Behind the Veil of Cultural Persistence: Marriage and Divorce in a Migrant Community

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June 24, 2019

Abstract

An analysis of first-hand data reveals contradictory evolutions of marriage practices among Turkish migrants in Brussels: alongside persisting arranged and exclusively homogamous marriages (often involving "imported" partners), we observe large and increasing divorce rates that contrast with the situation in the country of origin. How can arranged marriage survive in a context where individuals may marry outside of their community and where divorce is easy and public safety nets are in place? To answer that question, we build a theory inspired by the seminal work of Bisin and Verdier (2000) and in which parents and children bargain over the choice of a spouse. We show that, perhaps paradoxically, the possibility of divorce may help preserve arranged marriage. This is especially true for women who are more constrained once married. To test the prediction of the model, we exploit a change in the divorce law (introduction of no-fault divorce in 2007). We find that, in line with the theoretical predictions, men's propensity to marry an imported bride decreases while the same evolution is not observed for women. If anything, the latter's propensity to marry an imported groom has increased.

1 Introduction

Nowadays, the question of cultural persistence among immigrant communities in Western European countries has become a hot subject of concern and controversy. Insofar as it exists, cultural persistence is often resented because it is interpreted as a sign of resistance against integration into the host

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†The data collection was funded by the Fond National de la Rercherche Scientifique (FNRS, PDR T016714F) and would have been impossible without the active support of the municipality of Saint-Josse. We are extremely thankful to Begum Sidar for excellent research assistance.

society, of continuing loyalty to the country of origin and, more generally, of a refusal to adopt modern values. These include the assertion of individual choice and freedom and the removal of differences between ascriptively defined groups, gender-based discrimination or domination in particular. The risk is thus high that part of the host population reacts agressively under the impulse of nationalist-populist movements. It is therefore especially important to understand the processes at work behind the façade of cultural persistence. It is indeed possible that strategies are deployed by members of the disadvantaged groups to coax the traditional social order to evolve, albeit in a gradual and roundabout fashion.

This is precisely the point that we want to make in the present paper with explicit reference to the situation of women: women may succeed in furthering their emancipation within the ambit of tradition, that is, by simultaneously complying with customary rules and partly subverting them. The mechanism thus evokes the role of veiling as analyzed by Carvalho (2013): women use veiling as a way to signal their attachment to the traditional culture while simultaneously emancipating from it in order to seize emerging educational and economic opportunities. The argument is elaborated theoretically and supported empirically with the help of first-hand data collected in the Turkish community of Brussels. The choice of this community is not coincidental since Turkish immigrants are known to form strong, cohesive and even rather closed communities in Western Europe, in Germany, the Netherlands, and Belgium especially. Interestingly, the problem addressed in this paper may also be relevant inside developing countries since people migrating from "traditional" regions may settle in cities inhabited by Westernized residents. This typically applies to Turkish big cities (Istanbul, Ankara, Izmir) in which traditional communities live side by side with "modern" elites.[1] In our instance, a tension between modern and traditional cultures clearly arises since Anatolia is the region of origin of almost all members of the Turkish community of Brussels.

Our starting point is Bisin and Verdier (2000) who have proposed a well-known explanation for the survival of minority culture in the long run. At the center of this explanation is the role of the family and marriage. Parents care about their children's cultural traits and paternalistically exercise effort to socialize their children inside the minority culture (what they call vertical socialization). A key assumption is that the probability of a successful transmission of cultural traits is higher in homogamous families. If transmission is successful, children choose a homogamous marriage and, in their turn, transmit the minority traits to their own children, thereby ensuring the long-term persistence

[1] Nowadays, this problem is enhanced by a massive influx of "traditional" migrants coming from Syria, the Aleppo region in particular.

of these traits. In the words of the authors themselves: "Individuals from the cultural minority have higher incentives to marry homogamously and to exert direct socialization efforts in order to transmit their cultural identity to their offsprings. In other words, minorities rationally react to the assimilation of the melting pot" (p. 958).

In this framework, agents receive a fixed cultural trait that completely determines the way they will marry and the likelihood that their children will also inherit that trait. Evidence regarding Turkish immigrants in Brussels suggests a more complex picture in which arranged marriages, which often involve the import of a spouse from the country of origin, play a critical role in cultural transmission but are not necessarily permanent given the possibility of divorce. This traditional form of union appears to entail a bargaining process involving both the parents and the child concerned. Approaching (arranged) marriage as the outcome of a negotiation between parents and child is not inconsequential. A first reason is that the role of exit opportunities is explicitly brought into the picture which is especially important since they may differ between men and women. Second, one feasible outcome of the negotiation, which is not available in Bisin-Verdier's framework, is that a child with "modern" values (she has not been successfully socialized inside the minority culture) may choose a spouse with "traditional" values to oblige her parents. This option is facilitated by divorce opportunities: in the host society divorce has become common practice and it does not suffer from the kind of opprobrium or strong disapproval observed in Turkey. Because distancing from the traditional culture of the parents by refusing an arranged marriage involves a significant cost for Turkish immigrants, and because a new exit option as emerged in the form of divorce, the child may follow a strategic behavior that plays upon the two repertoires of traditionality and modernity. In other words, the adaptive behavior that divorce makes possible enables migrant children to subtly combine the dominant culture of the host society and the minority culture of the immigrant community.

In a nutshell we propose a theory of arranged marriage in which parents intervene in marriage decisions with the purpose of transmitting their own culture to their grandchildren. The attitude of children when confronted by a parental wish or will is influenced by the way they can exit an unhappy union, either through divorce or through an extra-marital relationship. In specifying the cost of the second exit option, we assume that it is higher for women: in patriarchal communities such as those of Turkish migrants, extra-marital relationships are strongly disapproved for women while being condoned for men. This implies that in such communities the cost of an arranged marriage is higher for women than for men, thereby bringing a gender asymmetry in our model of cultural transmission. One of

its key prediction is that a fall in the cost of divorce decreases incentives to engage in an arranged marriage for men but not for women.

We test this prediction by exploiting a change in the divorce law, in the form of the introduction of no-fault divorce in Belgium in 2007. We find that men's propensity to marry an imported bride decreases while the same evolution is not observed for women. If anything, the latter's propensity to marry an imported groom has increased.

The outline of the paper is as follows. In Section 2 we present descriptive evidence, both quantitative and qualitative, on the persistence of a number of important cultural practices inside the Turkish community of Brussels. Based on these observations, we then construct a theory of arranged marriage and cultural transmission (Section 3). In Section 4, we use first-hand data to test a key prediction of the theory, namely that a change in the cost of divorce has gender-asymmetric effects on the practice of imported spouses. Section 5 concludes.

2 Persistence of Turkish culture among second- and third-generation migrants

2.1 Data sources

The main data source on which we rely is a survey that we conducted in 2015 in two communes of Brussels where the concentration of inhabitants of Turkish origin is the highest in Belgium. We obtained our sample from the Belgian National Registry which provided us with the names and addresses of randomly chosen individuals of Turkish origin, regardless of present citizenship. We were able to stratify the sample in three distinct categories: people born in Turkey (labelled G1 for first generation), people born in Belgium from two parents born in Turkey (labelled G2 for second generation), and people born in Belgium from at least one parent belonging to the second generation migrant population (labelled G3 for third generation). In total we surveyed 489 individuals, 322 women and 167 men, aged 20 to 65. The generation-wise distribution of the respondents is: 230 G1, 190 G2 and 69 G3 individuals.

We administered a detailed questionnaire including not only standard modules about household demographics, education, labour market participation and levels of living, but also more specific modules dealing with questions of identity and marriage. As far as identity is concerned, we investigated the importance of the links to Turkey and the Turkish community in Belgium. In particular, we focused

on proficiency in Turkish, French and Dutch languages, exposure to Turkish media, involvement in Turkish associations, frequency of travels to Turkey, family and friendship networks, and prospects regarding future residence and places of burial. Regarding marriage, we sought answers about parents' involvement in the choice of the spouse, the characteristics of the latter, the quality and duration of marriage and the circumstances of divorce if they apply. These questions were raised not only for the respondent but also for his/her parents, siblings and children, thus enabling us to increase the number of observed marriages much beyond the number of respondents. The econometric analysis below focuses on marriage outcomes of G2 and G3 and includes 1277 individuals born after 1970.

Precisely because of the presumably closed character of the Turkish community in Brussels, we resorted to several means to enter into it and gain the minimum trust required to elicit answers to our questions. First we obtained the active support of the mayor of one of the two communes, who is of Turkish origin and a popular local politician. He agreed to announce our survey and encourage local residents to participate through a regular newsletter. Second we recruited a team of experienced and multilingual Turkish enumerators who were flexible enough to administer the questionnaire at a suitable time (including evenings and week-ends) and suitable place (possibly outside of the home) for the respondent.

There is a rich social science literature that adresses similar questions to ours in the specific context of Turkish migrants in European countries. Sociologists and anthropologists have thus described and discussed marriage practices and trajectories and various indicators of integration into the host society. In the following, we will complement our survey information with the insights provided by these more qualitative studies.

2.2 A close-knit community

Attachment to the culture of origin among migrants is an oft-noted phenomenon (see, for example, Charsley, 2013). This is especially true in the case of residents coming from traditional rural areas. In our case, the Turkish residents of Brussels originate from the area of Emirdag in Anatolia. In Table 1, we report a series of measures of this attachment for our sample of residents of Turkish origin in Brussels, distinguishing between the three generations. These measures reveal a consistent picture of the persisting importance of Turkish identity among them. In particular, we see that almost all respondents, whichever the generation they belong to, speak Turkish at home. However, and in contrast to what is observed for first-generation migrants, a minority of respondents born in Belgium

(G2 and G3) reports that Turkish is the only language they speak at home. In addition, the time spent in watching Turkish TV channels represents more than 55% of total watching time even for G3 respondents (the decline across generations is actually slow). Statistics regarding the residential pattern are also revealing: 70% of the G2 and G3 respondents stated that they have relatives or in-laws living in their neighbourhood. As expected, the proportion is lower for G1 migrants but still works out to 60%.

The frequency of visits to Turkey is remarkably high: 80% of respondents travel at least once a year to Turkey (typically in holiday time), and unexpectedly we do not detect a decrease across generations. Also surprising is the high percentage of respondents who admit to paying annual fees in order to be buried in Turkey: while this proportion is about 80% for G1 and G2 migrants, it still exceeds 60% for G3 migrants.

We have three indicators of religious adhesion. The first one measures the intensity of the respondent's religious beliefs. We see that 29% of G1 migrants consider themselves as strong believers (in Islam), a proportion that goes down to 13% for both G2 and G3 migrants. At the other end of the spectrum, the proportion of those identifying themselves as non-believers (or sceptics) is very small: 1% for G1, 2% for G2, and 4% for G3. The second indicator, which refers to the practice of prayer, also reflects a decline across the generations: while 60% of G1 admitted to praying regularly, the proportion is only 39% for G2 and 32% for G3. Finally, the third measure, which concerns the practice of fasting (Ramadan), does not point to a radical change between the three generations: 73% of G1, 66% of G2 and 75% of G3 report to be following the fasting ritual.

2.3 Arranged marriage and imported spouses

DO WE WANT TO ADD THE EVIDENCE ON GIRLS' EDUCATION THAT IS IN THE PRESENTATION?

Regarding marriage, our first observation concerns the incidence of the practice of homogamous unions. In as many as 97% of the cases, the parents of the respondent's first spouse were born in Turkey (spouses are G1 or G2 migrants). This is probably an overestimation of the situation prevailing in Belgium in general, since people of Turkish origin who have married a non-Turk are likely to have left the surveyed communities.

