Muslim family law, prenuptial agreements and the emergence of dowry in Bangladesh*

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Abstract

Existing theoretical and empirical research on dowries has difficulty accounting for the large changes in dowry levels observed in many countries over the past few decades. To explain trends in dowry levels in Bangladesh, we draw attention to an institutional feature of marriage contracts previously ignored in the literature: the *mehr* or traditional Islamic brideprice, which functions as a prenuptial agreement in Bangladesh due to the default practice of being only payable upon divorce. We develop a model of marriage contracts in which mehr serves as a barrier to husbands exiting marriage and a component of dowry is an amount that ex ante compensates the groom for the cost of mehr. The contracts are welfare-improving because they induce husbands to internalize the social costs of divorce for women. We investigate how mehr and dowry respond to exogenous changes in the costs of polygamy and divorce, and show that our model gives a different set of predictions than traditional models of dowry payments without contractible mehr. To test the model's predictions empirically, we use data collected on marriage contracts between 1956 and 2004 from a large household survey from the Northwest region of the country, and make use of key changes in Muslim Family Law in 1961 and 1974. We show that major changes in dowry levels took place precisely after the legal changes, corresponding to simultaneous changes in levels of mehr.

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1 Introduction

There is a large and growing literature in economics and other social sciences on the role of dowry (payments from a bride's family to the groom) in marriage markets. Economists typically model dowries as the outcome of female competition for grooms in settings in which it is relatively unattractive for women to stay unmarried compared to men, for instance because male individual earnings capacity exceeds that of females (Becker, 1981; Rao, 1993). In this framework, dowry acts as a price that equilibrates the marriage market by equating supply and demand for grooms.

Despite the appeal of this analytical framework, empirical and theoretical research into dowries has had difficulty accounting for the large swings in dowry levels and participation that have been observed in countries such as Bangladesh, India and Pakistan over the past few decades (Srinivas, 1984). In particular, time trends in all three settings indicate substantial dowry inflation and rising participation despite documented increases in the relative economic value of women and little change in the relative number of brides and grooms on the marriage market (Rao, 1993; Paul, 1986; Anderson, 2007).[1]

One of the most difficult puzzles to explain is the abrupt switch in the direction of marriage payments that occurred recently in Bangladesh. In this setting, the dowry system first emerged in the 1950s and has now almost fully replaced the traditional system of bride prices, making it the only Muslim country in which bride price is rarely observed and dowry is almost universally practiced. Among Muslim majority countries, marriage transfers from the bride's side are only commonly observed in Pakistan and Bangladesh (Tertilt, 2005). In both countries, dowry participation has risen dramatically since partition from India, and now characterizes the majority of marriages.

This paper attempts to reconcile economic models of dowry as prices with observed trends in dowry payments by incorporating into the analysis a thus far overlooked institutional feature, the mehr, a payment conditional on termination of the marriage, that originates from the traditional Islamic brideprice. In particular, most Muslim marriages involve the negotiation of a mehr provision as part of a marriage contract, which consists of a monetary payment from husband to wife (Carroll, 1986). The key characteristic of mehr in Bangladesh is that, unlike in other Islamic countries, it is almost universally and automatically specified to be paid only in the case of husband-initiated

[1] A number of authors have attempted to explain trends in dowry as the result of a "marriage squeeze". The basic idea is that, since men on average marry at older ages than women, the ratio of eligible girls or women of marriageable age to men of marriageable age falls over time due to population growth, leading to an increase in the demand for grooms on the marriage market (Rao, 1993a, 1993b; Amin and Cain, 1997). However, Anderson (2007) shows that in a dynamic model with subsequent generations of women and men, it is no longer true that population growth increases demand for grooms, invalidating it as an explanation for dowry increase. On the other hand, Anderson (2003) shows that marriage squeeze can arise when women but not men can inherit caste, as is the case in India. While this story might be relevant to dowry emergence in Pakistan, a Muslim country in which there is also a strong caste-like social system (biraderi), the theory has limited applicability in Bangladesh, where their is no comparable caste system. Another set of papers point to changes in the value of grooms relative to brides that resulted from changing economic roles of men and women. Kabeer (1988) argues that mechanization in rice production reduced the returns to female relative to male labor, while Oldenburg (2001) relates the emergence of dowry to increased access of men to cash wages and land under colonial rule, which increased their economic importance relative to women. A recent paper by Arunachalam and Naidu (2006) links the increase in dowry to expanding contraceptive access from the 1970s onwards, which lowered the productive value of women as child bearers.

divorce, much like a standard prenuptial agreement. There is no consensus on why this institutional feature emerged in Bangladesh and not in other Muslim countries (with the possible exception of Pakistan). One possible explanation is that it resulted from the rare combination of interpretations of Islamic law in Bangladesh: on the one hand polygamy became unattainable for all but the wealthiest since 1961, on the other hand men retained unilateral rights to initiate no-fault divorce (talaq).[2]

We investigate the possibility that an important price component of dowry in Bangladesh is compensation from brides to grooms in exchange for the amount of mehr specified in the marriage contract, which poses a credible barrier to no-fault divorce. If divorce imposes disproportionate economic and social costs on women, then it is ex ante efficient for couples to sign such a binding contract because it induces the husband to internalize the cost of divorce for the wife. Since agreeing upon a higher mehr in expectation imposes costs on the husband - by keeping him in a less than ideal marriage with some probability, and by having to pay this increased mehr in case of an even worse match realization - grooms must receive a transfer at the time of marriage that is increasing in the amount of mehr specified in order to agree to the contract. The prediction of this theory is that the emergence of dowry should coincide with the emergence of nontrivial deferred mehr payments specified in marriage contracts.[3] Furthermore, prenuptial amounts, and hence average dowry levels, will vary over time with both changes in the relative cost to men of marital separation and with the enforceability of marriage contracts.

To explore the implications for dowry payments of contracting over mehr, we develop a model of marriage markets in which couples specify prenuptial agreements and exchange a prompt transfer before entering a marriage. We assume a limited contracting environment, in which marrying couples specify a single conditional transfer from the husband to the wife in case the marriage ends with a husband-initiated divorce. This corresponds to the agreements that can be specified within traditional Muslim marriage contracts, which are the agreements that can be enforced using the widely accessible institution of religious courts. Despite the limited set of possible contracts, we show that under some conditions equilibrium agreements achieve efficiency by inducing the husband to internalize the social costs that divorce imposes on the wife. Mehr in our model serves the same role as a severance payment in an employment contract: they both create an extra barrier for one party to end the relationship, and in case of risk averse agents, both serve an insurance purpose.[4]

[2] This combination is rare because, in traditional Muslim societies, men have unilateral rights to divorce while at the same time polygamy is widespread. Hence, men can remarry without official divorce, reducing the value of deferred mehr payments conditional on divorce. At the same time, in more modernized Muslim societies, polygamy is restricted, but women enjoy more equal rights in the divorce procedure.

[3] This is indeed consistent with a historic example provided by Rapoport (2000), who reports that the practice of deferring a portion of mehr was extremely prevalent in early Islamic Egypt (7th/8th century). His explanation for the practice is that "a portion of the sadaq was deferred in order to deter husbands from unilateral divorces and from other unilateral actions." At the same time, marriages in early Islamic Egypt involved substantial dowry (jahaz). Disciples of the scholar Malik succeeded in eliminating the practice of deferred mehr by the ninth century, after which point dowry was no longer observed.

[4] For the literature on partnership and employment relations in incomplete contracting environments, see Klein et al. (1978), Grout (1984), Grossman and Hart (1986), and Hart and Moore (1990)). Particularly related to our work is the literature on "hostages" - a terminology introduced in Williamson (1983). See also Williamson (1984),

We show that in equilibrium dowries can be decomposed into a component that compensates the groom for the mehr specified in the marriage contract and a residual component that serves the usual price role of equilibrating the supply of brides and grooms in the market. In the model men are perfectly compensated ex ante for the amount of mehr specified in the contract, while women anticipating higher costs of divorce choose higher levels of mehr and pay higher dowries.

Our explanation of dowries is similar in spirit to theories positing that property or unearned income brought into marriage results in preferable marriage outcomes for the woman, particularly increases in her bargaining power (see for instance Schultz, 1990). However, while this general idea has been brought up in numerous papers on collective household models, we are not aware of existing work that identifies an explicit mechanism through which dowry - which is property of the husband - affects household outcomes in a way that is favorable to the woman.[5] Within this literature, the work most closely related to ours is an empirical study by Esteve-Volart (2003), which examines whether increases in dowry post-1974 (when penalties on unregistered marriage rose) are associated with a reduction in the probability of divorce in Matlab, Bangladesh. As in previous papers on bargaining power, the empirical strategy rests on the assumption that women who register marriages will be refunded their dowry in the event of divorce, but fails to identify a mechanism by which dowry can be recovered, a key focus of our paper.[6] As a result, Esteve-Volart (2003) cannot empirically disentangle dowry as divorce prevention from an increase in women's willingness to marry in response to the legal change of 1974, and in fact reaches an opposite conclusion to our findings on the change in dowry levels.[7]

Raub and Keren (1993), Chiu (1998), and Dnes (2003). One difference is that in some papers hostage is defined to be a promise of the transfer of a productive asset that is more valuable for the agent who makes the promise than to the recipient, while in our model it is a simple monetary transfer. Because of this contracts in our model are not vulnerable to renegotiation, as opposed to contracts involving the transfer of an asset with relatively smaller value for the recipient.

[5] Some qualitative studies suggest a psychological pathway through which dowry increases a bride's well-being and respect from her husband and in-laws. According to the BLAST study (2004), which carried out in-depth interviews with women in 12 districts of Bangladesh, "'Shukhe thakbe' or 'she will live happily' is the most common reason for agreeing to give dowry, other than stating that one has to marry a daughter off and for that one will have to give dowry ... Many of the women... stated that dowry had increased their status among the in–laws, even if they did not have complete control over the items given as dowry." One BLAST respondent claimed that dowry "... proves that my family is well off and that they are able to bear my burden if the need arises," and one woman reported that her daughter-in-law argued that his parents "have no claim" over their son after "selling" him to her family by accepting dowry. Nunn (2006) proposes a theoretical explanation for the frequently observed system in which both dowry and bride price are exchanged simultaneously. In his model, dowry is brought into marriage in the form of productive assets and the bride's family receives cash as a partial compensation. Furthermore, Nunn's model has little relevance in Bangladesh where there is currently no significant transfer given to brides at marriage and dowry is almost always paid in the form of cash or consumer goods as opposed to productive assets.

