 ^c (0.023)	−0.045 ^b (0.018)
R ²	0.736	0.699	0.782
Observations	923	1180	388

Notes: See Notes to Table 7.

Table 9: Reported Satisfaction – Migrants

	(1)	(2)	(3)	(4)	(5)
In Wage share	−0.422 (0.412)	3.462 ^a (1.153)	0.538 ^a (0.137)	0.556 ^a (0.131)	0.578 ^a (0.118)
In Wage share×Fem	1.359 ^b (0.656)	−2.236 (1.384)	0.987 (1.482)	−1.298 ^a (0.178)	−0.974 ^a (0.248)
In Wage share×Fem×No Family	−2.479 ^a (0.791)	—	—	—	—
In Wage share×Fem×No Visit	—	−0.691 ^a (0.196)	—	—	—
In Wage share×Fem×No Cleaner	—	—	−2.287 ^c (1.366)	—	—
In Wage share×Fem×Until 85	—	—	—	−0.229 (0.177)	—
In Wage share×Fem×Until 91	—	—	—	—	−0.978 ^b (0.367)
No Family	—	—	—	—	—
No Visit	—	−0.412 ^c (0.211)	—	—	—
No Cleaner	—	—	−0.518 ^b (0.246)	—	—
Age	−0.476 ^a (0.176)	−0.771 ^b (0.315)	−0.459 ^a (0.061)	−0.458 ^a (0.060)	−0.421 ^a (0.063)
Child	0.244 (0.225)	−0.545 ^b (0.212)	0.094 (0.167)	0.088 (0.165)	0.087 (0.168)
#Children	−0.289 ^c (0.159)	−0.521 ^a (0.034)	−0.177 ^b (0.079)	−0.179 ^b (0.081)	−0.190 ^b (0.085)
In HH income	0.625 ^c (0.388)	1.390 (1.398)	0.499 ^a (0.179)	0.504 ^a (0.177)	0.485 ^a (0.172)
Age Sq/1000	4.415 ^b (1.940)	6.110 ^c (3.180)	3.785 ^a (0.647)	3.825 ^a (0.652)	3.606 ^a (0.744)
#HH members	−0.183 (0.215)	0.043 (0.340)	−0.069 (0.081)	−0.070 (0.084)	−0.091 (0.074)
Child010	−0.422 ^a (0.142)	−0.919 ^a (0.158)	−0.325 ^a (0.039)	−0.328 ^a (0.039)	−0.330 ^a (0.037)
Yrs education	−0.057 (0.054)	0.118 ^b (0.050)	0.007 (0.009)	0.009 (0.008)	0.007 (0.007)
Yrs education, partner	−0.124 ^b (0.054)	−0.080 ^a (0.020)	−0.105 ^a (0.014)	−0.108 ^a (0.014)	−0.105 ^a (0.012)
Health	0.167 ^a (0.042)	0.295 ^a (0.059)	0.196 ^a (0.020)	0.196 ^a (0.020)	0.194 ^a (0.021)
Health, partner	0.010 (0.038)	0.004 (0.023)	0.035 ^c (0.018)	0.035 ^c (0.018)	0.035 ^c (0.018)
R ²	0.731	0.947	0.698	0.697	0.701
Observations	845	286	1428	1428	1428

Notes: See Notes to Table 7.