Measuring arranged marriage is a thorny task because this practice can be understood in a variety of ways and is actually evolving. The most extreme form is a union with a partner imposed by the

parents on the child or, almost equivalently in our migration context, with a partner "imported" from Turkey. Milder forms are unions in which a spouse has been suggested by the parents, met on the initiative of the family, or is a relative. A still more benign form is encountered when a child has asked the parents to approve his/her choice of a marriage partner. Our available measures and their evolution across generations are depicted in Table 2. A striking finding is the persisting importance of marriages to spouses imported from Turkey: although declining over the generations, the proportion of such marriages remains as high as 32% for G3 individuals (sample of respondents, their siblings, parents and children). Also worth noting is the slow decline, albeit from a lower base, of inter-cousin marriages. Thus 38% of G1 and 23% of G2 respondents engaged in a kin marriage.

In our questionnaire, we have not inquired about the motives behind arranged marriages. Yet, socio-anthropological studies have shed light on this question and emphasize the importance for the parents of transmitting the cultural identity of origin to their grandchildren. Explicitly referring to migrant Turks in Belgium, Jamoulle (2009) thus writes:

> Parents are tormented by the question of origin. They feel ashamed because Belgium has transformed their children in a way that makes them forget about where they come from. They feel guilty for having been unable to transmit the Turkish 'genos', with the result that they do not recognize themselves in their children who, moreover, are not well accepted in the Belgian society. [...] As they conceive it, the Turkish purity of the imported spouse will heal the wounds of exile and bring psychologically strong grandchildren (pp. 199-200 – our free translation).

One key dimension of culture that matters for the parents is language. A special problem arises because migrants tend to mix up Turkish language with words coming from the locally spoken languages. When they return to Turkey, they appear "illiterate" in the eyes of their local peers who speak "a literary Turkish language taught in highly performing primary schools" (p 207). Finding themselves in a no man's land between two cultures, children are not spared inner tensions and suffering:

> While parents would like their children to remain strangers in the host country where they have been born, the children themselves feel strangers in the country of their parents (Jamoulle, 2009, p. 208; see also Fukuyama, 2018, pp. 70-71).

Our data provide indirect evidence that the cultural transmission motive underlies the practice of arranged marriage in general, and of importing spouses in particular. First grandparents appear to be more involved in the education of their grandchildren when the latter have been born of a migration marriage. Table 3 reports the correlation between the frequency of contacts between grandparents and grandchildren and the type of marriage of the children. When their child married an imported spouse,

grandparents turn out to be 22 percentage points more likely to see their grandchildren several times a week (column 1). The effect is even larger for paternal grandparents (28 percentage points, column 3). Similarly, the probability that grandparents look after their grandchildren on a daily basis is higher when their child went through an arranged marriage (columns 4 to 6). Yet, the effect is statistically significant for paternal grandparents only (20 percentage points).

Second, first born children are more likely to marry an imported spouse than their siblings. Figure 1 reports the correlation between relative birth rank and the propensity to marry an imported spouse, by plotting the results of a fixed effect regression.[2] In this regression, a binary variable measuring marriage migration is regressed on relative birth rank, controlling for gender and education, and defining the fixed effect at the sibship level.[3] It is striking that the probability to make an migration marriage decreases from 0.5 for the first-born child to 0.3 for the last-born. It is a standard feature of cultural transmission that parents tend to assign to their oldest child the task of continuing the family's traditions. A plausible explanation is that cultural transmission is so important in the eyes of the parents that, in uncertain circumstances, they want to ensure that it is achieved as quickly as possible. Once reassured that grandchildren have been born from a traditional marriage, they become more lax for the marriages of the later born. Another reason is that first-born are more easily influenced by their parents who typically invest more time and emotional energy in them (Black et. al. 2005).

2.4 Extra-marital relationships and divorce

Our data indicate that divorce is a growing practice among migrants of Turkish origin in Brussels, that many divorces involve children and are initiated by women. Focusing on respondents and their siblings, regardless of their age (1804 married individuals), the divorce rate is 17% for G2, whereas it is less than 14% for G1 individuals.[4] We also see that 75% of divorces involve children and that in two thirds of the cases, the divorce was initiated by women. These findings confirm the conclusion reached by available studies dealing with other immigrant groups, such as Turkish immigrants in Denmark, Iranian immigrants in Sweden, and Southeast migrants in the UK (Liversage, 2013, Darvishpour, 1999,

[2]Relative birth rank goes from 0 (for the first-born) to 1 (for the last-born). It is equal to (absolute birth rank - 1)/(total number of siblings - 1), where the absolute birth rank goes up from 1 (for the first-born).

[3]The sample includes G2 and G3 individuals. In the case of G1 respondents, the relevant units of observation are his/her adult children, while, if the respondent is G2 or G3, the units of observation include both the respondent and his/her siblings. Note that the generation is absorbed in the fixed effect.

[4]If we focus on individuals older than 40 at the time of the survey, the rates are 15% for G1 (522 individuals) and as much as 26% for G2 (168 individuals).

Darvishpour, 2002, Qureshi et al., 2014, Economist, 2013). In the latter's case, arranged marriages persist even though they are increasingly viewed as more risky than before. Contrary to a widespread view concerning British Southeast Asian population, parents do not hesitate to support their child's decision to divorce and remarry if his/her personal fulfilment or happiness is at stake. The upward trend in divorce among young people is therefore not a source of antagonism between parents and children, and the stigma attached to divorce has been noticeably reduced.

An interesting contrast emerge, if we compare the divorce rate in Belgium to that of siblings of G1 who remained in Turkey: for these non-migrants the divorce is lower than 5%. This confirms other studies from rural Turkey (add figure from DHS).

Given our small sample size, we are unfortunately unable to meaningfully compare divorce rates on the basis of the type of marriage (with an imported spouse or not). Existing studies suggest the existence of a (much) higher divorce risk for migration marriages than for marriages between G2 individuals in Belgium (Eeckhaut et al., 2011) and other countries (Obućina, 2015 for Sweden; Liversage, 2013 for Denmark).

For obvious reasons, the survey method is not appropriate to elicit information regarding extra-marital relationships. Here, the participant observation approach of anthropologists is much more suited. Especially relevant to our study, is the aforementioned work of Jamoulle (2009) who deals with the same population as we do. A central message of her exploration of marital life is gender asymmetry: while men may pursue their bachelor's life even after marriage and the community easily condones their extra-marital relationships, women's behaviour is more tightly controlled and extra-marital affairs indulged by them are severely condemned. In Jamoulle's words:

> For Turkish men, it is customary practice to have a pleasurely life outside the conjugal couple. The opposite holds true for women: a woman who has a lover is considered to be a whore... As per the custom, marriage is typically seen by men as the continuation of the relationship with the mother. If the daughter-in-law is obedient and the progeny is abundant, the man has fulfilled his contract vis-a-vis the community. Therefore, he is allowed to enjoy himself outside of the home and the elders will close their eyes... This dual life of the Turkish men is causing a lot of suffering and undermines many marriages, especially so in migration urban contexts where access to mistresses is much easier than in the villages of origin... Generally, however, even though he may be unhappy as a husband, the man will not divorce from the mother of his children whom he respects as such" (Jamoulle, 2009, pp. 199-200 –our free translation).

3 A Theory of Arranged Marriages and Cultural Transmission

In the following, we develop a model of marriage arrangements as well as decision-making within marriage where the role of families of the bride and groom are made explicit. Let us denote by b the bride and by g the groom. We use f_b to represent the family of the bride and by f_g the family of the groom.[5] A potential bride and groom have vectors of characteristics $\mathbf{X}_b$ and $\mathbf{X}_g$ that are relevant for the match. These vectors include measures of human capital of the bride and groom, their personal traits as well as cultural or religious background (which may figure differently in the preferences of individuals marrying and their respective families). We assume that marriage between a bride b and a groom g, with characteristics $\mathbf{X}_b$ and $\mathbf{X}_g$ respectively, generates utility of $U_b(\mathbf{X}_b, \mathbf{X}_g)$ for the bride and $U_g(\mathbf{X}_b, \mathbf{X}_g)$ for the groom.

Let us denote by $U_{fb}(\mathbf{X}_b, \mathbf{X}_g)$ and $U_{fg}(\mathbf{X}_b, \mathbf{X}_g)$ the utility levels derived by the families of b and g from the same match. The characteristics of the potential brides and grooms are, potentially, ranked differently by the individuals on the marriage market and by their respective families. For example, one of the factors considered by the parents of the bride and groom may be the likelihood of cultural transmission to their grandchildren which depends on the culture of their daughter-in-law or son-in-law. But matching on culture alone may not be optimal from the perspective of the bride and groom. Drawing on Bisin and Verdier (2000, 2001), we formally model cultural transmission and explore its implications for the choice of marriage partner further below.

3.1 Transmission of Values to Offspring from the Marriage

In the context of marriage decisions within minority groups, a potentially important concern is what type of values will be acquired by the children born of the marriage. A groom (bride) who shares the values of the bride (groom) or her (his) family can help ensure that the children born of the marriage inherit their values. The risk that these values are not transmitted to the next generation is arguably higher in the case of minitory groups as the children will be exposed to a diversity of cultural perspectives, some of which may be in direct conflict with the parents' and grandparents' own values. To investigate how these issues can influence marriage decisions, we add additional structure to the utility functions introduced above drawing on models of cultural transmission (Bisin and Veridier 2000, 2001; Bisin, Patacchini, Verdier, Zenou 2011).

Suppose that there are two types of values, t representing 'traditional' values and m representing

[5] In the following discussion, we use the terms 'family' and 'parents' interchangeably.

'modern' values. Let us denote by $v(\mathbf{X})$ the type of values possessed by an individual with characteristics $\mathbf{X}$. We assume that the utility levels $U_b(\mathbf{X}_b, \mathbf{X}_g)$ and $U_g(\mathbf{X}_b, \mathbf{X}_g)$ generated by a marriage is the sum of two elements: (i) utility dependent on the mutual compatibility of the marriage partners denoted by $M(\mathbf{X}_b, \mathbf{X}_g)$ and (ii) expected utility from the cultural transmission process.

We introduce some additional notation to represent the second element. Following Bisin and Verdier (2001), let V^{ij} be the utility derived by an individual with values of type $i \in \{t, m\}$ when his/her child inherits values of type $j \in \{t, m\}$. Let P^{ij} be the probability that a child acquires values of type j when both parents have values of type i, where $i, j \in \{t, m\}$. Let $\tilde{P}^j$ be the corresponding probability when parents have dissimilar values (i.e. one parent has values of type i and the other has values of type j). We make the following assumptions about these terms.

Assumption 1 $V^{jj} = V^{ii} > V^{ij} = V^{ji}$ *if* $i \neq j$

Assumption 2 $P^{ii} > \tilde{P}^i, \tilde{P}^j > P^{ij}$ *if* $i \neq j$

Assumption 1 means that individuals derive greater satisfaction when their own values are transmitted to their child. Assumption 2 means the probability that the child inherits the parents' values is higher when the two parents have the same values; and that the probability that the child inherits different values from a parent is lower when his/her spouse shares the same values. Note also that, by construction, we must have $P^{ii} = 1 - P^{ij}$ and $\tilde{P}^i = 1 - \tilde{P}^j$.

Given these definitions, we can add additional structure to the utility generated by a marriage, defined in the previous section. Let $v(\mathbf{X}_b) = i$, $v(\mathbf{X}_g) = k$ and suppose $j \neq i$. Then we can define the bride's utility as follows.

$$U_b(\mathbf{X}_b, \mathbf{X}_g) = \begin{cases} M(\mathbf{X}_b, \mathbf{X}_g) + P^{ii}V^{ii} + P^{ij}V^{ij} + \epsilon \text{ if } k = i \\ M(\mathbf{X}_b, \mathbf{X}_g) + \tilde{P}^iV^{ii} + \tilde{P}^jV^{ij} + \epsilon \text{ if } k = j \end{cases} \tag{1}$$

To interpret (1), let us first consider the case where the spouses share the same values, i.e. $i = k$. The first term $M(\mathbf{X}_b, \mathbf{X}_g)$ simply captures the surplus generated by the marriage due to their degree of mutual compatibility. The next two terms capture the bride's expected utility from cultural transmission to her child (or children). With probability P^{ii}, the child inherits her own values, which gives her a utility of V^{ii}. With probability P^{ij} the child inherits a different set of values, which gives her a utility of V^{ij}.