[6] The author suggests that the institution of marriage registration made dowry more likely to stay with the woman upon divorce, however this is unlikely to be the case since dowry property is not registered on a Bangladeshi marriage contract (whereas it frequently is in Pakistan), and divorce settlements are strictly regulated in family courts by interpretation of Qur'anic law which makes no reference to dowry.

[7] Our paper focuses on the effect of mehr on reducing the probability of divorce (an event differentially costly for the woman) and abstracts away from the impact of mehr on household bargaining during the marriage. However, in models of household bargaining in which post-divorce outcomes serve as threat-points, an increase in mehr would increase a woman's bargaining power and hence payoff during the marriage by increasing her outside option and reducing the man's, further reinforcing that men in equilibrium would require an ex ante compensation for agreeing upon a higher mehr, and leading to the same qualitative conclusions as our model. For standard models of household

To lend empirical evidence to the role of mehr in explaining marriage payments, we exploit variation in mehr levels based on changes in men's incentives to divorce that occurred with the only two constitutional amendments to Muslim Family Law, in 1961 and 1974. Our model predicts that: (i) By imposing financial barriers for men on abandoning their wives without formal divorce, the 1961 amendment implies an *increase* in equilibrium levels of both dowry and mehr; (ii) By strengthening the enforcement of alimony payments and therefore the contract-independent costs of divorce, the 1974 legal change under certain assumptions implies a *decrease* in equilibrium levels of both dowry and mehr.

The above predictions differ from predictions obtained from a model in which dowry does not depend on negotiated terms of the marriage contract. In a model without mehr, the 1974 legal change would be expected to increase the equilibrium level of dowry by increasing the exogenous cost of divorce, and therefore making marriage less attractive for men. In contrast, in a model in which couples could specify both negative and positive mehr levels, they would be able to "contract around" the increase in mandatory divorce transfers, hence dowry levels would be unaffected. However, we show that given a nonnegativity constraint on mehr, which is an institutional feature of Muslim marriage contracts, an increase in the mandatory divorce payment creates a distortion that forces some women out of the market. Equilibrium dowry levels then have to adjust in a way that all women who are not constrained by the nonnegativity requirement on mehr pay less dowry than before.

We test the predictions of the model using novel data on marriage contract elements collected as part of a large household survey in rural Bangladesh, for the purposes of this study. Our empirical findings support the hypothesis that trends in dowry in Bangladesh over the past 40 years are in large part caused by shifts in the use of deferred divorce clauses in Muslim marriage contracts, which arose in response to changes in the legal environment that affected the cost of divorce for men. As predicted, levels of both dowry and prenuptial agreements increased sharply when legal barriers to polygamy were enacted and decreased after additional divorce costs were imposed on men. This finding contradicts previous claims in the literature that dowry has increased monotonically since its emergence. Our estimates imply that three-fourths of the increase in dowry from 1960 to 2000 is a result of increasing expenditures on divorce prevention over the period.

As a robustness check, we use political boundaries to isolate villages in our sample that had limited access to official marriage registrars or union councils who officiate divorce proceedings. For households in these villages, the legal change of 1961 is likely to have had little impact on marriage contracts, while the legal ruling of 1974 is likely to have had the opposite effect as it had in less remote areas by increasing the enforceability of marriage contracts without altering the threat of divorce. We test these hypotheses in a difference-in-difference estimate that compares the differential impact of the laws in these two areas. The results support both predictions.

An alternative role of dowry that has been explored by a number of social scientists and histori-

bargaining and related empirical analysis, see McElroy and Horney (1981), McElroy (1990), Chiappori (1992), and Lundberg and Pollak (1993,1996).

ans is that gifts from a bride's parents to the couple at marriage often act as a pre-mortem bequest to daughters. While historic evidence indicates that this was the traditional role of dowry in many societies (Boticinni, 1999, 2003), there is little empirical evidence on the destination of marriage transfers in contemporary settings since it is generally impossible to distinguish the two types of transfers in survey data. Our analysis also sheds light on the role of bequest dowry in explaining trends in Bangladesh with novel data on ownership rights over dowry that allow us to separate more precisely bequest dowry (transfers from bride's parents to bride) from gift dowry (transfer from bride's parents to groom) than has previously been possible. According to our estimates, bequest dowry is low and constant throughout the period, and, as predicted, independent of legal changes. This stands in contrast to past analyses of the trend in bequest dowry in Bangladesh based on less precise information, which estimate a decrease in the level of bequest dowry over time (Arunachalam and Logan, 2006).

2 Institutional Background

2.1 Islamic Law and Marriages in Bangladesh

A key feature of all Muslim marriage contracts that differs from a standard Western civil marriage license is a provision regarding mehr, a sum of money or any other valuables that the husband gives or undertakes to give to the bride upon marriage.[8] Muslim scripture specifies that all marriages involve a transfer from groom to bride, and the majority of classical Muslim clerics hold mehr to be an automatic effect of the marriage contract such that even if no mehr is stipulated, the wife is entitled to claim a "fair" amount based on that received by others of her social standing (Esposito, 1982; Welchman, 2000; Ali, 1996).[9] Customarily, mehr is divided into prompt mehr, which is payable immediately at the marriage, and deferred mehr, which is payable on the termination of the marriage by death or by divorce initiated by the husband (Rapoport, 2000; Welchman, 2000).[10]

Muslim marriage contracts across countries routinely include written documentation of both types of prenuptial arrangements. In Bangladesh, after the announcement of the engagement of a Muslim couple and before the wedding takes place, a formal contract (kabin) is drawn up and signed in the presence of a licensed marriage registrar (qazi) at a ceremony attended by both sides of the family. The contract notes the consent of the couple to marry and specifies the amounts of prompt and deferred mehr, which cannot be renegotiated after the marriage has become legal

[8] In Islamic law, marriage is defined as a civil contract whose essential components are the offer (ijab), the acceptance (qabul), and the payment of mehr. Rules regarding each of these were outlined in the Qur'an. For instance, [4:4] You shall give the women their due dowers, equitably. (See also 244:24-25, 5:5, 33:50, 60:10).

[9] Interpretations of the correct amount of implied dower in cases where it is not specified vary widely across time and space. The Qur'an gives only vague guidance in this: [2:236] "You commit no error by divorcing the women before touching them, or before setting the dower for them. In this case, you shall compensate them - the rich as he can afford and the poor as he can afford - an equitable compensation. This is a duty upon the righteous."

[10] When the divorce occurs through judicial dissolution, deferred mehr payment does not follow an absolute rule. In these cases, the courts have the latitude to assess blame and harm caused by the spouses and allocate cost accordingly. If the husband is found to be at fault, the wife is generally granted the mehr (El-Arousi 1977: 14; Quick 1998: 36-39; Ali 1996, 125).

(Geirbo and Imam, 2006). While in most settings, the majority of mehr is specified to be prompt or conditional, the default practice in Bangladesh is to specify the entire amount as deferred and only to be transferred in the case of divorce (Kamal, 1994; Huda, 2006).[11]

Islamic family law under any interpretation affords far greater rights in marriage and divorce to men than to women. Most notably, only a man can contract more than one marriage at a time (up to four permanent wives are allowed in all schools of Islamic law), and only men have unilateral and unconditional divorce rights (talaq). When talaq rights are not curtailed through legal amendments, husbands can divorce their wives without cause, attempt at mediation, judicial oversight or even informing their wives. As a result a married Muslim woman in many traditional settings lived under the ever-present threat of being divorced without having the right to initiate divorce herself.

Although women have little ability to influence marriage outcomes directly, throughout history scholars have regarded deferred dower as an effective deterrence against husband-initiated divorce. This view can be observed in legal discourse of the last century such as the following:[12]

> "This one-sided liberty of divorce, as well as the one-sided permission of polygamy, .. are the natural results of complete freedom of contract, and the rigid enforcement of contracts between parties so unequally matched, as were men and women... But where the woman is by any chance in a position to make a better bargain for herself, the same principle of free contract tells in her favour. ... [T]hough an absolute stipulation that she shall never be divorced will be void in law, she can make herself practically secure by stipulating for a dower so large, that it will be inconvenient or impossible for him to pay it, on the understanding that it will not be exacted unless he divorces her..."
>
> - Roland Knyvet Wilson, An Introduction to the Study of Anglo-Muhammadan Law (London: W. Thacker, 1894), pp. 138-139.

The next sections formalize this notion in a model of marriage contracts involving mehr.

As opposed to mehr, dowry does not originate from Islamic law and is neither registered nor recorded on the marriage contract. While it is a now common practice in Bangladesh, it is supported neither by state law nor personal law. In fact, dowry was declared illegal in Bangladesh in 1980 with the Dowry Prohibition Act, though this appears to have had no impact on the institution (Huda, 2006). Furthermore, there is no consensus in the literature as to why dowry emerged

[11] This has been noted many times in cultural studies and also verified by the authors with data collected from the books of 315 marriage registrars in rural Bangladesh in 2007. In none of the marriages recorded in these registrars was more than a token amount of mehr specified to be prompt (cross-tabulations and details of data collection available upon request).

[12] Other scholars have a maintained a slightly different view of deferred mehr as serving primarily as the bride's financial protection in case of talaq, or a substitute for alimony, as illustrated below.

> "Mehr is one of the fundamental conditions of every marriage contract. It is a capital sum provided by the husband and placed at the disposal of the wife which constitutes for her benefit a guarantee of independence during marriage and a security for the future in case of divorce or widowhood." - Clavel "Droit Musulman" (Paris) 1895 Volume I p. 49.

among Muslim households in Bangladesh and Pakistan when the system is nonexistent and even shunned by religious leaders in the rest of the Muslim world. On account of evidence that dowry practices began to spread in both countries at the point of partition from India, dowry is often perceived to be a cultural practice inherited from upper-caste Hindus (Rozario, 2004).[13] However, unlike our explanation, this fails to account for the fact that dowries only became common practice in Bangladesh post-partition.