Table 10: Reported Satisfaction – Migrants and Germans

	(1)	(2)	(3)	(4)
In Wage share	0.047 ^a (0.005)	0.047 ^a (0.005)	0.050 ^a (0.004)	0.051 ^a (0.004)
In Wage share×Fem	−0.083 ^a (0.004)	−0.083 ^a (0.005)	−0.210 ^a (0.003)	−0.210 ^a (0.003)
In Wage share×Fem×Migrants	−0.871 ^a (0.057)	−0.043 (0.090)	0.076 (0.141)	0.112 (0.137)
In Wage share×Fem×Non Christian×Migrants	—	−1.351 ^a (0.210)	—	—
In Wage share×Fem×Religion	—	—	−0.028 ^a (0.003)	−0.028 ^a (0.003)
In Wage share×Fem×Religion×Migrants	—	—	−0.098 ^a (0.027)	0.006 (0.036)
In Wage share×Fem×Religion×Non Christian×Migrants	—	—	—	−0.275 ^a (0.047)
Religion	—	—	0.011 ^b (0.004)	0.011 ^b (0.004)
Age	−0.055 ^a (0.001)	−0.056 ^a (0.002)	−0.166 ^a (0.002)	−0.166 ^a (0.002)
Child	0.047 ^a (0.010)	0.049 ^a (0.010)	0.057 ^b (0.021)	0.056 ^b (0.021)
#Children	−0.048 ^a (0.003)	−0.049 ^a (0.003)	−0.080 ^a (0.001)	−0.081 ^a (0.001)
In HH income	0.283 ^a (0.010)	0.282 ^a (0.010)	0.269 ^a (0.011)	0.266 ^a (0.011)
Age Sq/1000	0.186 ^a (0.026)	0.194 ^a (0.027)	1.336 ^a (0.019)	1.337 ^a (0.019)
#HH members	−0.106 ^a (0.008)	−0.105 ^a (0.008)	0.016 (0.010)	0.016 (0.010)
Child010	0.045 ^a (0.002)	0.045 ^a (0.002)	0.066 ^a (0.001)	0.066 ^a (0.001)
Yrs education	0.025 ^a (0.005)	0.027 ^a (0.005)	−0.011 ^c (0.006)	−0.011 (0.006)
Yrs education, partner	−0.060 ^a (0.007)	−0.062 ^a (0.008)	−0.069 ^a (0.010)	−0.072 ^a (0.010)
Health	0.188 ^a (0.002)	0.188 ^a (0.002)	0.201 ^a (0.005)	0.201 ^a (0.005)
Health, partner	0.068 ^a (0.001)	0.068 ^a (0.001)	0.045 ^a (0.002)	0.044 ^a (0.002)
R ²	0.619	0.619	0.717	0.717
Observations	14487	14487	6520	6520

Notes: See Notes to Table 7.

Table 11: Reported Satisfaction – Migrants and Germans

	(1)	(2)	(3)
In Wage share	0.043 ^a (0.005)	0.265 ^a (0.019)	0.046 ^a (0.005)
In Wage share×Fem	−0.077 ^a (0.004)	−0.851 ^a (0.048)	−0.015 ^a (0.005)
In Wage share×Fem×Migrants	−0.878 ^a (0.059)	−0.629 (0.763)	0.743 (0.860)
In Wage share×Fem×#Child04	0.004 ^a (0.001)	—	—
In Wage share×Fem×#Child04×Migrants	0.002 (0.037)	—	—
In Wage share×Fem×No Visit	—	0.046 ^a (0.012)	—
In Wage share×Fem×No Visit×Migrants	—	−0.160 (0.255)	—
In Wage share×Fem×No Cleaner	—	—	−0.068 ^a (0.001)
In Wage share×Fem×No Cleaner×Migrants	—	—	−1.615 ^c (0.883)
#Child04	−0.062 ^a (0.002)	—	—
No Visit	—	0.036 (0.012)	—
No Cleaner	—	—	−0.073 ^a (0.001)
Age	−0.060 ^a (0.001)	−0.101 (0.018)	−0.055 ^a (0.001)
Child	0.052 ^a (0.010)	0.178 (0.022)	0.048 ^a (0.010)
#Children	−0.051 ^a (0.003)	−0.117 ^a (0.016)	−0.048 ^a (0.003)
In HH income	0.278 ^a (0.010)	0.073 ^a (0.045)	0.283 ^a (0.010)
Age Sq/1000	0.236 ^a (0.026)	0.644 ^a (0.208)	0.178 ^a (0.026)
#HH members	−0.097 ^a (0.007)	−0.142 ^a (0.085)	−0.106 ^a (0.008)
Child010	0.059 ^a (0.002)	0.127 ^a (0.006)	0.045 ^a (0.002)
Yrs education	0.025 ^a (0.005)	0.031 ^a (0.002)	0.025 ^a (0.005)
Yrs education, partner	−0.060 ^a (0.007)	−0.159 ^a (0.005)	−0.059 ^a (0.007)
Health	0.189 ^a (0.002)	0.142 ^a (0.009)	0.188 ^a (0.002)
Health, partner	0.068 ^a (0.001)	0.044 ^a (0.005)	0.068 ^a (0.001)
R ²	0.619	0.89	0.619
Observations	14487	2425	14487

Notes: See Notes to Table 7.