In the second case, the spouses have different values, i.e. $i \neq k$. The expression for mutual

compatibility remains the same but the expression for the expected utility from cultural transmission is different. With probability $\tilde{P}^i$, the child inherits the mother's values, denoted by i, which yields her a utility of V^{ii}. With probability $\tilde{P}^j$, the child inherits the father's values which in this instance equals j, which yields the mother a utility of V^{ij}.

Finally, we assume that ϵ is a stochastic variable realised only after the marriage has been initiated; the distribution of ϵ is described by the c.d.f. $F(.)$ and $\mathbf{E}(\epsilon) = 0$. The variable ϵ represents the utility stemming from factors of compatibility not observed during the period of courtship.

Lemma 2 in the Theoretical Appendix shows that, for a given level of mutual compatibility, the utility generated by a marriage is higher where the spouses share the same type of values – i.e. $v(\mathbf{X}_b) = v(\mathbf{X}_g)$ – compared to the case where they do not.

In the case of the families of the bride and groom, f_b and f_g, we allow for the possibility that the families of the bride and groom may have different values from the bride and groom respectively. For example, within immigrant communities, it is possible that first generation immigrants failed to transmit their own values to their second generation offsprings, given their exposure to other values from outside the community. We use $V^{i'i}$ and $V^{i'j}$ to represent the utility derived by grandparents with values of type i' when their grandchildren acquire values of type i and j, respectively.[6] Bear in mind that the utility of the grandparents derived from their grandchildren depends on the values of their grandchildren only, and not on the values of the parents themselves. Because the probability of transmitting a specific set of values to the next generation depends on whether the bride and groom have the same or different values, the values of the bride nevertheless appear in the definition of $U_{fb}(\mathbf{X}_b, \mathbf{X}_g)$. We denote by $v_f(\mathbf{X})$ the values for the parents of an individual with characteristics $\mathbf{X}$. Suppose that $v_f(\mathbf{X}_b) = i'$, $v(\mathbf{X}_b) = i$, $v(\mathbf{X}_g) = k$ and $j \neq i$. Furthermore, we define

$$U_{fb}(\mathbf{X}_b, \mathbf{X}_g) = \begin{cases} \lambda_f M(\mathbf{X}_b, \mathbf{X}_g) + P^{ii} V^{i'i} + P^{ij} V^{i'j} + \epsilon \text{ if } i = k \\ \lambda_f M(\mathbf{X}_b, \mathbf{X}_g) + \tilde{P}^i V^{i'i} + \tilde{P}^j V^{i'j} + \epsilon \text{ if } i \neq k \end{cases}$$

where we assume that $\lambda_f \in (0, 1)$. From the above definition, it is evident that the family derives a different level of utility from the match than the bride herself. This is because (i) they do not attach the same weight to the mutual compatibility between the marriage partners ($\lambda_f \neq 1$) and (ii) they may have different values (i.e. $v_f(\mathbf{X}_b) \neq v(\mathbf{X}_b)$). The utility of the groom and his parents are defined in a similar manner.

[6] We could also assign distinct utility levels to the grandparents and the parents. Our main results do not depend on this. We make the simpler assumption for ease of notation.

3.2 Bargaining over Choice of Partner

Because of potentially conflicting preferences between the person marrying and her/his parents, the realised match is the outcome of bargaining between them. We model the outcome as a Nash bargaining solution. In the case of disagreement, the individuals can marry without family approval but this results in a loss of economic support from the family network as well as the wider social network (whereas family approval of choice of marriage partner may be interpreted as a signal of the trustworthiness of the individuals concerned). Therefore, the family holds stronger barganing power in an economic setting where social networks are important while the bride and groom have stronger bargaining power where they are not.

Let $W_i(\mathbf{X}_b, \mathbf{X}_g) = \mathbf{E}U_i(\mathbf{X}_b, \mathbf{X}_g)$ for $i \in \{b, g, fb, fg\}$. Let us denote by N_b and N_g the value of the social network to which the bride and groom, respectively, have access via their families. Then, if the potential partners available to b are represented by the set $G(b)$, then the marriage partner agreed upon through the bargaining process is given by

$$\tilde{g}(b) = \arg\max_{g \in G(b)} \left[W_b(\mathbf{X}_b, \mathbf{X}_g) + N_b - W_b\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)\right]\left[W_{fb}(\mathbf{X}_b, \mathbf{X}_g) - W_{fb}\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)\right] \quad (2)$$

subject to

$$\begin{aligned} W_b(\mathbf{X}_b, \mathbf{X}_g) + N_b &\geq W_b\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right) \\ W_{fb}(\mathbf{X}_b, \mathbf{X}_g) &\geq W_{fb}\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right) \end{aligned}$$

where

$$\hat{g}(\mathbf{X}_b; b) = \arg\max_{g \in G(b)} W_b(\mathbf{X}_b, \mathbf{X}_g) \quad (3)$$

The choice of marriage partner for a groom is obtained from an identical Nash bargaining solution (except for changes in notation where relevant). We assume that the set of potential partners available to the bride and groom are exogenously given, rather than derive it from market clearing conditions. We take this approach because of the specific nature of our study context: the candidate marriage partners are obtained either from the marriage market in Turkey or the marriage market in Brussels, both of which are considerably larger than the set of agents -- Turkish immigrant families in Brussels -- whose decisions we analyse. Therefore, the marriage decisions of some Turkish immigrants are unlikely to affect the potential partners available to others. We take the candidate marriage partners in $G(b)$)

to be the outcome of searches conducted by the bride and the parents prior to the bargaining process. Specifically, the bride's search yields her preferred partner $\hat{g}(\mathbf{X}_b; b)$ from the Brussels marriage market and the parents' search yields the alternative candidates in $G(b)$ from the Turkish marriage market.

It is straightforward to show that if $N_b = 0$, then $\tilde{g}(\mathbf{X}_b; b) = \hat{g}(\mathbf{X}_b; b)$; i.e. when access to parental support and social networks are of no value for the daughter's well-being, the marriage outcome will be based entirely on her preferences. On the other hand, for N_b sufficiently large, $\tilde{g}(\mathbf{X}_b; b) = \hat{g}(\mathbf{X}_b; f_b) = \arg\max_{g \in G(b)} W_{fb}(\mathbf{X}_b, \mathbf{X}_g)$; i.e. if the social networks are sufficiently important, then the marriage outcome will be based entirely on the preferences of the parents. For intermediary values of N_b, both the parents and the daughter will have some say in the marriage decision.

3.3 Analysis of bargaining outcomes

3.3.1 Characterisation of Groom Choice

In this section, we provide a characterisation of the groom that would be chosen when marriages are arranged as described above and when the cultural transmission process can produce a conflict of interest between a prospective bride and her family. We consider both situations where the bride and the family have the same type of values and where they have different values. While we focus on groom choice, the case of bride choice is identical apart from the difference in notation. We begin with the following results.

Lemma 1 *Suppose* $v\left(\mathbf{X}_{\hat{g}(b)}\right) = v_f(\mathbf{X}_b)$. *Then* $\tilde{g}(b) = \hat{g}(b)$.

Lemma 2 *Suppose* $v\left(\mathbf{X}_{\tilde{g}(b)}\right) = v\left(\mathbf{X}_{\hat{g}(b)}\right)$. *Then* $\tilde{g}(b) = \hat{g}(b)$.

In words, Lemma 1 says that if the bride's preferred groom has the same type of values as her parents, then the groom agreed upon must be the one preferred by the bride. Lemma 2 says that if the groom that the bride and her family agree upon have the same type of values as the bride's preferred groom, then it must be that the bride's preferred groom has been agreed upon. The results are significant because they imply that whenever the chosen groom is someone different from the bride's preferred choice – the more interesting case in the context of arranged marriages – it must be that the family has different types of values from the bride's preferred groom, and the latter has different types of values from the groom agreed upon. These results are formally stated as follows.

Corollary 1 *of Lemma 1: If* $\tilde{g}(b) \neq \hat{g}(b)$, *then* $v_f(\mathbf{X}_b) \neq v\left(\mathbf{X}_{\hat{g}(b)}\right)$.

Corollary 2 *of Lemma 2: If* $\tilde{g}(b) \neq \hat{g}(b)$*, then* $v\left(\mathbf{X}_{\tilde{g}(b)}\right) \neq v\left(\mathbf{X}_{\hat{g}(b)}\right)$.

We can also establish that when the chosen groom differs from the bride's preferred choice, the chosen one has the same type of values as the bride's family, as stated below.

Lemma 3 *If* $\tilde{g}(b) \neq \hat{g}(b)$*, then* $v\left(\mathbf{X}_{\tilde{g}(b)}\right) = v_f(\mathbf{X}_b)$.

The three lemmas and the corollary above apply whether the bride and her family have the same type of values or not. Next, we provide some results specific to each case: (i) where they have the same type of values; and (ii) where they do not:

Lemma 4 *Suppose* $v_f(\mathbf{X}_b) = v(\mathbf{X}_b)$*. If* $\tilde{g}(b) \neq \hat{g}(b)$ *then* $M\left(\mathbf{X}_b, \mathbf{X}_{\tilde{g}(b)}\right) < M\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)$.

In words, Lemma 4 states that if the bride and her family have the same type of values but the bride's preferred groom was not chosen, it must be that the chosen groom has a lower level of compatibility than the preferred groom.

Lemma 5 *Suppose* $v_f(\mathbf{X}_b) \neq v(\mathbf{X}_b)$*. (i) If* $v\left(\mathbf{X}_{\tilde{g}(b)}\right) = v(\mathbf{X}_b)$*, then* $\tilde{g}(b) = \hat{g}(b)$*. (ii) If* $v\left(\mathbf{X}_{\tilde{g}(b)}\right) = v_f(\mathbf{X}_b)$*, then* $\tilde{g}(b) = \arg\max_{g \in \{G(b): v(\mathbf{X}_g) = v_f(\mathbf{X}_b)\}} M(\mathbf{X}_b, \mathbf{X}_g)$.

In worlds, Lemma 5 states that if the bride and her family have different types of values, then there are two possible outcomes. The marriage choice will be either the bride's preferred groom, or the most compatible groom from the subset of potential suitors who share the family's values.

3.3.2 Comparative Statics

Next, we consider how environmental and institutional factors influence the marriage outcome. We proceed by defining a function that captures the difference in expected utility from cultural transmission when one marries someone who shares one's own values as compared to the case when the partners have different types of values. Using (1), this difference can be written as

$$\Phi\left(P^{ii}, \tilde{P}^{i}, V^{ii}, V^{ij}\right) = \left(P^{ii} - \tilde{P}^{i}\right) V^{ii} - \left(\tilde{P}^{j} - P^{ij}\right) V^{ij}$$

We can show that, by Assumptions 1 and 2, we have $\Phi\left(P^{ii}, \tilde{P}^{i}, V^{ii}, V^{ij}\right) > 0$.[7] If the two types of values are very different, $\left(V^{ii} - V^{ij}\right)$ will be large and, therefore, $\Phi\left(P^{ii}, \tilde{P}^{i}, V^{ii}, V^{ij}\right)$ will be large.

[7] Note that $\tilde{P}^{j} - P^{ij} = P^{ii} - \tilde{P}^{i}$. Therefore, $\Phi(.) = \left(V^{ii} - V^{ij}\right)\left(P^{ii} - \tilde{P}^{j}\right) > 0$.

Also, for close-knit communities, P^{ii} will be large which, again, will make $\Phi\left(P^{ii}, \tilde{P}^{i}, V^{ii}, V^{ij}\right)$ large. We wish to examine how variation in $\Phi(.)$ affects the choice of marriage partner. For the following results, we define $g_f(b)$ as the potential groom with highest level of mutual compatibility with the bride among those who share the parents' values.