2.2 Constitutional Amendments

Religious leaders and legal activists have long recognized Muslim women's vulnerability to both polygamy and indiscriminate divorce. Hence, the key emphasis of legal reform of family law in many Muslim countries including Bangladesh during the last century has been imposing restrictions on the rights of men to contract polygamous marriages and divorce their wives through talaq. The introduction of such legal reforms serves as the basis of our empirical strategy for isolating changes in dowry that correspond to changes in demand for divorce prevention. Two such amendments to laws governing marriage and divorce in Bangladesh have particular relevance for our analysis.

2.2.1 Muslim Family Law Ordinance of 1961

The Muslim Family Law Ordinance (MFLO) of 1961 imposed, above all, significant restrictions on polygamy. Under the MFLO, a man was given permission to marry a second wife only under specific circumstances and after following specific procedures. The debate regarding polygamy began in earnest in the mid-1950s, when members of the Status of Women Committee of the All-Pakistan Women's Association, after having become alarmed by the increase in second marriages following partition, took to the streets to protest polygamy (Abbott, 1962; Hyatt, 2006). The protests resulted in strict curbs on polygamy under the MFLO. These included the requirement that he obtain the written permission of the local government authorities of the existing wife's residence and satisfy the local government body, or Union Council, that he had obtained the prior wife's consent. In addition, the proposed new marriage had to be "just and necessary", determined by the council on the basis of the current wife's physical or mental condition and the husband's ability to support multiple families. To enforce these rules, the MFLO empowered Union Councils to arbitrate on all disputes related to polygamy, and imposed automatic jail sentences for men found to be in violation of these rules (United Nations, 1997).[14]

In addition to changes in laws governing polygamy, the MFLO made an attempt at divorce reform by requiring that a husband notify the local official of his pronouncement of talaq, intended

[13] A related anthropological theory posits that the transformation from bride price to dowry was driven by a post-partition increase in conspicuous consumption of all types, including lavish expenditures at weddings due to the new rural cash economy that arose under capitalism (Ahmed and Nahar, 1987).

[14] In particular, "The 1961 Ordinance for the first time made the registration of marriage compulsory and restricted polygamy by making it a requirement that the husband obtain the permission from the Chairman/Mayor of the Union Parishad/Pourashava for a second marriage ... The Ordinance made any marriage contracted without such permission punishable with imprisonment up to a year or a fine of 10,000 Takas or both (United Nations, 1997)."

to empower local councils to impose barriers on arbitrary divorce. However, in the absence of a system requiring notification of talaq *revocation*, this requirement had little effect on divorce proceedings. As a result of this oversight, in effect the MFLO provided no restrictions on divorce nor increased the likelihood of a woman receiving provisions for mata'a (the "maintenance" paid to a divorced woman).[15] Hence, in practice while the institution of marriage became formalized under this law, the institution of divorce was relatively untouched and the husband maintained complete rights to unconditional divorce.[16]

To summarize, the main effect of the MFLO was to place firm restrictions on polygamy, hence increasing husbands' incentives to officially divorce in the event that they desire to separate. Importantly, these reforms did not take effect in East Pakistan (present-day Bangladesh) until 1963 due to resistance by local clerics (Syed Ali Nawaz Gardezi v. Col. Muhammad Yusuf PLD 1963 SC 51).

2.2.2 Registration of Muslim Marriages and Divorces Act of 1974

The only amendment and only major post-Independence reform to the MFLO was the Registration of Muslim Marriages and Divorces Act (MMDA) of 1974. Unlike the MFLO, the MMDA increased the effective costs of divorce while leaving polygamy rules untouched. Essentially, the MMDA re-enacted the provisions of the 1876 Act for registration of divorces, in addition to establishing other legal rights that better protected a woman against arbitrary divorce. Most importantly, by establishing a universal system of divorce registration and physical registries, the Act made notification requirements of talaq effective, such that men were under threat of penalty for committing talaq without going before the courts, thereby curtailing men's privilege to verbally divorce their wives.

By requiring that divorce be granted only in court, these stipulations increased a man's expected costs of divorcing his wife (for any fixed level of mehr specified in the marriage contract) since there was a greater chance that he would be required to pay maintenance, while placing no further restrictions on polygamy. Furthermore, the three-month notification period and administrative procedures associated with talaq registration that the law imposed were intended to inhibit divorces that occurred out of emotional impulse. The requirement that local UP councils be involved in all divorce proceedings strengthened a divorced woman's right to alimony payment (mata'a) and possibly also her right to mehr.

To summarize, the 1974 amendment enacted procedural restrictions to reduce arbitrary divorce by increasing expected alimony payments and procedural requirements.

[15] Muslim laws require that a divorced woman receive maintanence from her husband following talaq, talaq tafwid or ta'liq, divorce, or following faskh or tafriq, a legal or conditional divorce, under certain circumstances. The woman's right to maintanence depends on the interpretation of and legal norms governing the circumstances of the divorce.

[16] Because of exactly such concerns, in 1956 the Pakistan Commission on Marriage and Family Laws recommended that the Court be authorized to order a husband to maintain his divorced wife until death or remarriage, citing the "large number of middle-aged women who are being divorced without rhyme or reason should not be thrown out on the street without a roof over their heads and without any means of sustaining themselves." (Report, in The Gazette of Pakistan [Extraordinary], June 20, 1956, p. 1215).

2.2.3 Case Law Developments Regarding Divorce Payments

While these two enactments were the only legislative amendments to family law that took place, two important case law developments are worth noting.[17] In particular, in the 1990s, there were two rulings over the amount men had to pay wives for maintenance in cases of divorce that are more likely to have influenced marriage contracts. In the first, in 1990, (Rustom Ali v. Jamila Khatun, 43 DLR (1991) 301), the Court ruled in accordance with classical Hanafi law that a wife is not automatically entitled to arrears of maintenance. In particular, the former wife or the child may not claim past maintenance unless the parties have a previously established agreement, which clearly highlighted the importance of specifying mehr in marriage contracts. In 1995, after much pressure from women's organizations, the High Court temporarily reversed this decision, and the case immediately went to the Supreme Court.[18] However, after a long waiting period, in 1998 the Supreme Court overruled the 1995 decision and reinstated the 1990 ruling on maintenance.

To summarize, the 1990 and 1998 rulings reduced the expected financial cost of divorce by decreasing the amount of maintenance a man should expect to pay in the event of divorce. Although less permanent than the constitutional amendments, both rulings received widespread attention in the Bangladeshi and international Islamic media (which was also far more wide-reaching by the 1990s), so could have plausibly had an even greater influence on expectations of enforcement of marriage contracts.[19]

2.3 Complimentary Legal Institutions

The potential influence of the legal changes described above depends on critical features of the legal environment in which they are made. Here we discuss two institutional features of family law in Bangladesh particularly relevant for interpretations of marriage contracts and payments.

[17] In particular, the issues of maintenance and obedience within marriage, as well as grounds on which women may seek divorce, continue to be governed by classical (hanafi) law for the most part. Much legal development has occurred through case law. In contrast, marraige registration, polygamy, and talaq are governed by common law.

[18] In 1995, (Muhammad Hefzur Rahman v. Shamsun Nahar Begum,15 BLD (1995) 34) relating to the maintenance of divorces, the Court ruled that a Muslim husband's responsibility to maintain his divorced wife does not cease with the expiry of the idda. The Court ruled that the former husband is bound to provide his divorced wife with maintenance on a reasonable scale for an indefinite period, until her status as a divorce changes, that is, if she remarries. The ruling was based on an interpretation of a Qur'anic verse relating to provisions for divorced wives (2:241).

[19] Meanwhile, legal reforms to family law in the 1980s appear to have had little impact on the institution of marriage: In the early 1980s, two court rulings changed conditions under which women could seek divorce. In 1980, in Hasina Ahmed v. Syed Abul Fazal (32 DLR (1980) 294), the Supreme Court ruled that a woman may be granted a khul (divorce) by a judicial decision without the husband's consent. In 1982: Nelly Zaman v. Giasuddin Khan (34 DLR (1982) 221), the Supreme Court ruled that, with the passage of time, the husband's suing for forcible restitution of conjugal rights against an unwilling wife is both outmoded and untenable if considered with relation to the principle of equality of men and women enshrined in Articles 27 and 31 of the Constitution. Discussion of these two rulings by legal scholars suggests that they had symbolic value rather than real consequences since both kuhl and forcible restitution of conjugal rights are and always have been extremely rare. In 1984, the Minimum Marriage Age Ordinance went into effect, making minimum ages of marriage 21 for men and 18 for women. However, without birth certificates, this law has been impossible to enforce and had little impact on marriage patterns: According to the 2000 BDHS, the vast majority of women aged 20-30 in Bangladesh report to have been married under the age of 18.

2.3.1 Record Keeping

First, complex and potentially long-standing contractual arrangements are only enforceable, and therefore meaningful instruments to prevent divorce, in a setting with a sufficiently strong institution of record keeping. In Pakistan and Bangladesh, registration of Muslim marriages has been compulsory since the passage of the MFLO, which included detailed rules regarding the manner in which registration was to take place, and pronounced that registers be preserved permanently.[20] However, the laws were not universally applied until post-independence since the government failed to provide sufficient facilities for recording and preserving registration documents. In particular, the MFLO made no provision for the appointment of sufficient registrars to accommodate the new requirements. As a result penalties were not imposed on couples that failed to register, and marriage registration rates remained at around 50% throughout the 1960s and early 1970s (Appendix A).

In practice, the MMDA facilitated a truly universal system of marriage registration by appointing local registrars throughout the country and establishing strict rules relating to registration fees and higher penalties imposed on registrars and couples that did not comply. By 2000, an estimated 90% of all marriages contracts were recorded in the national registry.