Definition 1 *A 'situation of conflict' is one where* $v\left(\mathbf{X}_{\hat{g}(b)}\right) \neq v_f\left(\mathbf{X}_b\right)$.

Proposition 1 *Suppose* $v_f\left(\mathbf{X}_b\right) = v\left(\mathbf{X}_b\right)$. *In a situation of conflict, an arranged marriage occurs if and only if the following two conditions hold:*

$$\begin{aligned} \Phi(.) &> M\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right) - M\left(\mathbf{X}_b, \mathbf{X}_{g_f(b)}\right) - N_b \\ \Phi(.) &> \lambda_f\left[M\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right) - M\left(\mathbf{X}_b, \mathbf{X}_{g_f(b)}\right)\right] \end{aligned}$$

The first condition reflects the bride's standpoint while the second one reflects that of her parents. Formally, we define a 'situation of conflict' as one where the bride's preferred choice of partner has different values from her parents (Definition 1). Proposition 1 implies that in a 'situation of conflict', she marries her preferred groom when the payoff difference from transmitting the two types of values is small (i.e. $\left(V^{ii} - V^{ij}\right)$ is small) and when a couple with shared values have a relativey low probability of transmitting their own values (i.e. P^{ii} is small); otherwise, she marries a groom with the same type of values as her family.

We can also see that the latter is more likely to occur when N_b (i.e. the additional social support available to the bride when the groom's choice is a joint decision) is large and/or when there are potential grooms – within the set that shares the parents' values – with a high degree of mutual compatibility with the bride.

Proposition 1 is specific to the case where the bride and her parents have the same type of values (i.e. $v_f\left(\mathbf{X}_b\right) = v\left(\mathbf{X}_b\right)$). But we obtain a similar result when the bride and her parents have different types of values. In this case, the parents obtain a smaller expected utility even when the groom shares their values because their own daughter does not (since $\tilde{P}^{i} < P^{ii}$). Specifically, the difference in expected utility to the parents from cultural transmission when their daughter marries someone who shares their own values – as compared to the case where both the daughter and the groom have different values from them – can be written as

$$\tilde{\Phi}\left(P^{ii}, \tilde{P}^{i}, V^{jj}, V^{ji}\right) = \left(\tilde{P}^{j} - P^{ij}\right) V^{jj} - \left(P^{ii} - \tilde{P}^{i}\right) V^{ji}$$

We can show that, by Assumption 1, we have $\tilde{\Phi}\left(P^{ii}, \tilde{P}^{i}, V^{jj}, V^{ji}\right) = \Phi\left(P^{ii}, \tilde{P}^{i}, V^{jj}, V^{ji}\right)$. Here again, we can show that if $\left(V^{jj} - V^{ji}\right)$ is large or P^{ii} is large, this will make $\tilde{\Phi}\left(P^{ii}, \tilde{P}^{i}, V^{jj}, V^{ji}\right)$ large. We state the equivalent of Proposition 1 as follows.

Proposition 2 *: Suppose $v_f(\mathbf{X}_b) \neq v(\mathbf{X}_b)$. In a situation of conflict, an arranged marriage occurs if and only if the following two conditions hold:*

$$\begin{aligned} \Phi(.) &< M\left(\mathbf{X}_b, \mathbf{X}_{g_f(b)}\right) - M\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right) + N_b \\ \tilde{\Phi}(.) &> \lambda_f\left[M\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right) - M\left(\mathbf{X}_b, \mathbf{X}_{g_f(b)}\right)\right] \end{aligned}$$

Proposition 2 shows how the choice of marriage partner varies with the bride's and parents' expected utility derived from a groom with shared values (as opposed to a groom with different values). Note that $\tilde{\Phi}(.)$ and $\Phi(.)$ are both increasing in $\left(V^{ii} - V^{ji}\right)$ and P^{ii}. Therefore, when the first expression is large so is the second and vice versa. This means that the condition in which the bride marries a groom who shares values with her parents but not herself – i.e. $\Phi(.) < \overline{\Phi}_b$ *and* $\tilde{\Phi}(.) > \overline{\Phi}_{fb}$ – is restrictive. We can also see that it is more likely to occur when N_b (i.e. the additional social support available to the bride when the groom choice is a joint decision) is large and/or when there are potential grooms – within the set that shares the parents' values – with a high degree of mutual compatibility with the bride.

4 Post-Marital Strategies

4.1 Divorce and Remarriage Market

Some of the marriages contracted as per the process above may end in divorce and the divorcees may re-enter the marriage market. The strategic options available to divorcees may differ from those entering the marriage market for the first time. In particular, divorcees may not have access to the social network normally accessed via their parents, as the event of divorce itself may be interpreted as a sign that the divorcee is of 'bad quality'.

To investigate strategic choices that individuals and their families make when divorce is a possible outcome, we can consider a two-period case of the model presented above. During the first period, a married couple observes their realisation of ϵ. At the end of the period, they can opt to divorce and re-enter the marriage market. In this case, the one-period game described above is repeated. If they

choose to remain married, they obtain the same level of utility in the second period as in the first. Utility in the second period is discounted by a factor $\beta \in (0,1)$.

Assuming that children have already been born of the first marriage and cultural transmission has occurred, there is no conflict of interest between parents and daughter at the time of remarriage. We denote by $g_r(b)$ the preferred groom on the remarriage market. We assume that divorce incurs a cost C, which represents both pecuniary and non-pecuniary costs of filing for divorce.

We can write the utility obtained by a bride with characteristics $\mathbf{X}_b$ from marrying a groom with characteristics $\mathbf{X}_g$ as $\mathbf{E}U_b(\mathbf{X}_b, \mathbf{X}_g) + \epsilon$ (for simplicity, we ignore the groom's decision for the present). The bride will divorce in the second period (ignoring the groom's choices for the time being) if and only if realisation of ϵ is sufficiently small. More precisely, the condition for divorce can be written as

$$\mathbf{E}U_b\left(\mathbf{X}_b, \mathbf{X}_{\tilde{g}(b)}\right) + \epsilon < \mathbf{E}U_b\left(\mathbf{X}_b, \mathbf{X}_{g_r(b)}\right) - C$$

$$\Longrightarrow \epsilon < \Delta_b\left(g_r(b), \tilde{g}(b)\right) - C$$

where $\Delta_b\left(g_r(b), \tilde{g}(b)\right) = \mathbf{E}U_b\left(\mathbf{X}_b, \mathbf{X}_{g_r(b)}\right) - \mathbf{E}U_b\left(\mathbf{X}_b, \mathbf{X}_{\tilde{g}(b)}\right)$. Then the expected sum of utilities to a prospective bride from marrying a groom g when she enters the marriage market for the first time is given by

$$\mathbf{E}U_b(\mathbf{X}_b, \mathbf{X}_g) + N_b + \beta(1-d)\mathbf{E}U_b(\mathbf{X}_b, \mathbf{X}_g) + \beta d\left\{\mathbf{E}\left[U_b(\mathbf{X}_b, \mathbf{X}_{\tilde{g}_r}) \mid_{\epsilon \leq \Delta_b(g_r(b), \tilde{g}(b)) - C}\right]\right\} \qquad (4)$$

where $d = F\left(\Delta_b\left(g_r(b), \tilde{g}(b)\right) - C\right)$. The first term in (4) is the expected utility to bride b from marrying groom g in the first period of the marriage. The second term is the value of the social network (to which parental approval of the marriage provides access) in the first period. The third term provides the utility in the second period from the marriage assuming that the realised value of ϵ is sufficiently high that the union remains intact. The fourth term captures the utility obtained from the remarriage market in case of divorce.

The possibility of divorce in the second period will affect the marriage outcome in the first period. In particular, we can show that the expression in (4) is decreasing in C. This is because increasing C lowers the bride's utility in states where divorce occurs (it also decreases the probability of divorce, but as this change occurs in states where the bride is close to being indifferent between remaining in the first period marriage and exiting the marriage, this does not, in itself, change the expected utility

over the two periods).

Note that the Nash bargaining product (i.e. the objective function in (2)) corresponding to $\hat{g}(b)$ is always equal to zero (as it, by construction, yields a zero surplus to the bride's parents). By contrast, the Nash bargaining product corresponding to $g_f(b)$ is decreasing in C because it raises the 'cost' of an arranged marriage compared to the cost of a 'love marriage' (note that love marriages can end in divorce as well, but this is only in a subset of states where an arranged marriage would result in divorce). Therefore, for C sufficiently small, the bride will have an arranged marriage (i.e. marriage with $g_f(b)$) in the first period and marriage with $\hat{g}(b)$ otherwise. Alternatively, we can state that for a given C, an arranged marriage occurs if the difference in mutual compatibility between the bride b and the potential suitors $g_f(b)$ and $\hat{g}(b)$ (which can be written as $M\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right) - M\left(\mathbf{X}_b, \mathbf{X}_{g_f(b)}\right)$) is sufficiently small; and the threshold value below which arranged marriage occurs is decreasing in C. If this 'difference in mutual compatibility' is a random realisation, then we obtain the following result.

Proposition 3 *The probability of arranged marriage is decreasing in the cost of divorce (C).*

Proposition 3 implies, in particular, that if divorce becomes easier, then the probability of an arranged marriage will increase.

4.2 Extra-Marital Relationships

Next, we consider an extension to the model in which there is another alternative available to married individuals in the second period: an extra-marital relationship.

Taking on an extra-marital partner effectively ends the marital relationship but does not involve a formal divorce. This means that the married individuals save on the divorce cost C. We assume that an extra-marital relationship triggers strong social disapproval with a gender difference: the community condones such behaviour in men but not in women. Formally, we represent this social disapproval in terms of a loss in social network support – which, for women, is equal to N_b. We assume that if either spouse pursues an extra-marital relationship, s/he will opt for her/his preferred partner, represented by $g_r(b)$ and $b_r(g)$ as per our previous notation. We also assume that if one spouse pursues an extra-marital relationship while the other does not, the latter obtains the level of utility corresponding to singlehood, which we normalise to 0, as the marital relationship is effectively over with no other relationship taking its place. Then, if a pair (b, g) marries in period 1, there are five possible outcomes in period 2 as shown in the table below:

Outcome	Groom's Utility	Bride's Utility
marriage (status quo)	$\mathbf{E}U_g\left(\mathbf{X}_b, \mathbf{X}_g\right) + \epsilon$	$\mathbf{E}U_b\left(\mathbf{X}_b, \mathbf{X}_g\right) + \epsilon$
divorce	$\mathbf{E}U_g\left(\mathbf{X}_{b_r(g)}, \mathbf{X}_g\right) - C$	$\mathbf{E}U_b\left(\mathbf{X}_b, \mathbf{X}_{g_r(b)}\right) - C$
extra-marital: groom only	$\mathbf{E}U_g\left(\mathbf{X}_{b_r(g)}, \mathbf{X}_g\right)$	0
extra-marital: bride only	0	$\mathbf{E}U_b\left(\mathbf{X}_b, \mathbf{X}_{g_r(b)}\right) - N_b$
extra-marital: both	$\mathbf{E}U_g\left(\mathbf{X}_{b_r(g)}, \mathbf{X}_g\right)$	$\mathbf{E}U_b\left(\mathbf{X}_b, \mathbf{X}_{g_r(b)}\right) - N_b$

We assume in the following that utility between the wife and the husband are non-transferable for any of the available options (in the theoretical appendix we analyse the consequences of relaxing this assumption).

To formalise the strategies available to each spouse, we assume that they can each choose from three possible actions: status quo, divorce, and extra-marital relationship, and they choose their actions simultaneously. The first outcome obtains if both spouses choose 'status quo'. The second outcome obtains if either spouse chooses 'divorce'. The next three options obtain if one or both spouses choose to pursue an extra-marital relationship. We assume that women never pursue extra-marital relations because the cost of community sanctions is too severe to make this a viable prospect: i.e. $\mathbf{E}U_b\left(\mathbf{X}_b, \mathbf{X}_{g_r(b)}\right) - N_b < 0$.

We are thus are left with three options: marriage, divorce, and "extra-marital: groom only". Suppose that, initially, C is very large, i.e. divorce is very costly, such that the option is never pursued. Then, depending on the realisation of ϵ, either the marriage status quo will be maintained in the second period or the groom will pursue an extra-marital relationship. More precisely, the groom enters into an extra-marital relationship if and only if

$$\mathbf{E}U_g\left(\mathbf{X}_b, \mathbf{X}_g\right) + \epsilon < \mathbf{E}U_g\left(\mathbf{X}_{b_r(g)}, \mathbf{X}_g\right)$$

$$\implies \epsilon < \mathbf{E}U_g\left(\mathbf{X}_{b_r(g)}, \mathbf{X}_g\right) - \mathbf{E}U_g\left(\mathbf{X}_b, \mathbf{X}_g\right)$$

If the cost of divorce declines sufficiently, then the groom's extra-marital relationship is no longer a viable outcome. In particular, consider the case where

$$\mathbf{E}U_b\left(\mathbf{X}_b, \mathbf{X}_{g_r(b)}\right) - C > 0$$

$$\implies C < \mathbf{E}U_b\left(\mathbf{X}_b, \mathbf{X}_{g_r(b)}\right)$$

Then, for a sufficiently low realisation of ϵ, the bride will always file for divorce in the second period, thus preventing the groom from pursuing an extra-marital relationship within the marriage. A decline in the divorce cost C thus yields a higher utility for the bride. But it produces a lower utility for the groom because in those states of the world where he was previously pursuing an extra-marital relationship within the marriage, he now pays the additional cost of divorce. (Note, however, that from this point onwards, further declines in C is beneficial to both the bride and the groom). Then, following the reasoning in the previous subsection, it is possible that a decline in divorce costs C make arranged marriages in the first period *more* likely for brides but *less* likely for grooms.

5 Impact of a change in divorce law

In this section, we aim to test a key prediction of the above theory by exploiting a legal change that appears to be exogenous. In this instance, we use a recent change in the Belgian law that amounts to a decrease in the cost of divorce. According to the theory, its impact should vary between men and women. In particular, we expect women, but not men, to be more likely to engage in arranged marriages after the reform. We first succinctly describe the content of this law and then shift to the empirical test proper.

5.1 The 2007 reform of divorce law in Belgium

ANTICIPATION?

Under the pre-2007 legal situation, divorce was possible on either fault grounds or consensus of the spouses. In the absence of a consensus or an evident fault (adultery, violence, cruelty and severe insult), a divorce could be obtained only after a prolonged period of two years of de facto separation, and the initiating party was considered faulty of desertion and therefore liable to an alimony payment in favor of the "abandoned" spouse.[8] The new law, which is extensively described in Bracke, Schoors and Verschelden (2011), introduced the possibility of a "no-fault" divorce, initiated unilaterally. Not only is the procedure to obtain divorce considerably shortened but under a no-fault divorce, the idea of a punishment imposed on the leaving party in the form of an alimony has disappeared. Regarding the second aspect, alimony is due only to a spouse who is deemed "needy". As for the first aspect, unilateral divorce can be immediately obtained if the spouses have lived apart from each other for

[8]Note that the category of "severe insult" was quite encompassing, including behaviors such as refusal of sexuality, expressing homosexuality, neglecting the household or contributions to the marriage, alcohol or drug abuse, love declarations to a third party, religious fanaticism and desertion or abandonment with malicious content.

one year, or if the plaintiff appears to court a second time to ask for divorce. The new law has also accelerated the procedure for consensual divorces. Clearly the new law has considerably reduced the cost of divorce. In particular it has opened a new possibility for many women who are dissatisfied with their marital life and were previously denied the possibility of exiting an unhappy union by their husband.

5.2 Empirical models and specifications

In order to test the impact of the change of the divorce law on marriage behavior of second- and third-generation migrants, we must address the issue of censoring: while we observe marriage outcomes at the time of the survey (2015), some individuals, young adults in particular, may not yet be married. We use two different approaches. First, for each individual marriage outcomes are defined by reference to their first marriage (whether she was ever married, and whether she married an imported spouse or not) at various ages (21, 22, 23, 24 and 25 years), and we estimate with standard OLS whether those likely affected by the reform made different marital choices.[9] It is because the reform may change the pool of individuals who contract a marriage that our focus is on those who were "at risk of marriage" at the time of the reform, or after it was enacted, rather than on those who actually married before and after the reform. By "at risk of marriage", we mean those individuals who turned 21 during the year of the reform (2007) or after. This benchmark of 21 years of age corresponds to the relevant (average) age at marriage minus one year to take account of the negotiations preceding marriage. On average, age at marriage is 22.5 years for men and 21.9 years for women belonging to the cohorts born between 1980 and 1990, who typically married before the reform.[10] It is noteworthy that the variation of age at marriage is low, thus giving credibility to our use of the mean to construct the benchmark. ADD interquartile. Specifically, we estimate the following model for each relevant age a (21, 22, 23, 24 and 25 years):

$$Y_i^a = \alpha + \beta\, reform_i + \gamma\, reform_i * woman_i + \delta\, birthdate_i + \eta\, birthdate_i * woman_i + \theta\, woman_i + \varepsilon_i$$

where Y_i^a is successively defined as being single at age a, or being married to an imported spouse at age a. The variable $reform_i$ takes value 1 if the individual i was at risk of marriage at the time

[9] We do not consider marriage outcomes at later ages because the sample size would be too small: since the reform took place only 7 years before the survey, only few individuals older than 25 at the time of the survey have been affected by the new law.

[10] The results are unaffected if we use 20 years of age for women and 21 years for men.

of, or after the reform. The presence of the interaction term $reform_i * woman_i$ aims at testing the gender-specific effect of a decrease in the cost of divorce as predicted by the theory. To control for gender-specific time trends in marriage outcomes, we include the year of birth ($birthdate_i$) and its interaction with gender. Error terms are clustered at the respondent's level because marital outcomes concerning the siblings (or children) have been reported by the respondents in our sample.

The second approach relies on a duration model which estimates the probability of engaging in an arranged marriage, taking the censoring problem into account (the possibility of non-marriage). Moreover we estimate a model with competing risks, which provides an alternative to Cox regression in the presence of an alternative event that prevents the event of interest from occurring. In this instance, the competing event is a non-arranged marriage.[11] Specifically, we use the approach of Fine and Gray (1999) that enables to estimate the effect of covariates on the cumulative incidence function (C_t^{AM}) defined as the proportion of individuals who made an arranged marriage (AM) at time t accounting for the fact that individuals may also make non-arranged marriages:

$C_t^{AM} = \int_0^t h_k(u|X)S(u)du$

where h_k is the hazard rate for arranged marriage (the "cause specific hazard"), X is a vector of covariates (we use the same as above) and S is the overall survival function. Fine and Gray's approach uses a subdistribution function that specifies the relationship between the hazard and the survival function in the presence of a competing event. It allows to recover the effects of the covariate on the overall incidence function. The model is semiparametric in that the baseline subhazard is left unspecified while the effects of the covariates are assumed to be proportional (as in a standard Cox estimation).[12]

5.3 Empirical Results

NEED TO: 1) ADD REGRESSION USING "DATE OF MARRIAGE" INSTEAD THAN "TURNED 21". 2) add a table of stat des

Using our first approach, we start by estimating the probability of being single at different ages distinguishing between individuals exposed and not exposed to the reform, and between men and women. From the results displayed in Table 4, it is evident that the reform has had no significant effect on that probability, whichever the age considered. The only factor that critically influences

[11] Treating a non-arranged marriage as censoring would not be satisfactory because this would be assuming that arranged and non-arranged marriage decisions are independent.

[12] We implement the estimation using the software Stata and the command "stcrreg".

singlehood is the time trend: whether a man or a woman, individuals' propensity to remain single at given ages increases over time.

We can now discuss the impact of the reform on the propensity to make an arranged marriage, defined here as "importing a spouse". This choice is justified by the fact that the concept of arranged marriage is rather fuzzy (see Section 2.3). The definition in terms of "spouse import" has the advantage of providing an objective and unambiguous measure. Moreover this information was recorded in a consistent way for the marriage of the respondents, their parents, children and siblings. While Table 5 reports the results when the sample is restricted to respondents married at the age considered, Table 6 reports the results for the full sample (including unmarried individuals). The coefficients on "21 after reform" indicate that men tend to avoid an arranged marriage after the reform, albeit not always significantly. By contrast the coefficients on the interaction term are positive and significant, revealing that, as predicted, the impact of the new divorce law differs between men and women and that the latter respond to the change by engaging more often in arranged marriages relative to men. Moreover, since the sum of the two coefficients is statistically different from zero, we can conclude that the incidence of arranged marriage for women has actually increased. Bear in mind that we are not in the presence of a closed marriage market, so that the divergence observed between men and women is not incongruous.

In Table 5, but not in Table 6, we observe a decrease in the size of the coefficient for the later ages considered. This is presumably because individuals who accept an arranged marriage tend to marry earlier. Those who wait longer and tend to shun arranged marriages are obviously less likely to be affected by the law. When all individuals are included in the regressions, this composition effect is diluted by the inclusion of those not yet married at the age considered. The importance of controlling for the time trend comes out clearly from both tables: over time, there is a perceptible decrease in the incidence of arranged marriages, for women in particular.

Turning now to the second approach, Table 9 displays the estimated coefficients of the hazard of making an arranged marriage (for those married). It confirms the results obtained above: after the reform, women are more often engaged in arranged marriages when compared to men. In Figure 2, the cumulative incidence curve depicts the effect of the reform on the proportion of individuals who made an arranged marriage at various ages, accounting for the possibility of non-arranged marriages, separately for men and women and for individuals turned 21 before (unexposed) and after the reform (exposed). Since all individuals (including non-married) are taken into consideration, this graph is

equivalent to Table 6 under the first approach. It is striking that although the difference between men and women for individuals unexposed to the new divorce law is hardly perceptible, the difference for exposed individuals is very large (almost 20 percentage points at 30).

Notice incidentally that when we define arranged marriage more broadly by including individuals who did not import a spouse from Turkey, yet chose a spouse suggested by their parents, the results continue to hold (see column (2) of Table 9 and Table 7).

To check that our results are not driven by a change, occurred before the reform, in the relative trends of arranged marriages for men and women, we reproduce our main estimation (approach 1) of the propensity to have made an arranged marriage at different ages (for married individuals) after replacing the variable "turned 21 after 2007" by "turned 21 after year x" where x takes values from 2003 to 2010. Results are displayed in Table **??**. Two conclusions emerge. First, there does not appear to be any gender-based differential change in the trends to make an arranged marriage before the year 2007. Second, the impact of the reform is cumulatively strengthened as time elapses beyond 2007. An intuitive explanation for the latter result is that information about the legal change has spread gradually over the years, or its credibility has been gradually established, among the population concerned.

6 Conclusion

What have we learned about the evolution of Turkish culture in the immigrant community of Brussels, particularly with respect to marriage rules and practices? First, there is a time trend pointing to a gradual decline of arranged marriages, and it is accompanied by rising rates of divorces, most of which are initiated by women. These trends reflect the exposition of residents of Turkish origin to the mores of the host population and to its institutional environment, which includes a generous welfare system providing for the needs of single women. The central contribution of this paper is to have shown that divorce and arranged marriage are not independent : when divorce becomes easier, the incentive to accept an arranged marriage is paradoxically increased for women but not for men. This gender-differentiated effect has been shown to be at work after a new law was passed in 2007 that reduced the cost of divorce. The attraction of arranged marriages is therefore subject to two contradictory forces depending upon whether the standpoint of men or women is considered. It must nevertheless be stressed that legal changes are one-shot shocks that can only retard the declining trend of arranged marriages as determined by the "modernizing" influences emanating from the host society.