While registration is relatively new in Bangladesh, the practice of mehr and referral to marriage contracts in divorce settlements (presided over by appointed local judges) has been universal throughout the last century (Kumari, 2007). Prior to registration, Muslim marriages in Bangladesh were presided over by the qazi, as they are today, and the signing of the contract was a fundamental part of the traditional marriage ceremony.[21] Since marriage in Islam has always been interpreted as a contractual arrangement, marriage registration is not necessary to legitimize the use of marriage contracts for divorce prevention. While registration facilitates the process of divorce, local councils will still consider a marriage contract that was not registered but can be produced by one of the divorcing parties.[22]

2.3.2 Contract Enforcement

The significance of dower arrangements also depends fundamentally on sufficient contract enforcement, which amounts to the scope of the local councils in interpreting the conditions under which a woman can claim either deferred or prompt dowry and awareness among women of their rights to mehr. Although the Qur'an is fairly specific about certain circumstances of marriage and payment

[20] The MFLO required that the following information to be entered in the register (a sample form is provided in Appendix B): amount of dower; how much of the dower is prompt and how much deferred; special conditions or stipulations for dower payment; whether and conditions under which husband has delegated power of divorce to wife; whether the husband's right of divorce is in any way curtailed; and whether any document was drawn up at marriage relating to dower or maintenance.

[21] The qazi (qadi, kadi, kazi) is a traditional Muslim judge whose advice is also traditionally sought on other matters of personal law, such as inheritance, divorce, and the administration of religious endowments (waqfs).

[22] Consistent with this, in almost all households interviewed in 2003, married women had a copy of the marriage contract in the home, even when the marriage took place before registration became compulsory or registrars were available.

obligations, there is in practice a great deal of discretion on the part of courts to decide whether a divorced woman has a right to claim mehr.[23] The legal and social science literature is very scant on the actual power and variance across time or space of Union Parishad (UP) Arbitration Councils (which deal with disputes concerning divorce, maintenance and polygamy).[24] Internal project documents prepared by Madaripur Legal Aid Association (MLAA, 2000) point out that UP Councils often exist only on paper and that local people are frequently unaware of their existence. The only published literature has been produced by the Asia Foundation (2002), which concludes that the UP councils tend to be biased and ineffective in providing justice to women and the poor, and in some cases even decline to convene sessions. The report further points out that the members are frequently ill-informed about family laws.

Nonetheless, although many women may be uninformed about their legal rights or reluctant to take their husband to court, Rozario (2004) claims that women do seek legal aid when thrown out or threatened with second marriage or divorce, and there are countless examples of legal cases involving divorce negotiations and payment that appear in the local press.

More importantly, in practice, uncertainty in legal outcomes does not invalidate the central function of marriage contracts in posing barriers to divorce as long as there remains sufficient expected enforcement of such contracts. Indeed, anthropological research into divorce settlements in rural Bangladesh provides evidence that, while amounts of mehr are not strictly enforced in divorce proceedings, there remains a strong relationship between mehr and actual divorce settlements determined by the courts. Hasle (2003) reviews 27 divorce cases in a rural village in 2000, and observes that settlements are roughly 20% of specified mehr, and in no case is no settlement offered to the woman.[25] Hence, while enforcement varies greatly over time and space, it is important to keep in mind that the legal system provides more contract enforcement than is commonly assumed. It is safe to say that, while far from guaranteed, the average married woman can expect some degree of enforcement of marriage contract terms upon divorce.

3 Theoretical Analysis

In this section we propose a simple dynamic model of marriage markets that involves both dowry and prenuptial agreements. Aside from formally describing how marriage and separation decisions,

[23] For instance: [2:237] If you divorce them before touching them, but after you had set the dower for them, the compensation shall be half the dower, unless they voluntarily forfeit their rights, or the party responsible for causing the divorce chooses to forfeit the dower.

[24] Nazneen (2004) summarizes the role of Salish Councils in present-day law:

"Salish is now administered in three overlapping forms in Bangladesh. The Union Parishad Arbitration Council is empowered to arbitrate on family disputes, and its decisions are recognised in the Family Court. Traditional salish is a gathering of village elders and concerned parties, exclusively male, for resolving local disputes, and has no legal authority. NGO-modified salish is a new form which aims to modify salish panels and the way in which their sessions are conducted and administered. Salish cannot legally adjudicate on criminal cases, issue fatwas or impose cruel or inhumane punishments. Family disputes have to be settled based on religious personal laws."

[25] While it may seem a puzzle that mehr amounts are consistently inflated on marriage documents, it makes sense in the context of potentially high inflation. Indeed, in some countries mehr values are indexed to inflation, but this is not the case in Bangladesh.

and mehr and dowry levels are related to each other and depend on the costs of separation on women and men, the purpose of the model is to generate predictions for the direction of change in mehr and dowry levels after the two constitutional amendments: the MFLO, which made abandonment prohibitively costly for men, and the MMDA, which increased the contract-independent cost of divorce for men. As we will show, a model with an ex ante contractible divorce-contingent transfer generates a different set of predictions than existing models of marriage market.

Intuitively, there are two main channels through which the legal changes we examine affect dowry and mehr levels:

1. There is a direct effect on how much mehr women would like to specify in their marriage contracts: the MFLO made contracting on high levels of mehr possible by making it impossible for men to exit marriages without official divorce, while the MMDA decreased women's demand for mehr by increasing the contract-independent transfer men had to pay to their wives in case of divorce. The resulting changes in mehr change the amount of dowry women have to pay, because men require a higher dowry payment in exchange for higher mehr specified in the contract.

2. The legal changes affect the supply of women and men in the market. The MFLO, by making it impossible for men to exit marriages without official divorce, enlarged the set of effectively contractible mehr levels, increasing the supply of women in the market. The MMDA, by increasing the contract-independent costs of divorce for men and the contract-independent compensation for women in case of divorce, had a direct impact of decreasing the supply of men and increasing the supply of women in the market. These supply changes effect the levels of dowries.

Below we show that changes through these different channels work in the same direction in the case of the MFLO, generating an unambiguous prediction in that both dowry and mehr levels should increase after the change. In the case of the MMDA, changes through different channels operate in different directions. Under certain assumptions the net effect implies a decrease in both dowry and mehr levels.

3.1 The Model

For ease of exposition, here we present a simple one-period model, which is still rich enough to analyze the effects of legal changes on dowry and mehr through both channels discussed above. In a supplementary appendix (Ambrus and Field (2008)) we extend the analysis to a dynamic framework - see the related discussion in Subsection 3.4

3.1.1 Basic framework

Consider a marriage market with a continuum of women and men, of the same measure. Assume that initially every man is endowed with e amount of consumption good, and every woman is endowed with e' amount of consumption good.

The timing of events is as follows: (1) Individuals decide whether to marry or stay single; (2) Those who want to marry get matched, sign a marriage contract, and exchange a prompt transfer (dowry or brideprice, depending on who the recipient is). The marriage contract specifies the mehr,

denoted by m, that is the payment that the husband has to pay to his wife in case he decides to divorce. We assume that m has to be nonnegative. We denote the net prompt transfer from the bride to the groom by d (hence, $d > 0$ corresponds to a dowry payment, while $d < 0$ corresponds to a bride price payment). See below for the matching technology and contract choice. (3) The ex ante unknown match qualities of couples realize (see below in more detail); (4) Married men decide whether to stay in the marriage, or to divorce or abandon their wives; (5) Men who decide to divorce pay a transfer to their spouses, the amount of which depends on the marriage contract signed (see below for more detail); (6) Individuals consume their endowments net the transfers they received or paid.

We emphasize that ending the marriage (through official divorce or abandonment) is a unilateral decision of the husband. In case of divorce, on top of the contracted mehr payment m (which can differ across couples), the man also has to pay a mandatory alimony payment $m_0 \geq 0$ (which is the same for all couples). Besides official divorce, a man has the option to abandon his wife. If a man does so, he does not have to pay any transfer to the abandoned wife, but an exogenous cost $q \in R_+ \cup \{\infty\}$ is imposed on him.[26]

All individuals have the same utility function, which is additively separable in consumption utility and marriage utility. $U(c, x) = u(c) + x$, where c is consumption in the given period, and x is a term that depends on marital status and match quality realization. Below we focus on the case when $u(c) = c$, which simplifies the analysis considerably, because insurance considerations are missing from marriage contracts. Hence, the sole purpose of mehr is providing an exit barrier to divorce.

We normalize x, the utility term from marital status, to be 0 for individuals who do not marry. For man i, $x = X_i + \varepsilon_i$ in case he gets married and stays in the marriage. Term X_i is individual-specific and known by the man ex ante, representing his eagerness to marry. Term ε_i is a match-specific random component that is unknown to the couple before entering the marriage. This represents the couple's (or the in-laws') unobservable level of compatibility. In case man i marries but decides to divorce or abandon his wife, $x = X_i$. That is, in case of a bad realization of ε_i, the man can save the implied utility cost by separating. The distribution of X_i in a cohort is assumed to be continuous and have strictly positive density over R, and have finite first and second moments. The random term ε_i has the same distribution for all men, and this distribution has a density function $\varphi()$, which is assumed to be continuous and strictly positive over R, and have finite first and second moments.

For woman j, $x = Y_j$ if she gets married and stays married, where Y_j is individual-specific and known ex ante.[27] We assume that being divorced or abandoned imposes socioeconomic costs on women.[28] In particular, for woman j, $x = Y_j - D_j$ in case she is divorced, and $x = Y_j - A_j$ in

[26] This cost can incorporate both costs imposed by institutionalized or informal social punishment, as well as economic costs like those arising from having to relocate.

[27] Allowing for a random component, as in the case of the utility term for men, would not make any difference, since it is men and not women who decide whether to separate.

[28] Divorce also imposes a burden on a woman's family, as she will typically return to live with her parents or brothers.

case she is abandoned. Terms D_j and A_j are individual-specific and known ex ante. We assume $A_j \geq D_j - m_0$ for any woman j. This implies that even a woman with mehr 0 would prefer to get officially divorced than abandoned. The distribution of (Y_j, A_j, D_j) in each cohort is assumed to have a continuous density function and finite first and second moments, and the marginal density of (Y_j, D_j) is assumed to be positive over $R \times R_+$.