Second, there are several reasons why women's welfare is probably increasing in our study area:

(i) women have a say in marriage decisions even when it is arranged (an arranged marriage is not authoritatively imposed by the parents against their child's will); (ii) a woman-initiated divorce is not (no more) severely punished by the parents and the community, and (iii) easier divorces tend to erode the impact of the deeply gender-asymmetric practice of extra-marital relationships. Only the last effect is directly attributable to institutional changes that reduce the cost of divorce, whether they concern the social welfare system or the divorce procedures. This is enough to conclude that any change that has the effect of opening up or easing exit opportunities for women belonging to deep-rooted patriarchal societies work toward their gradual emancipation. The pivotal point here is that this effect is obtained without confronting patriarchal values head-on. In other words, an approach that avoids a direct opposition between the host and the immigrant cultural norms (say, through legal prohibitions), and instead uses incentives to influence behavior, is the best method to make traditional culture evolve and to reduce gender-based inequalities in particular.

To the extent that a decline in divorce cost leads to an increase in arranged first marriages accepted by women, the effect is clearly of a second-best order: women may have to endure a lot of suffering before being able to run a better life in the course of a second marriage. But the first-best solution is not available, at least immediately, and women tend to consider that an arranged marriage with a prospect of divorce is less costly for them than the alternative option of a non-arranged marriage that would antagonize their parents. The same could be said of parents who accept divorces in order to preserve arranged marriages and the consequent possibility of transmitting their values to their grandchildren. In conclusion, because it requires a change in one the deepest layers of what constitutes a patriarchal culture, women's emancipation or empowerment can only be a stepwise process in which women themselves act strategically with a full awareness of the constraints they are subject to. Therefore, any attempt to cut short this emancipatory process is susceptible of causing backlash effects or may prove ineffective.

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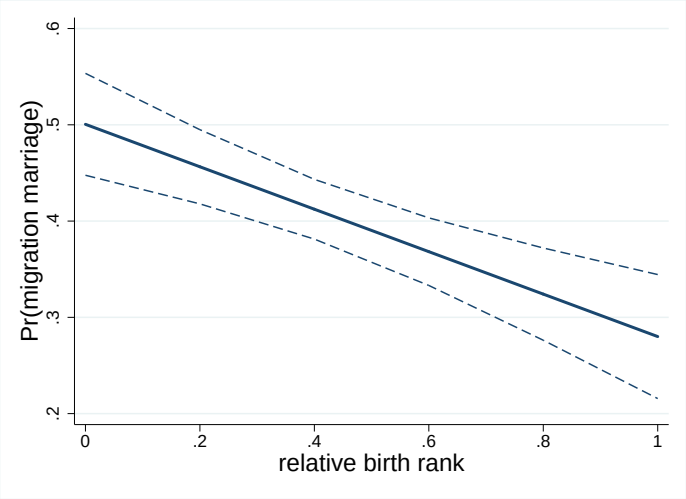
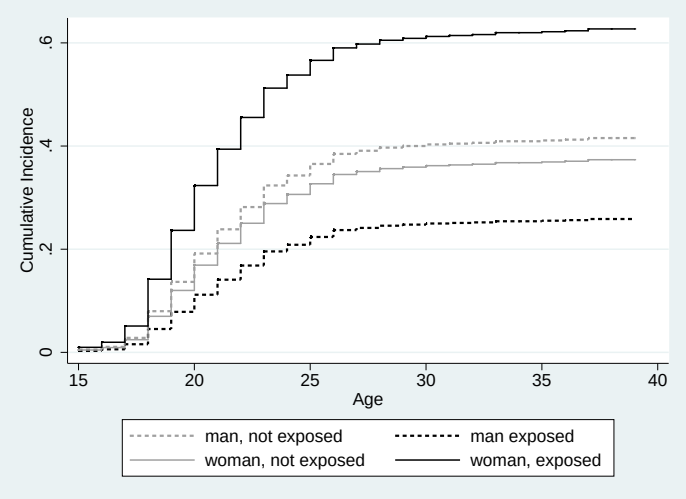
Figures

Figure 1: Relative birth rank and spouse import



Note: Plot of the effect of relative birth rank on import marriage (with 95% confidence interval). Result a fixed effect regression at the extended family level, controlling for birth year, gender and education. The sample includes respondents, their siblings and their children.

Figure 2: Importing a spouse, by gender, cohort and exposition to the new law



Note: Cumulative incidence curves of the proportion of individuals who made an arranged marriage at various ages, accounting for the possibility of non-arranged marriages, separately for men and women and for individuals turned 21 before (unexposed) and after the reform (exposed).

Tables

Table 1: Links to Turkey and religion, by generation

	G1 (N=230)		G2 (N=190)		G3 (N=69)	
	mean	sd	mean	sd	mean	sd
Speaks Turkish home	0.99	0.09	0.94	0.24	0.97	0.17
Speaks only Turkish home	0.68	0.47	0.22	0.41	0.16	0.37
Share of Turkish TV	0.71	0.23	0.6	0.26	0.55	0.33
Family members in community	0.60	0.49	0.74	0.44	0.68	0.47
Go to Turkey at least once a year	0.73	0.44	0.70	0.46	0.70	0.46
Is paying for burrial in Turkey	0.84	0.37	0.81	0.4	0.62	0.49
Strong Islam believer	0.29	0.45	0.13	0.34	0.13	0.34
Sceptic or non-believer	0.01	0.11	0.02	0.12	0.04	0.21
Practice prayer	0.6	0.49	0.39	0.49	0.32	0.47
Practice ramadan	0.73	0.44	0.66	0.47	0.75	0.43

Note: sample of respondants

Table 2: Marriage characteristics, by generation

Extended family sample (married individuals born after 1965)

	G1 (N=524)		G2 (N=806)		G3 (N=65)	
	mean	sd	mean	sd	mean	sd
Spouse import			0.47	0.50	0.32	0.47
Spouse imported or suggested	0.80	0.40	0.64	0.48	0.46	0.50

Respondent sample (married individuals)

	G1 (N=216)		G2 (N=134)		G3 (N=20)	
	mean	sd	mean	sd	mean	sd
Spouse import			0.53	0.50	0.19	0.40
Spouse imported or suggested	0.94	0.24	0.69	0.46	0.29	0.46
Kin marriage	0.38	0.49	0.23	0.42	0.25	0.44
Met 10 times before marriage	0.39	0.49	0.65	0.48	0.95	0.22

Table 3: Contact between grand-parents and grand-children by marriage type of parents

	(1) weekly contacts	(2) weekly contacts	(3) weekly contacts	(4) daily care	(5) daily care	(6) daily care
Spouse import (child)	0.215***	0.201***	0.283***	0.096	0.094	0.196**
	(0.065)	(0.061)	(0.102)	(0.063)	(0.061)	(0.085)
Spouse import × daughter			-0.163			-0.202*
			(0.128)			(0.102)
Birth year (child)	0.006	0.001	0.001	0.004	0.001	0.001
	(0.004)	(0.006)	(0.006)	(0.005)	(0.006)	(0.005)
Age of eldest grand-child		-0.009	-0.009		-0.004	-0.003
		(0.006)	(0.006)		(0.006)	(0.006)
Daughter		-0.140**	-0.082		-0.016	0.057
		(0.056)	(0.052)		(0.056)	(0.067)
G3		0.008	0.003		0.062	0.056
		(0.064)	(0.068)		(0.153)	(0.154)
Constant	-11.579	-1.032	-1.521	-7.708	-1.995	-2.600
	(8.228)	(11.576)	(11.646)	(8.955)	(10.902)	(10.748)
Observations	190	190	190	190	190	190

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The sample consists of respondents who have grand-children.

"Child" and "daughter" refer to the child of the respondent and "grand-child" to the grand-child of the respondent.

The first dependent variable indicates whether the respondent sees his/her grand-children several times per week.

The second dependent variable indicates whether the respondent takes care of his/her grand-children on a daily basis.

Table 4: Change in divorce law and the probability to be single at given ages

	(1) single at 21	(2) single at 22	(3) single at 23	(4) single at 24	(5) single at 25	(6) single at 26
21 after reform	-0.05	-0.03	0.05	0.12	0.10	0.06
	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.09)
21 after reform * woman	0.12	0.11	-0.00	-0.03	-0.06	0.01
	(0.11)	(0.12)	(0.11)	(0.11)	(0.11)	(0.11)
birth year	0.02***	0.02***	0.02***	0.02***	0.02***	0.02***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
birth year * woman	-0.00	-0.01	-0.00	-0.00	-0.01	-0.01*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
woman	2.59	15.17	8.75	8.99	13.10	23.69*
	(14.71)	(15.73)	(14.61)	(14.86)	(13.90)	(14.06)
_cons	-38.23***	-45.14***	-41.27***	-35.22***	-36.82***	-34.91***
	(11.08)	(12.07)	(11.85)	(12.47)	(12.34)	(12.23)
N	1076	1004	941	886	826	769

Standard errors in parentheses (clustered at the respondant level).

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 5: Change in divorce law and spouse import at given ages (for married individuals)

	(1) import 21	(2) import 22	(3) import 23	(4) import 24	(5) import 25	(6) import 26
21 after reform	-0.38**	-0.26*	-0.22*	-0.20	-0.14	-0.10
	(0.16)	(0.14)	(0.13)	(0.13)	(0.11)	(0.11)
21 after reform * woman	0.69***	0.57***	0.48***	0.44***	0.37**	0.32**
	(0.20)	(0.18)	(0.16)	(0.15)	(0.14)	(0.14)
birth year	0.00	-0.00	-0.01	-0.01	-0.01	-0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
birth year * woman	-0.04***	-0.04***	-0.03***	-0.03***	-0.03***	-0.03***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
woman	76.61***	76.87***	59.84***	62.47***	66.86***	67.20***
	(24.45)	(22.11)	(21.50)	(21.18)	(20.19)	(20.14)
_cons	0.00	4.52	17.64	18.35	16.07	9.44
	(19.95)	(18.31)	(17.59)	(17.26)	(15.65)	(15.55)
N	369	437	500	534	575	582

Standard errors in parentheses (clustered at the respondant level).

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The dependent variable takes value 1 if the individual was married to an imported spouse at age a=22,...,26.

Samples include individuals born after 1970, who turned 'a' years old before the survey (2015) and are married.

Table 6: Change in divorce law and spouse import at given ages (all individuals, including non-married)

	(1) import 21	(2) import 22	(3) import 23	(4) import 24	(5) import 25	(6) import 26
21 after reform	-0.05	-0.05	-0.07	-0.10	-0.09	-0.07
	(0.06)	(0.06)	(0.07)	(0.07)	(0.07)	(0.08)
21 after reform * woman	0.21**	0.24***	0.26***	0.28***	0.28***	0.25**
	(0.08)	(0.09)	(0.10)	(0.10)	(0.10)	(0.11)
birth year	-0.01**	-0.01**	-0.01**	-0.01**	-0.01**	-0.01*
	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)
birth year * woman	-0.02***	-0.02***	-0.02***	-0.02***	-0.03***	-0.02***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
woman	38.99***	43.50***	42.39***	46.79***	51.63***	48.96***
	(12.26)	(13.55)	(14.79)	(15.60)	(16.28)	(17.18)
_cons	18.53**	22.12**	27.54**	26.70**	26.69**	22.58*
	(8.72)	(9.73)	(10.69)	(11.47)	(11.95)	(12.37)
N	1076	1004	941	886	826	769

Standard errors in parentheses (clustered at the respondant level).

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The dependent variable takes value 1 if the individual was married to an imported spouse at age a=22,...,26.

Samples include individuals born after 1970, who turned 'a' years old before the survey (2015).