3.1.2 Matching technology and equilibrium

We assume a frictionless matching technology that is similar to the one introduced in Cole, Mailath and Postlewaite (2001) and Mailath, Postlewaite and Samuelson (2008). In the latter paper, there is a continuum of buyers and sellers with heterogenous preferences and production functions, and a range of possible product attributes corresponding to $[0, \infty)$. Buyers and sellers simultaneously decide whether to enter the market and if yes then what attribute to purchase or produce. An equilibrium implies a function of prices for the various attributes such that, in a formal sense the number of buyers and sellers choosing the same attribute is the same for every attribute level.

Analogously, we assume that there is a continuum of possible marriage contracts, corresponding to mehr levels $m \in [0, \infty)$, and each of them is assigned a price, that is an amount of transfer that the woman entering a marriage with the given contract has to pay to her husband at the beginning of marriage. We denote the transfer specified for a contract with mehr m by $d(m)$, and refer to it as the dowry (or bride price, if negative) attached to mehr level m. We assume price-taking behavior: individuals observe dowry levels $d(m)$ for $m \in [0, \infty)$, and decide whether to enter the market, and if yes then what contract (what level of m) to choose.

Let W and M denote the set of women and men who decide to marry. Let $\widetilde{m}_W(j)$ denote the mehr choice of $j \in W$, and let $\widetilde{m}_M(i)$ denote the mehr choice of $i \in M$. We say that the marriage market clears at the given period if there is a bijection $\widetilde{b} : W \to M$ that is (i) measure-preserving, i.e. $\lambda_M(\widetilde{b}(W')) = \lambda_W(W')$ for every Borel $W' \subset W$; (ii) matches individuals who want to sign the same contract: $\widetilde{m}_M(\widetilde{b}(j)) = \widetilde{m}_W(j)$ for every $j \in W$.

Note that the definition of market clearing implies that for every $S \subset [0, \infty)$ the following holds: if the sets of women and men choosing contracts from S, denoted by W^S and M^S, are measurable then $\lambda_M(M^S) = \lambda_W(W^S)$ - that is, supply and demand are equal for all contracts.

Definition: A marriage market equilibrium consists of a dowry function $d : R_+ \to R$ and a profile of strategies of individuals such that: (i) given d and the strategies of others, all players choose sequentially rational strategies; (ii) given the strategy profile, the market clears.

Requirement (i) in the definition imposes the following optimality properties on strategies: First, the choices of both women and men whether to get married and if yes then what mehr level to choose are optimal, given d and the anticipated separation choices of men. Second, the decision of every married man whether to stay in the marriage, divorce or abandon is required to be optimal, for any marriage contract and match quality realization.

From now on, for ease of exposition, we refer to marriage market equilibrium simply as equilibrium.

3.1.3 Discussion of modeling assumptions

Nonnegativity of mehr

The model specification poses that $m \geq 0$. This is a constraint imposed on marriage contracts by the Qur'an: religious courts do not enforce contracts with negative mehr.

Divorce is a contractible contingency, but polygamy is not

This is again a feature imposed on the contracts by institutional features: religious courts in Bangladesh enforce mehr, but not transfers conditional on polygamy.

Renegotiation

The possibility of ex post renegotiation of the marriage contract would help couples overcome the constraints arising from the contracting environment: namely that mehr has to be nonnegative, even if the mandatory alimony payment is high, and that couples cannot credibly negotiate a mehr higher than $q - m_0$, since the latter would induce the husband to choose abandonment, instead of a formal divorce. However, marriage contracts, and in particular the agreed upon mehr payments, cannot be officially renegotiated: divorce courts require documentation from the couple that the required mehr was paid in full. Hence, in what follows we assume that renegotiating marriage contracts after the match quality realization is not feasible.

Matching technology and equilibrium

We assume a frictionless matching technology and competitive equilibrium with price-taking behavior. We believe these are realistic assumptions in the setting we investigate. At any point of time there is a large number of women and men who want to get married in Bangladesh, and most people marry outside their localities, meaning that the market is thick. Furthermore, the matching is arranged by professional marriage arrangers, and given that every village has several arrangers (who keep in touch with arrangers in other villages), the process of finding an appropriate match is usually fast and smooth.

Dowry only depends on mehr specified in the contract

In our specification, the amount of dowry only depends on the mehr specified in the marriage contract, not on the identity of the people signing the contract. Given that we assume heterogeneity across individuals, this raises the question whether individuals should try to find out more information about each other before signing the contract and whether dowry should also depend on the individual characteristics. It is easy to see that the answer is no for men: since the ex ante distribution of match quality is assumed to be the same for all women, and separation is a unilateral decision of men, conditional on the marriage contract men are ex ante indifferent among women. Women, on the other hand, might potentially be interested in the types of candidate spouses with respect to base marriage utility (X_i), if the latter affected the probability of divorce or abandonment. However, this turns out not to be the case in equilibrium: below we show that conditional on the marriage contract, in equilibrium all men want to leave the marriage exactly after the same

match quality realizations.[29]

3.2 Basic properties of equilibrium

For ease of exposition, we assume throughout that $q > m_0$. If $q < m_0$ then the mehr specified in marriage contracts is inconsequential, since men choose abandonment over divorce even when mehr is 0. This introduces an indeterminacy of mehr levels specified in contracts, however other features of equilibrium that we derive below would remain valid.

Our first observation is that for a given m, $q < m_0 + m$ implies that it is better for the man to abandon his wife than to divorce her, while $q > m_0 + m$ implies the opposite. Hence, the effective cost of separation for a man, conditional on m, is $c_m \equiv \min(q, m_0 + m)$. This implies that any man stays in the marriage for match quality realizations $\varepsilon > -\min(q, m_0 + m)$, and chooses divorce for match quality realizations $\varepsilon < -\min(q, m_0 + m)$.[30] Note that conditional on m, all men have the same threshold for staying in the marriage. This threshold is decreasing in m, implying that the man stays in the marriage with higher probability, as long as $m < q - m_0$. This means that women can decrease the probability that they get divorced by choosing a higher level of mehr. Term $q - m_0$ indicates the effective threshold for mehr: specifying an even higher mehr does not decrease the probability that the man leaves the marriage, since at this level of mehr the man would choose abandonment over divorce.

The next claim reveals an important feature of the dowry function in equilibrium. For the proofs of all claims and propositions, see the Appendix.

Claim 1: In equilibrium, there is $d_0 \in R$ such that $d(m) = d_0 + \pi(m)$ for every m chosen in equilibrium, where $\pi(m) \equiv \int_{-\infty}^{-c_m} \varphi(x)(c_m - c_0)dx + \int_{-c_m}^{-c_0} \varphi(x)(-c_0 - x)dx$.

That is, the dowries in equilibrium contracts can be decomposed as a sum of the base level dowry d_0, and the price of the mehr specified in the contract, $\pi(m)$. The price of mehr is increasing in m, and it exactly compensates the groom for the expected extra cost that the mehr imposes on him. To see this, note that the first term in the expression for $\pi(m)$ is the expected cost that that mehr m imposes on the man by increasing the amount of transfer he has to pay in case of divorce (which occurs after match quality realizations bad enough that mehr m cannot keep the man in the marriage), while the second term is the expected cost that mehr m imposes on the man by

[29] Of course there can be many other characteristics of individuals, not captured in our model, which could effect the dowry payment for a marrying couple. As long as these characteristics are observable, our qualitative conclusions below remain valid, although dowry is no longer simply a function of mehr (but also a function of these characteristics).

[30] In the simple model we present, under the assumption $q > m_0$, in equilibrium there is no abandonment, only divorce. This is because women prefer to be officially divorced, hence they specify low enough mehr so that abandonment does not become optimal for their husbands. If instead we assumed $q < m_0$ then in equilibrium men would always choose abandonment over divorce. In a more realistic model, for example in a context in which the cost of abandonment is a random variable the value of which only realizing after marriage, some marriages would end with divorce, while others with abandonment. We stick to the simplified framework in which q is deterministic and the same for all men for ease of exposition, and because we are primarily interested in dowry and mehr levels, not divorce vs abandonment rates.

keeping him in a less than ideal marriage (which occurs after match quality realizations that are bad enough so that the man would divorce if the mehr was specified to be 0, but not when the specified mehr is m). The intuition for the above result is that if $d(m) - d(m') > \pi(m) - \pi(m')$ for some $m, m' \in R_+$ then all men would strictly prefer choosing mehr m' over mehr m, therefore mehr m cannot be chosen in equilibrium by any individual by the market clearing condition in the definition of equilibrium.

Claim 2: If woman j chooses to marry in equilibrium, then:
(i) If $D_j \leq m_0$ then she chooses $m = 0$;
(ii) If $m_0 < D_j < q$ then the m she chooses $m = D_j - m_0$;
(iii) If $q \leq D_j$ then she chooses $m = q - m_0$.

To interpret the above result, recall that D_j is the cost that divorce imposes on woman j. Woman j in equilibrium chooses a mehr level that minimizes the difference between $m_0 + m$, that is the total compensation they receive in case of divorce, and the above cost, subject to two constraints: the nonnegativity requirement on m, and the constraint that $m \leq q - m_0$. Note that the result implies that every couple chooses a mehr level that maximizes the joint surplus of the couple, subject to the constraints above. If neither of these constraints bind, the mehr level is specified such that the husband decides to divorce exactly after match quality realizations for which the sum of continuation values of the spouses are higher in case of divorce than in case of staying together.

Since the mehr a woman j chooses in equilibrium only depends on D_j, for any equilibrium, we can define function $m : R_+ \to R_+$ such that $m(D)$ is the amount of mehr that a woman with marriage utility parameter D chooses in the equilibrium, if she decides to marry.