Table 7: Change in divorce law and having either imported a spouse or married a G2 suggested by the parents at a given age, for all (included non-married individuals)

	(1) import or arranged 21	(2) import or arranged 22	(3) import or arranged 23	(4) import or arranged 24	(5) import or arranged 25	(6) import or arranged 26
21 after reform	-0.02	-0.03	-0.07	-0.10	-0.10	-0.06
	(0.07)	(0.07)	(0.07)	(0.08)	(0.08)	(0.08)
21 after reform * woman	0.12	0.17*	0.21**	0.22**	0.23**	0.16
	(0.09)	(0.10)	(0.11)	(0.11)	(0.11)	(0.12)
birth year	-0.02***	-0.02***	-0.02***	-0.02***	-0.02***	-0.02***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
birth year * woman	-0.01**	-0.01*	-0.01*	-0.01*	-0.02*	-0.01*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
woman	27.62**	28.65*	29.02*	27.79*	31.72*	29.11*
	(12.64)	(14.59)	(14.84)	(15.79)	(16.35)	(17.09)
_cons	31.29***	37.01***	41.14***	40.55***	40.33***	36.28***
	(10.01)	(11.34)	(11.50)	(12.19)	(12.76)	(13.09)
N	1076	1004	941	886	826	769

Standard errors in parentheses (clustered at the respondant level).

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The dependent variable takes value 1 if the individual was married to an imported spouse or to a spouse suggested by his/her parents at age a=22,...,26.

Samples include individuals born after 1970, who turned 'a' years old before the survey (2015).

Table 8: Placebo regressions: differences by cohort in spouse import at given ages (married individuals)

	(4) X = 2003	(5) X = 2004	(6) X = 2005	(7) X = 2006	(8) X = 2007	(9) X = 2008	(10) X = 2009	(11) X = 2010
Having imported a spouse at 22 (for those married at 22) - 437 observations								
21 after X	0.0146	0.0555	0.0780	-0.0739	-0.261*	-0.183	-0.263*	-0.279*
	(0.146)	(0.148)	(0.148)	(0.146)	(0.143)	(0.142)	(0.143)	(0.147)
21 after X * woman	0.0959	0.109	0.0682	0.256	0.572***	0.398**	0.396**	0.490***
	(0.185)	(0.187)	(0.187)	(0.184)	(0.180)	(0.178)	(0.178)	(0.181)
Having imported a spouse at 23 (for those married at 23) - 500 observations								
21 after X	-0.0119	0.0410	0.0848	-0.0766	-0.223*	-0.148	-0.242*	-0.282**
	(0.133)	(0.134)	(0.135)	(0.133)	(0.132)	(0.132)	(0.134)	(0.138)
21 after X * woman	0.182	0.166	0.0413	0.230	0.484***	0.349**	0.364**	0.477***
	(0.170)	(0.172)	(0.172)	(0.170)	(0.167)	(0.165)	(0.166)	(0.170)
Having imported a spouse at 24 (for those married at 24) - 534 observations								
turned 21 after X	0.0386	0.0677	0.132	-0.0642	-0.204	-0.139	-0.233*	-0.275**
	(0.124)	(0.127)	(0.127)	(0.127)	(0.126)	(0.128)	(0.130)	(0.134)
turned 21 after X * woman	0.106	0.0942	-0.0100	0.216	0.440***	0.325**	0.334**	0.441***
	(0.160)	(0.162)	(0.162)	(0.161)	(0.159)	(0.159)	(0.161)	(0.167)
Having imported a spouse at 25 (for those married at 25) - 575 observations								
turned 21 after X	0.0418	0.0768	0.0882	-0.0427	-0.144	-0.113	-0.178	-0.244*
	(0.116)	(0.117)	(0.117)	(0.117)	(0.117)	(0.119)	(0.123)	(0.134)
turned 21 after X * woman	0.172	0.119	0.0463	0.198	0.368**	0.273*	0.268*	0.305*
	(0.152)	(0.153)	(0.152)	(0.151)	(0.150)	(0.150)	(0.155)	(0.171)

Standard errors clustered at the respondent's level in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Each cell reports the coefficient of a separate regression.

The dependent variable takes value 1 if the individual was married to an imported spouse at age a, where a takes value 22 to 25 from the first to the last panel.

The relevant samples consist of all individuals born after 1970, who turned 'a' years old before the survey (2015) and are married.

Table 9: Change in divorce law and spouse import: competing risk duration model

	(1) imported spouse	(2) imported or arranged
21 after reform	-0.585	-0.373
	(0.374)	(0.305)
21 after reform * woman	1.331***	0.852**
	(0.473)	(0.378)
woman	168.6***	94.14**
	(55.18)	(45.81)
birth year	-0.0319	-0.0435**
	(0.0205)	(0.0186)
birth year * woman	-0.0852***	-0.0475**
	(0.0279)	(0.0232)
N	710	710

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Theoretical appendix

The Case of Transferable Utility

Lemma 6 *Under Assumptions 1 and 2, given two prospective grooms g and g' for a bride b, if $v(\mathbf{X}_g) = v(\mathbf{X}_b) \neq v(\mathbf{X}_{g'})$, and $M(\mathbf{X}_b, \mathbf{X}_g) = M(\mathbf{X}_b, \mathbf{X}_{g'})$, then $U_b(\mathbf{X}_b, \mathbf{X}_g) > U_b(\mathbf{X}_b, \mathbf{X}_{g'})$.*

Proof. Let $v(\mathbf{X}_g) = v(\mathbf{X}_b) = i$, $v(\mathbf{X}_{g'}) = k$ and $j \neq i$. Then

$$\begin{aligned} & P^{ii}V^{ii} + P^{ij}V^{ij} \\ = \; & P^{ii}V^{ii} + \left(1 - P^{ii}\right)V^{ij} \\ > \; & \tilde{P}^{i}V^{ii} + \left(1 - \tilde{P}^{i}\right)V^{ij} \text{ by Assumption 2} \\ = \; & \tilde{P}^{i}V^{ii} + \tilde{P}^{j}V^{ki} \text{ since } \tilde{P}^{i} + \tilde{P}^{j} = 1 \text{ and } V^{ki} = V^{ij} \text{ by Assumption 1} \end{aligned}$$

Then, since $M(\mathbf{X}_b, \mathbf{X}_g) = M(\mathbf{X}_b, \mathbf{X}_{g'})$, we must have $U_b(\mathbf{X}_b, \mathbf{X}_g) > U_b(\mathbf{X}_b, \mathbf{X}_{g'})$. ■

Proof. of Lemma 1: We provide a proof by contradiction. Suppose $\tilde{g}(b) \neq \hat{g}(b)$. Then $\exists g \in G(b)$ such that

$$\left[W_b(\mathbf{X}_b, \mathbf{X}_g) + N_b - W_b\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)\right]\left[W_{fb}(\mathbf{X}_b, \mathbf{X}_g) - W_{fb}\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)\right]$$

$$> \quad \left[W_b\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right) + N_b - W_b\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)\right]\left[W_{fb}\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right) - W_{fb}\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)\right]$$

By construction, $\left[W_b\left(\mathbf{X}_b, \mathbf{X}_g\right) + N_b - W_b\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)\right] \leq \left[W_b\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right) + N_b - W_b\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)\right]$. Therefore, we must have $W_{fb}\left(\mathbf{X}_b, \mathbf{X}_g\right) > W_{fb}\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)$. Therefore, $U_{fb}\left(\mathbf{X}_b, \mathbf{X}_g\right) > U_{fb}\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)$. Because $v\left(\mathbf{X}_{\hat{g}(b)}\right) = v_f\left(\mathbf{X}_b\right)$, it follows that $\lambda_f M\left(\mathbf{X}_b, \mathbf{X}_g\right) > \lambda_f M\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)$. Therefore, $U_{fb}\left(\mathbf{X}_b, \mathbf{X}_g\right) > U_{fb}\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)$. If $v\left(\mathbf{X}_b\right) = V_f\left(\mathbf{X}_b\right)$, then $U_{fb}\left(\mathbf{X}_b, \mathbf{X}_g\right) > U_{fb}\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right) \Longrightarrow U_b\left(\mathbf{X}_b, \mathbf{X}_g\right) > U_b\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)$ which leads to a contradiction. If $v\left(\mathbf{X}_b\right) \neq v_f\left(\mathbf{X}_b\right)$, then $v\left(\mathbf{X}_b\right) \neq v\left(\mathbf{X}_{\hat{g}(b)}\right)$. Therefore, as $M\left(\mathbf{X}_b, \mathbf{X}_g\right) > M\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)$, it must be that $U_b\left(\mathbf{X}_b, \mathbf{X}_g\right) > U_b\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)$ which leads to the same contradiction. ■

Proof. of Lemma 2: We provide a proof by contradiction. Suppose $\tilde{g}\left(b\right) \neq \hat{g}\left(b\right)$. Then

$$\begin{aligned} & \left[W_b\left(\mathbf{X}_b, \mathbf{X}_{\tilde{g}(b)}\right) + N_b - W_b\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)\right]\left[W_{fb}\left(\mathbf{X}_b, \mathbf{X}_{\tilde{g}(b)}\right) - W_{fb}\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)\right] \\ > \quad & \left[W_b\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right) + N_b - W_b\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)\right]\left[W_{fb}\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right) - W_{fb}\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)\right] \end{aligned}$$

By construction, $W_b\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right) \geq W_b\left(\mathbf{X}_b, \mathbf{X}_{\tilde{g}(b)}\right)$. Therefore, we must have $W_{fb}\left(\mathbf{X}_b, \mathbf{X}_{\tilde{g}(b)}\right) > W_{fb}\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)$. Since $v\left(\mathbf{X}_{\tilde{g}(b)}\right) = v\left(\mathbf{X}_{\hat{g}(b)}\right)$ by assumption, we must have $M\left(\mathbf{X}_b, \mathbf{X}_{\tilde{g}(b)}\right) > M\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)$. Then, it follows that $W_b\left(\mathbf{X}_b, \mathbf{X}_{\tilde{g}(b)}\right) > W_b\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)$, which is contrary to the definition of $\hat{g}\left(b\right)$. Therefore, we must have $\tilde{g}\left(b\right) = \hat{g}\left(b\right)$. ■

Corollary 3 *of Lemma 1: If $\tilde{g}\left(b\right) \neq \hat{g}\left(b\right)$, then $v_f\left(\mathbf{X}_b\right) \neq v\left(\mathbf{X}_{\hat{g}(b)}\right)$.*

Proof. If $v_f\left(\mathbf{X}_b\right) = v\left(\mathbf{X}_{\hat{g}(b)}\right)$, then Lemma 1 applies and $\tilde{g}\left(b\right) = \hat{g}\left(b\right)$. Therefore, if $\tilde{g}\left(b\right) \neq \hat{g}\left(b\right)$, it must be that $v_f\left(\mathbf{X}_b\right) \neq v\left(\mathbf{X}_{\hat{g}(b)}\right)$. ■

Corollary 4 *of Lemma 2: If $\tilde{g}\left(b\right) \neq \hat{g}\left(b\right)$, then $v\left(\mathbf{X}_{\tilde{g}(b)}\right) \neq v\left(\mathbf{X}_{\hat{g}(b)}\right)$.*

Proof. If $v\left(\mathbf{X}_{\tilde{g}(b)}\right) = v\left(\mathbf{X}_{\hat{g}(b)}\right)$, then Lemma 2 applies and $\tilde{g}\left(b\right) = \hat{g}\left(b\right)$. Therefore, if $\tilde{g}\left(b\right) \neq \hat{g}\left(b\right)$, it must be that $v\left(\mathbf{X}_{\tilde{g}(b)}\right) \neq v\left(\mathbf{X}_{\hat{g}(b)}\right)$. ■

Proof. of Lemma 4: If $\tilde{g}\left(b\right) \neq \hat{g}\left(b\right)$, then

$$\begin{aligned} & \left[W_b\left(\mathbf{X}_b, \mathbf{X}_{\tilde{g}(b)}\right) + N_b - W_b\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)\right]\left[W_{fb}\left(\mathbf{X}_b, \mathbf{X}_{\tilde{g}(b)}\right) - W_{fb}\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)\right] \\ > \quad & \left[W_b\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right) + N_b - W_b\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)\right]\left[W_{fb}\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right) - W_{fb}\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)\right] \end{aligned}$$

By construction, $W_b\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right) \geq W_b\left(\mathbf{X}_b, \mathbf{X}_{\tilde{g}(b)}\right)$. Therefore, we must have $W_{fb}\left(\mathbf{X}_b, \mathbf{X}_{\tilde{g}(b)}\right) > W_{fb}\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)$. Therefore,

$$U_{fb}\left(\mathbf{X}_b, \mathbf{X}_{\tilde{g}(b)}\right) > U_{fb}\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)$$

Suppose $M\left(\mathbf{X}_b, \mathbf{X}_{\tilde{g}(b)}\right) \geq M\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)$. Then,

$$U_b\left(\mathbf{X}_b, \mathbf{X}_{\tilde{g}(b)}\right) > U_b\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)$$

By assumption, $v_f\left(\mathbf{X}_b\right) = v\left(\mathbf{X}_b\right)$. Therefore, it follows that

$$U_{fb}\left(\mathbf{X}_b, \mathbf{X}_{\tilde{g}(b)}\right) > U_{fb}\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)$$

which is contrary to the definition of $\hat{g}\left(b\right)$. Therefore, we must have $M\left(\mathbf{X}_b, \mathbf{X}_{\tilde{g}(b)}\right) < M\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)$.