Lastly, we characterize individuals' choices whether to get married or not in equilibrium. Let X^c be defined by:

$$X^c = -d_0 - \int_{-\infty}^{-c_0} \varphi(\varepsilon)[-c_0]d\varepsilon - \int_{-c_0}^{\infty} \varphi(\varepsilon)\varepsilon d\varepsilon$$

Claim 3: In equilibrium, any man i with $X_i > X^c$ gets married, and any man i with $X_i < X^c$ stays single.

For every $D_j \in R_+$, let $Y^c(D_j)$ be defined by:

$$Y^c(D_j) = d_0 + \pi(m(D_j)) - \int_{-\infty}^{-c_{m(D_j)}} \varphi(x)[m_0 + m(D_j) - D_j]dx$$

Claim 4: In equilibrium, woman j gets married if $Y_j > Y^c(D_j)$, and stays single if $Y_j < Y^c(D_j)$.

It is now possible to show that there is only one level of d_0 consistent with equilibrium. The intuition is that the proportion of women wanting to marry is continuous and decreasing in d_0, going to 0 and 1 as d_0 goes to $+\infty$ and $-\infty$. Similarly, the proportion of men wanting to marry is continuous and increasing in d_0, going to 0 and 1 as d_0 goes to $-\infty$ and $+\infty$. Therefore, there is only one level of d_0 at which the market clears. Note that once d_0 is pinned down, all variables of interest (how many individuals marry, what mehr levels couples choose, separation decisions of men) are uniquely determined by the claims above, for almost all individuals. This leads to the next result, which says that the equilibrium in our model is essentially unique.

Proposition 1: *(existence and uniqueness)* For any q and m_0, there exists an equilibrium. Moreover, for any two equilibria the following hold:

(i) the set of mehr levels chosen in equilibrium is the same: $[0, q - m_0]$;

(ii) $d(m)$ is the same for any $m \in [0, q - m_0]$;

(iii) the sets of individuals choosing to marry are the same in the two equilibria, up to a set of individuals of measure 0;

(iv) a woman marrying in both equilibria chooses exactly the same m in both equilibria.

3.3 Regime Changes and Theoretical Predictions

3.3.1 Description of legal regimes in the model

We think about the marriage market before 1961 as a regime in which both alimony payments and the cost of abandonment for men are low. We refer to this period as Regime I, and assume that during this period $m_0 = m_0^I$ and $q = q^I$. As shown in the previous subsection, the equilibrium range of mehr levels is $[0, q - m_0]$, hence q being small implies that the mehr level chosen by every marrying woman is small.

We assume that the MFLO in 1961 corresponds to an increase in q to a level that makes abandonment prohibitively costly.[31] We refer to the period between 1961 and 1974 as Regime II, and assume that during this period $q = \infty$ and $m_0 = m_0^{II} = m_0^I$.

Finally, we model the change in 1974 as an increase in the contract-independent alimony transfer, m_0.[32] We refer to the period after 1974 as Regime III, and assume that during this period $m_0 = m_0^{III} > m_0^{II}$.

3.3.2 The Change from Regime I to Regime II

Here we investigate the consequences of the 1961 legal change, which made abandonment and polygamy prohibitively costly.

The next result shows that the regime change unambiguously increases both mehr and dowry for every (marrying) woman in our model. The intuition for this is the following. Suppose first that the

[31] As we argue in Section 5, this primarily applies to nonremote districts, where people in this period had access to legal institutions.

[32] As we argue in Section 5, this again primarily applies to nonremote districts.

regime change does not change the level of base dowry. Then Claim 1 implies that dowry payments belonging to the set of mehr levels that were effectively contractible in Regime I, $[0, q^I - m_0^I]$, do not change. This implies that every woman type who marries in Regime I also marries in Regime II. Furthermore, the set of contractible mehr levels becomes R_+ in Regime II, hence woman types whose divorce costs are larger than $q^I - m_0^I$ are strictly better off in Regime II. Claim 4 implies that a positive measure of these women types do get married, which concludes that the mass of women marrying is larger in Regime II than in Regime I. At the same time, Claim 3 implies that the mass of men deciding to marry stays the same. This contradicts that the market clears in both regimes, and indeed the base dowry needs to be higher in Regime II than in Regime I, to restore equilibrium in the market. Furthermore, for every woman type who marries in both regimes, the chosen mehr is weakly higher in Regime II, and strictly higher for a positive fraction of women.

Proposition 2: *(change from polygamy to monogamy increases mehr and dowry)* The change from regime I to regime II increases the chosen mehr and the dowry payment for every marrying woman.

The legal change is welfare-improving, in the sense of increasing the number of women and men deciding to marry (note that not marrying provides the same utility in all regimes, hence an increase in the number of marriages indicates that more individuals get a higher utility than in the no-marriage default option). This is because an increase in d_0 increases the number of men deciding to marry, and then market clearing in equilibrium implies that the number of women marrying has to increase as well.[33] The source of this welfare gain is that the legal change brings a new set of mehr payments into the contractible realm. The increase in the number of women deciding to marry also implies an increase in the average levels of dowry and mehr in the population. To see this, note that woman types who marry in Regime II but not in Regime I specify a mehr higher than $q^I - m_0$, otherwise they would marry in Regime I, too. This, and the fact that d_0 increases imply that all these woman types pay strictly higher dowries and specify strictly higher mehr than all woman types who marry in Regime I but not in Regime II.

3.3.3 The change from Regime II to Regime III

The next theorem shows that the 1974 legal change unambiguously decreases the mehr of every woman, and decreases the dowry of all women who specify nonzero mehr in equilibrium.

Proposition 3: *(an increase in the mandatory divorce transfer decreases both dowry and mehr)* The change from Regime II to Regime III decreases the mehr of any woman type who marries in both regimes, and it decreases the dowry payment of every woman type who marries in both regimes and is not constrained by the nonnegativity of mehr in Regime III.

[33] Note that women's marriage decisions depend not only on d_0, but on m_0 and q as well, since the latter determine the set of feasible marriage contracts.

Note that the result implies that all women who choose positive mehr in Regime III pay less dowry than in Regime II.

The intuition behind the result is that a higher contract-independent transfer "crowds out" some of the mehr specified in marriage contracts, leading to smaller levels of contracted mehr. If there was no nonnegativity constraint on mehr (some couples could specify negative mehr) then every woman's mehr would decrease by exactly $m_0^{III} - m_0^{II}$. Hence, equilibrium base level dowry and the mehr levels would adjust in a way that all dowries remained the same, and exactly the same measure of woman and man types entered the market (in particular, men would be exactly compensated for the increase in m_0 by a corresponding increase in d_0). That is, mehr would decrease and dowries would stay unchanged. However, the nonnegativity constraint on mehr implies that after the legal change there are more women who are forced to acquire inefficiently high exit barriers for their marriages. This means that if base level dowry increases by the amount that exactly compensates men for the increase in m_0 then the regime change would decrease the number of marrying women, while leaving the number of marrying men unchanged. This contradicts that the market clears in both regimes, and indeed the base dowry has to be smaller than the amount that exactly compensates men for the increase in m_0. Hence, if a woman specifies a nonzero mehr after the regime change (the nonnegativity constraint does not bind), then the regime change decreases the price of her dowry by more than the increase in base level dowry. That is, her total dowry decreases.

The result implies that the regime change decreases average mehr, but does not necessarily imply that average dowry decreases as well, since the dowry payment of those women who specify zero mehr after the change might increase. For example, if m_0 is already very high, implying that most women specify zero mehr, a further increase in mandatory alimony payments is likely to increase average dowry levels. However, if most women specify positive mehr levels in their marriage contracts even after the increase in the mandatory alimony payment, which is suggested by our data, then average dowries are likely to fall after an increase in m_0. Below we give an example of average dowry falling after an increase in m_0, in a simplified framework in which the distribution of match quality is binary.[34]

Example 1: Assume that ε takes value -4 with probability $1/2$ ("bad marriage"), and $+4$ with probability $1/2$ ("good marriage").

Let 0.1 fraction of men have marriage value parameter $X = -10$. Call them type I men. Let 0.9 fraction of men have marriage value parameter $X = -1.5$. Call them type II men.

Let 0.2 fraction of women have marriage value parameter $Y = 1$ and divorce cost $D = 0$. Call them type I women. Let 0.8 fraction of women have marriage value parameter $Y = 10$ and divorce cost $D = 6$. Call them type II women.

Assume that in Regime I, $m_0 = 0$. Because type I men do not marry, there is a shortage of men in the market. Type I women have to be indifferent between marrying or not. Since they choose $m = 0$, this implies $d(0) = d_0 = 1$. Note that at this level of dowry type II men are willing to

[34] For an example with normally distributed match quality, contact the authors.

marry, since their expected utility is 1.5. Type II women choose $m = 4$ (actually, because of the simple structure of the match quality distribution, any m that is at least 4 is equivalent here). The cost this imposes on a type II man is $4 \cdot \frac{1}{2} = 2$, since with probability $\frac{1}{2}$ the realization of ε is -4. Hence, $d(4) = 1 + \pi(4) = 3$.

Assume now that in Regime II, $m_0 = 5$. At such high alimony level, men never divorce, and all mehr levels are equivalent to $m = 0$ (no need to specify any higher level). This means that (type II) men only marry if $d_0 \geq 1.5$. At this level of dowry type I women do not want to marry. This creates a shortage of women in the market. Hence, type II men in equilibrium have to be indifferent between marrying or not, implying $d_0 = 2$. It is easy to check that women of type II strictly prefer marrying at this dowry level.

To summarize, the average dowry level in regime I is $\frac{1}{9}1 + \frac{8}{9}3 = 2\frac{7}{9}$, while the average dowry level in regime II is 2. Also, in accordance with Proposition 3, the dowry payment of type II women decreases, from 3 to 2. We emphasize that the possibility that average dowry decreases after an increase in alimony payments distinguishes our model from standard models in the literature: see the related discussion in Subsection 6.1.

The legal change, by reducing the set of contractible divorce-contingent transfer payments, is welfare-reducing: some couples are forced to accept higher than optimal alimony payments, because the nonnegativity constraint on mehr prevents them from "contracting around" the increase in mandatory alimony payments. The decrease in social welfare is reflected in a reduction of the number of people marrying in each cohort.

3.4 Dynamic extension of the model

The static analysis presented above misses some important features of how mehr and dowry depend on the legal environment because (i) marriage and separation decisions are influenced by the expected continuation values of the spouses after a possible end of the marriage; and (ii) at the same time expected continuation values in the future depend on marriage and separation decisions in the current period, by influencing the supply of women and men in the market in the future. This interdependence of the variables can only be dealt with properly in a dynamic model. Furthermore, the 1961 change, by making abandonment prohibitively costly, potentially changed the ratio of women to men returning to the market (since divorced women are allowed to remarry, as opposed to abandoned ones). This is an inherently dynamic effect, which again can only be addressed in a multi-period model.

In a supplementary appendix to this paper (Ambrus and Field (2008)) we extend the analysis to an infinite-horizon model, in which in every period a new cohort of women and men enter the market, and previously married individuals can reenter the market if they became eligible to marry again. The extra complications arising in this setting are the following:

(i) The cost that divorce imposes on woman j is no longer simply D_j, but also the expected present value of the dowry woman j has to pay for remarrying. For this reason, the level of dowries directly influence the amount of mehr women want to choose.

(ii) Analogously, when considering whether to stay in the current marriage, men take it into account the new dowry payments they can collect if they separate.

(iii) One needs to keep track of the set of women and men returning to the marriage market after failed marriages, and how they influence equilibrium dowry and mehr levels.

Despite these complications, the dynamic analysis yields exactly the same qualitative conclusions as the static one presented above. The intuitions for this are the following. The increase in dowries and mehr in the static model after the 1961 change is amplified in a dynamic setting, for two reasons. First, an increase in base level dowry in the dynamic setting increases the amount of mehr a woman wants to choose, by increasing expected future dowry payments and hence expected costs of being divorced. This further increases the dowry payment of the woman, since it implies that the mehr-dependent part of the dowry increases, too. Second, if the change implies that some women who previously would have been abandoned get divorced after 1961, then since divorced women can reenter the marriage market, the supply of women in the market relative to the supply of men (who can reenter the market both after abandonment and divorce) increases. This again reinforces the increase in dowries. For reasons analogous to the first point, the decrease in dowry and mehr levels in 1974 for women not constrained by nonnegativity of mehr gets amplified in a dynamic setting, too.

4 Empirical Evidence

4.1 Data

To test the predictions of the model, we use household data from the 2004 Bangladesh Rural-Urban Linkages Survey (BRULS), a random sample of households in Rajshahi, one of the six administrative divisions of Bangladesh that covers approximately one quarter of the country in both area and population.[35]

The BRULS was a follow-up study to the 2000 Household Income and Expenditure Survey (HIES) conducted by the Bangladesh Bureau of Statistics. Among the 9,800 HIES households, the majority of the 1,360 rural households in Rajshahi were recontacted between December 2004 and January 2005, yielding a final sample size of 1,271 households representative of 78 villages and 16 districts in the region.[36]

[35] The division is commonly known as the "breadbasket" of Bangladesh, and its largest industries are jute, silk, fruit and rice. The regional nature of the survey is relevant for the external validity of the findings even inside of Bangladesh, since marriage practices vary quite a bit by region. Nationwide findings from the BLAST survey (2004a) suggest that the change in dowry over time may be more acute in the Northwest region: While the amount of dowry received by older males was lowest in the Northwest, younger men in the Northwest received an amount of dowry comparable to the national average. The same study found that only 50% of marriages (spanning a wide range of years) in Rajshahi had involved prior agreements regarding dowry gifts, relative to 95% of marriages in the Sylhet region where dowry is most common. Although the years and wording of the question are distinct, the BLAST figure is comparable to the fraction of marriages involving dowry that we find in the BRULS over the same period.

[36] Since the majority of households that relocated within Rajshahi were successfully tracked, the 6.5% attrition rate primarily reflects the rate at which sample households moved outside of the region between 2000 and 2004. An additional 200 households in Rajshahi were also interviewed as part of a supplementary study of contract farming; these households are excluded from the analysis as marriage questions were not asked.

As a panel with the HIES, the 2004 data contain detailed information on household food and non-food consumption, dwelling characteristics, agricultural and non-agricultural enterprises, assets, credit, savings, time allocation, social capital, community characteristics, and education, health, employment of current and previous household members. In addition, a module was added to the 2004 questionnaire for the purposes of this study in which the following marital history data were collected for all ever married individuals in each household and all children of the head not residing in the household: year of first marriage, dowry amount and form (up to three types), ownership rights over dowry (up to three types), amount of mehr specified on the marriage contract, who chose the first spouse, and first spouse's age, education and parents' wealth relative to own parents' wealth (whether bride's father was richer than, less rich than or equally as rich as the groom's father). In the analysis sample, real values of mehr and dowry in 2004 prices are constructed from the national consumer price index series available between 1969 and 2004 (from the United Nations Statistical Office), adjusted backwards according to the annual average price of jute for years prior to 1970.[37]

Enumerators were asked to collect mehr values directly from marriage certificates whenever available. According to field reports, marriage certificates were available from 82% of households in the survey pilot.

4.2 Sample

The primary analysis sample considers only ever-married female heads or spouses and daughters or daughters-in-law of heads. A total of 6.67 percent of the sample are excluded from the sample (272 observations) on account of missing information on dowry or mehr amounts. In addition, seven percent of the sample is non-Muslim (289 households) and are therefore excluded from the analysis, along with individuals under 18 and over 65. This leaves 1368 women between the ages of 18 and 65.

4.3 Correlation Between Dowry and Mehr

Our first set of evidence on the validity of our predictions comes from examining the relationship between individual amounts of dowry and mehr. The theoretical model we present implies a strong positive correlation between dowry and mehr. Indeed, as shown in Figures 1a-1c, the data indicate that there is a strong positive and statistically significant correlation between dowry and mehr at the individual level. Figure 1a superimposes a lowess fit line representing the best nonparametric fit of the dowry-mehr relationship, which is almost perfectly linear. The estimated linear regression

[37] Since the nation of Bangladesh is relatively new, there are no official price indices available for the entire period of interest that correspond reasonably well to expected changes in regional prices. Jute is the most common agricultural product produced in the region over the entire period. To construct the price series, the CPI was anchored to the price of jute in 1970. Years in which jute prices and the CPI are both available show that these two series move very closely throughout the early 1970s (*Appendix C*). As a robustness check, an alternative price level adjustment was constructed using the national consumer price index series for Pakistan for years prior to 1970 (when Bangladesh was under control of Pakistan). Both series are descirbed in detail in Appendix D. None of the estimates or patterns are sensitive to the choice of price deflator.

coefficient is 0.8 with a standard error of 0.07. Figures 1b and 1c divide the data into two periods, pre- and post-1974, revealing that the relationship is relatively constant over time.

In general, the positive correlation between dowry and mehr is somewhat surprising given that, were dowry a simple marriage market "price", we would generally anticipate a negative correlation between dowry and mehr since grooms who can command high dowries can also negotiate lower mehr. Of course, with these data alone, we cannot rule out the possibility that the correlation reflects third factors such as family income that drive both dowry and mehr. However, they provide an important consistency check on our theoretical model.

4.4 Trends in Dowry and Mehr

Our central empirical analysis examines the relationship between changes in legal regimes and changes over time in real values of dowry and mehr. Our data reveal that dowry and mehr are highly correlated, both across individuals and over time. Figure 2 plots the fraction of marriages by year that involved dowry payments from the bride's parents to the groom, which increases steadily over time. The figure also shows that dowry participation became relatively high beginning in the 1960s rather than the 1970s, as has been suggested in the past. Figures 3 and 4 plot by year of marriage average values (in 1980 taka) of mehr specified on the marriage contract and dowry given from the bride's family observed in our sample of first marriages from the BRULS. Both figures indicate clear changes in levels of mehr and dowry that correspond to important legal changes: Both mehr and dowry are low until the early 1960s, after which point they rise steadily and remain high between 1966 and 1974. After 1974, we observe a dramatic reduction in both components to levels above those observed in 1960 but well below the peak levels observed in 1966-1974. Both remain relatively constant from 1976 to 1998, and then appear to rise again beginning around 2000.

Figure 5 plots alongside total amounts of dowry average level of "bequest dowry", or dowry that is reported to be given from the bride's family exclusively to the bride. Here we see a gradual upward trend in the amount of bequest dowry, but one that appears to be independent of legal changes. Unfortunately, because of the structure of survey questions, these figures only consider *pure* bequest dowries, and do not take into account dowries that are part bequest and part gift to groom. While we cannot know the amount of dowry given to bride when dowry takes both forms, the fraction of marriages in which *any* dowry is given to the bride (unreported) also appears to be relatively stable over the entire period.

Table 1 presents summary statistics for the full set of variables used in the regression analysis. As seen on Figure 3, amount of mehr specified on the marriage contract jumps after 1962 - doubling in magnitude from regime 1 to regime 2, then falls again after 1974 and remains fairly constant until 2000, after which point a significant rise - amounting to 50 percent of real value - is again observed. Meanwhile, as documented in Figure 2, the fraction of marriages that involve dowry triples from period 1 to period 2, then doubles post-1974, and continues to rise slowly thereafter, reaching 85.7 percent after 2000. However, the value of dowry transfers from bride to groom (as illustrated in Figure 4) is non-monotonic, following the same pattern as mehr: dowry amounts increase sharply

after 1962, then fall immediately after 1974 and rise thereafter. By the 1990s, dowry values have returned to the level observed between 1962 and 1973. Finally, as observed in Figure 5, the fraction of marriages in which all dowry is designated to be property of the bride rises right after 1962, then remains relatively constant between 1963 and 1973, and finally rises slightly from 1974 onward.