■

Proof. of Lemma 3: We provide a proof by contradiction. Suppose $v\left(\mathbf{X}_{\tilde{g}(b)}\right) \neq v_f\left(\mathbf{X}_b\right)$. It follows from the corollary to Lemma 2 that if $\tilde{g}\left(b\right) \neq \hat{g}\left(b\right)$, then $v\left(\mathbf{X}_{\tilde{g}(b)}\right) \neq v\left(\mathbf{X}_{\hat{g}(b)}\right)$. So it must be that $v\left(\mathbf{X}_{\hat{g}(b)}\right) = v_f\left(\mathbf{X}_b\right)$. By construction, we must have

$$U_{fb}\left(\mathbf{X}_b, \mathbf{X}_{\tilde{g}(b)}\right) > U_{fb}\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right) \tag{5}$$

(If not, $\tilde{g}\left(b\right)$ cannot be the Nash bargaining solution in (7)).

$$\Longrightarrow M\left(\mathbf{X}_b, \mathbf{X}_{\tilde{g}(b)}\right) > M\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right) \tag{6}$$

If $v\left(\mathbf{X}_b\right) = v\left(\mathbf{X}_{\tilde{g}(b)}\right)$, then it follows from (6) that

$$U_b\left(\mathbf{X}_b, \mathbf{X}_{\tilde{g}(b)}\right) > U_b\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)$$

which is a contradiction. If $v\left(\mathbf{X}_b\right) = v\left(\mathbf{X}_{\hat{g}(b)}\right) = v_f\left(\mathbf{X}_b\right)$, then it follows from (5) and (6) that

$$U_{fb}\left(\mathbf{X}_b, \mathbf{X}_{\tilde{g}(b)}\right) > U_{fb}\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)$$

which is again a contradiction. Therefore, we must have $v\left(\mathbf{X}_{\tilde{g}(b)}\right) = v_f\left(\mathbf{X}_b\right)$. ■

Proof. of Lemma 5: (i) Suppose $v\left(\mathbf{X}_{\tilde{g}(b)}\right) = v\left(\mathbf{X}_b\right)$. By construction,

$$U_{fb}\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right) = \max_{g \in G(b)} U_{fb}\left(\mathbf{X}_b, \mathbf{X}_g\right) \tag{7}$$

$$\Longrightarrow M\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right) = \max_{g \in \{G(b): v(\mathbf{X}_g) = v(\mathbf{X}_b)\}} M\left(\mathbf{X}_b, \mathbf{X}_g\right)$$

Then, for each $g \in \{G(b) : v(\mathbf{X}_g) = v(\mathbf{X}_b)\}$, we have

$$U_{fb}\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right) \geq U_{fb}\left(\mathbf{X}_b, \mathbf{X}_g\right) \tag{8}$$

It follows from (7) and (8) that

$$\hat{g}(b) = \arg \max_{g \in \{G(b): v(\mathbf{X}_g) = v(\mathbf{X}_b)\}} \left[W_b\left(\mathbf{X}_b, \mathbf{X}_g\right) + N_b - W_b\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)\right]\left[W_{fb}\left(\mathbf{X}_b, \mathbf{X}_g\right) - W_{fb}\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)\right] \tag{9}$$

By assumption, $v\left(\mathbf{X}_{\tilde{g}(b)}\right) = v\left(\mathbf{X}_b\right)$. Therefore, we can write

$$\begin{aligned} \tilde{g}(b) &= \arg \max_{g \in G(b)} \left[W_b\left(\mathbf{X}_b, \mathbf{X}_g\right) + N_b - W_b\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)\right]\left[W_{fb}\left(\mathbf{X}_b, \mathbf{X}_g\right) - W_{fb}\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)\right] \\ &= \arg \max_{g \in \{G(b): v(\mathbf{X}_g) = v(\mathbf{X}_b)\}} \left[W_b\left(\mathbf{X}_b, \mathbf{X}_g\right) + N_b - W_b\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)\right]\left[W_{fb}\left(\mathbf{X}_b, \mathbf{X}_g\right) - W_{fb}\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)\right] \end{aligned} \tag{10}$$

Comparing (9) and (10), we obtain $\hat{g}(b) = \tilde{g}(b)$.

(ii) Let

$$g_m = \arg \max_{g \in \{G(b): v(\mathbf{X}_g) = v_f(\mathbf{X}_b)\}} M\left(\mathbf{X}_b, \mathbf{X}_g\right)$$

It follows from the definition of $U_{fb}(.)$ that

$$\begin{aligned} g_m &= \arg \max_{g \in \{G(b): v(\mathbf{X}_g) = v_f(\mathbf{X}_b)\}} U_{fb}\left(\mathbf{X}_b, \mathbf{X}_g\right) \\ &= \arg \max_{g \in \{G(b): v(\mathbf{X}_g) = v_f(\mathbf{X}_b)\}} U_b\left(\mathbf{X}_b, \mathbf{X}_g\right) \\ &= \arg \max_{g \in \{G(b): v(\mathbf{X}_g) = v(\mathbf{X}_b)\}} \left[W_b\left(\mathbf{X}_b, \mathbf{X}_g\right) + N_b - W_b\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)\right]\left[W_{fb}\left(\mathbf{X}_b, \mathbf{X}_g\right) - W_{fb}\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)\right] \end{aligned} \tag{11}$$

By assumption, $v\left(\mathbf{X}_{\tilde{g}(b)}\right) = v_f\left(\mathbf{X}_b\right)$. Therefore, we can write

$$\begin{aligned} \tilde{g}(b) &= \arg \max_{g \in G(b)} \left[W_b\left(\mathbf{X}_b, \mathbf{X}_g\right) + N_b - W_b\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)\right]\left[W_{fb}\left(\mathbf{X}_b, \mathbf{X}_g\right) - W_{fb}\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)\right] \\ &= \arg \max_{g \in \{G(b): v(\mathbf{X}_g) = v_f(\mathbf{X}_b)\}} \left[W_b\left(\mathbf{X}_b, \mathbf{X}_g\right) + N_b - W_b\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)\right]\left[W_{fb}\left(\mathbf{X}_b, \mathbf{X}_g\right) - W_{fb}\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)\right] \end{aligned} \tag{12}$$

Comparing (11) and (12), we obtain $\tilde{g}(b) = g_m = \arg\max_{g \in \{G(b): v(\mathbf{X}_g) = v_f(\mathbf{X}_b)\}} M\left(\mathbf{X}_b, \mathbf{X}_g\right)$. ■

Proof. of Proposition 1: By assumption, $v_f\left(\mathbf{X}_b\right) = v\left(\mathbf{X}_b\right)$; i.e. the bride and her parents have the

same type of values. Define

$$g_f(b) = \max_{g \in \{G(b): v(\mathbf{X}_g) = v_f(\mathbf{X}_b)\}} M(\mathbf{X}_b, \mathbf{X}_g)$$

Thus, $g_f(b)$ is the potential groom with the highest level of mutual compatibility with b among those who share the parents' values. Using Lemmas 1, 2 and 5, the bargaining outcome must be either $\hat{g}(b)$ or $g_f(b)$. Therefore, we need only compare the value of the objective function in (7) for these two potential grooms. In the case where $v_f(\mathbf{X}_b) = v(\mathbf{X}_b)$, the objection function can be written as

$$\begin{aligned} & \left[W_b(\mathbf{X}_b, \mathbf{X}_g) + N_b - W_b\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)\right]\left[W_{fb}(\mathbf{X}_b, \mathbf{X}_g) - W_{fb}\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right)\right] \\ = \quad & \left[M(\mathbf{X}_b, \mathbf{X}_g) + N_b - M\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right) + \Phi(.)\right]\left[\lambda_f M(\mathbf{X}_b, \mathbf{X}_g) - \lambda_f M\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right) + \Phi(.)\right] \end{aligned}$$

By construction, this expression is equal to zero at $g = \hat{g}(b)$. The expression is greater than zero at $g = g_f(b)$ if and only if the following two conditions hold:

$$\begin{aligned} \Phi(.) &> M\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right) - M\left(\mathbf{X}_b, \mathbf{X}_{g_f(b)}\right) - N_b \\ \Phi(.) &> \lambda_f\left[M\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right) - M\left(\mathbf{X}_b, \mathbf{X}_{g_f(b)}\right)\right] \end{aligned}$$

Therefore, an arranged marriage occurs (with $g_f(b)$) if and only if these two conditions hold. Otherwise, b marries $\hat{g}(b)$. ■

Proof. of Proposition 2: By assumption, $v_f(\mathbf{X}_b) \neq v(\mathbf{X}_b)$; i.e. the bride and her parents have different types of values. Define

$$g_f(b) = \max_{g \in \{G(b): v(\mathbf{X}_g) = v_f(\mathbf{X}_b)\}} M(\mathbf{X}_b, \mathbf{X}_g)$$

Thus, $g_f(b)$ is the potential groom with the highest level of mutual compatibility with b among those who share the parents' values. Using Lemmas 1, 2 and 5, the bargaining outcome must be either $\hat{g}(b)$ or $g_f(b)$. Therefore, we need only compare the value of the objective function in (7) for these two potential grooms. In the case where $v_f(\mathbf{X}_b) \neq v(\mathbf{X}_b)$, the objective function can be written as

$$\left[M(\mathbf{X}_b, \mathbf{X}_g) + N_b - M\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right) - \Phi(.)\right]\left[\lambda_f M(\mathbf{X}_b, \mathbf{X}_g) - \lambda_f M\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right) + \tilde{\Phi}(.)\right]$$

By construction, this expression is equal to zero at $g = \hat{g}(b)$. The expression is greater than zero at

$g = g_f(b)$ if and only if the following two conditions hold:

$$\begin{aligned} \Phi(.) &< M\left(\mathbf{X}_b, \mathbf{X}_{g_f(b)}\right) - M\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right) + N_b \\ \tilde{\Phi}(.) &> \lambda_f\left[M\left(\mathbf{X}_b, \mathbf{X}_{\hat{g}(b)}\right) - M\left(\mathbf{X}_b, \mathbf{X}_{g_f(b)}\right)\right] \end{aligned}$$

Therefore, an arranged marriage occurs (with $g_f(b)$) if and only if these two conditions hold. Otherwise, b marries $\hat{g}(b)$. ■