5 Regression Estimates

5.1 Basic Specification

We test for the statistical significance of the observed shifts in mehr and dowry that correspond to changes in legal regimes by estimating the following regression for couple i married in period y in region r, which includes fixed effects for region of residence (r) and 8-year period of marriage (y):

$$Y_{iyr} = \alpha_{yr} + \beta\mu_{iyr} + X_{iyr} + \epsilon_{iyr} \tag{1}$$

In this equation, μ_y is a vector of four dummy variables that separates the range of marriage years into five distinct legal regimes, 1956-1963 (pre-MFLO), 1964-1974 (pre-MMDA), 1975-1990, 1991-1998, and 1999-2004.[38] We are interested in the coefficient estimates on the variables contained in μ_y, which indicate the level shifts in dowry and mehr that correspond to the changes in legal regime, conditional on a linear time trend in year of marriage and non-linear shifts in Y across 8-year periods. The estimates are robust to including a squared term for year of marriage. They are also robust to alternative cutoff points and lengths of period fixed effects, though the marginally significant results become insignificant when shorter periods are used.

In the baseline specification, X includes year of marriage and an indicator of relation to the household head (specifically, whether the woman is the daughter-in-law as opposed to daughter or wife of the household head). We distinguish between these two types of observations because, in one case (data on dowry offered by the wife or daughter of the head) the respondent is the giver of dowry, and in the other case (data on the dowry offered by the daughter-in-law), the respondent is the receiver of dowry, and there may be systematic dowry reporting differences based on whether one is a giver rather than a receiver. We also estimate the above regression with a wider set of control variables, including age, education and relative wealth of bride and groom at the time of marriage. Since these variables have the potential to be influenced by laws governing marriage, we present the results from the baseline specification alongside the saturated model for comparison. In all regressions, standard errors are clustered by household.

In the absence of a control group that is not influenced by the law but otherwise subject to identical time trends in marriage behavior, identification relies entirely on pre-post comparisons. Hence, our estimates in specification (1) will capture the causal influence of legal rulings on equilibrium marriage payments in year t in the absence of third factors that coincided with the regime shifts in timing and direction of influence on marriage outcomes. While a great deal went on during

[38] As described earlier, the 1961 MFLO did not take effect in East Pakistan until 1963, so we treat 1963 as the relevant year of change.

this period in Bangladeshi history, given that the full set of predictions spans includes four distinct events that had non-monotonic influence on dowry and mehr, confounding time trends would require a complex set of external events. In addition, since the law changes of 1961 and 1974 were motivated by similar concerns and trends in legislation (ensuring that marriages followed religious law and were registered), circumstances that gave rise to the law changes are unlikely to be independently responsible for changes in mehr and dowry at these two junctures in opposite directions. To account for time trends as much as possible, our estimates include a linear trend along with seven period dummies that introduce flexibility into underlying trends in marriage payments that may be nonlinear. The estimates are robust to including a squared term for year of marriage. They are also robust to alternative cutoff points and lengths of period fixed effects, though the marginally significant results become insignificant when shorter periods are used.

5.2 Difference-in-difference Specification

To gain more traction on the empirical findings, we make use of spatial variation in the likelihood that a household was influenced by the legal changes based on the administrative level of the upazila, or division subdistrict, in which the marriage took place. In particular, we classify each marriage according to whether the village is either a municipality or subdistrict capital, which determines access to local government bodies.[39] A subdistrict (or upazila, or thana) is a geographic unit of approximately 50,000 households. Of all 119 subdistricts in the division of Rajshahi, 39 are considered municipalities, which was the smallest administrative level before 1980. In addition, each subdistrict has a headquarters village where local government bodies representing rural areas are located.

The basic idea underlying this distinction is that, while marriage contracts are part of a traditional marriage ceremony for the majority of Muslim households even in very remote areas, presumably the extent to which these contracts are considered enforceable is a function of the availability of local officials who can officiate and enforce such agreements at the point of both marriage and divorce, which includes both qazis and local government chairmen.[40] Hence, dividing our sample into remote and less remote villages gives us a control group of households that we expect to be little influenced by law changes such as the MFLO since their marriages are unlikely to have been officially endorsed by a traditional qazi, nor would they have had ready access to a

[39] In particular, we define a variable equal to one if the village either (1) lies within a subdistrict that is classified as a municipality or (2) if the ward in which the village lies is the capital of the subdistrict. The results are robust to classifying remoteness according to the first criteria only.

[40] Local government in urban and rural areas is entrusted to bodies elected by the people, referred to as Municipalities (Pourashavas) in urban areas and Union Councils (*Parishads*) in rural areas, the basic unit of political administration (BBS, 1993). A representative body of roughly 100,000 people, its functions include a range of duties from socioeconomic development to general administration such as divorce record-keeping. For instance, a divorce must initially be filed with a UP chairman (the kazi registers the paperwork once it is finalized). For divorce proceedings that go to court, family courts are located at the thana level, so the closest court for divorce proceedings will be the thana headquarters. Villages located in areas that are municipalities have the additional advantage of being more likely to have a local kazi who can register the marriage document, particularly prior to 1974. After 1974, kazi were finally provided financial incentives to cover all rural areas so that registration become much more accessible for all.

union parishad (UP) council upon dissolution of the marriage.

In contrast, since the 1974 ordinance was intended to strengthen the 1961 ruling by giving existing qazis jurisdiction over all villages, we expect remote areas to experience a positive increase in the use of mehr provisions in marriage contracts in these areas on the extensive margin at the same time that we observe levels of mehr falling in less remote areas where marriage contracts were already being registered.

Using non-headquarters as a control group, we estimate the following difference-in-difference equation:

$$Y_{iyr} = \alpha_{yr} + \beta_1 \mu_{iyr} + \beta_2 m_{iyr} + \beta_3 (\mu * m)_{iyr} + X_{iyr} + \epsilon_{iyr} \tag{2}$$

In this specification, m is whether a household was sampled from a union headquarters or municipality. Of the 76 separate unions in our sample, approximately half (37) fall into this category, including 40% of households that reside in municipal subdistricts and an additional 10% that reside in villages that are capitals of non-municipal subdistricts.

In both regression estimates, it is important to keep in mind that our estimates capture the causal influence of legal regimes on *individual* marriage payments - our central parameter of interest since it links directly to predictions from our theoretical model - only insofar as the laws do not have a substantial effect on marriage market sorting. For instance, if a law reduces dowry for the reasons hypothesized in our model, changes in dowry requirements could postpone or hasten marriage for credit-constrained families, which could have secondary effects on equilibrium dowry. While impossible to rule out (and in fact likely to matter for some group of individuals), this type of substitution effect will in general bias downward our estimated effect of the law.

Potential direct effects of the legal regime on marriage market sorting that are outside the scope of the model are more complicated to assess. For instance, if marriage registration led individuals to marry more readily spouses from villages that are further away (or closer), this behavioral response could have implications for marriage payments. We explore this issue empirically after discussing the main results by examining the effect of the law on observable bride and groom characteristics. We further address the issue of endogenous marriage timing with the more conservative specification based on legal regime at the time a woman is 13 rather than in her year of marriage. However, our discussion of initial results rests on both of these assumptions.

5.3 Results

Table 2 presents the regression results from equation (1).

We first discuss the estimated changes in mehr (columns 1 and 2). In regressions both with and without controls for bride and groom characteristics, the coefficient estimates indicate a substantial and statistically significant increase in the amount of mehr specified on marriage contracts after 1961. According to the estimates, the value of mehr more than tripled after 1961, which is also evident from Figure 3. Furthermore, the regression estimates and unconstrained time trends reveal

a sharp and significant decline in the level of mehr specified on marriage contracts post-MMDA (1974).

With respect to the Court rulings of 1990 and 1999, the coefficient estimates are in line with our predictions in direction and magnitude, however the statistical significance is not robust across specifications. In columns 1 and 2, mehr rises by a moderate amount after 1990, and the trend break is significant at the 10% level. However, while the point estimate of the coefficient on the dummy for marriages post-1998 is large, it is far from significant. This is not surprising given the limited number of marriages observed in the final period over which this trend can be estimated.

Columns 3 and 4 show the estimated changes in dowry. The results indicate that dowry rises after the MFLO and falls after the MMDA. Again these results are unaffected by the inclusion of spouse characteristics. As illustrated in Figure 4, the estimated rise post-MFLO is large and the fall post-MMDA only slightly smaller. Furthermore, the result is unchanged when we set to zero the value of dowry that is said to be property of the bride, in an effort to exclude pure bequest dowries (column 5).

With respect to the legal changes in the 1990s, in the baseline specification and the model with demographic controls, dowry levels appear to be rising after both 1990 and 1998, but there is no indication of a significant break in these years. However, when dowries given purely as bequests are exclude from the regression, the estimated increases corresponding to the final two periods attain significance.

For all regressions, F-tests confirm the joint significance of the set of legal dummies. Together, the estimates imply that the net effect of legal changes on dowry is a 30,000 Taka increase over the entire period from 1960 to 2000, roughly three-fourths of the increase observed over the entire period.

Table 3 presents results from the difference in difference estimates (equation (2)). Here we observe two basic patterns: First, the rate of dowry participation indeed rises in remote subdistricts and falls in more central subdistricts in response to the 1974 change, illustrating the dual impact of the law on contract enforcement and demand for divorce prevention. This is also reflected in the coefficients on the 1974 dummy when regressed on the value of mehr, and is robust across both DID specifications. As a consequence, change in value of mehr is entirely concentrated in more urban areas where the second effect predominates. Second, the 1961 law appears to have only had an impact on levels of dowry and mehr in more central areas where family courts and qazi were available to enforce marriage contracts.

The 1974 legal change is likely to increase the number of women who are constrained by the nonnegativity constraint on mehr, and hence specify only a token amount of mehr. To check this, we consider the fraction of marriage contracts involving mehr amounts below USD$100, since some positive amount of mehr must always be specified on the marriage contract. Recall that the expectation of the actual enforced mehr payment is about 20% of the one specified in the contract, hence the effective mehr in these contracts is much smaller than $100. Prior to 1974, 10% of marriages involved mehr levels below this amount. Meanwhile, after the change, this fraction

jumps to 17% of all marriages. These patterns, illustrated in Figures 6a-6d, provide evidence that the 1974 legal change introduced inefficiencies by increasing contract-independent alimony payments in case of divorce.

5.4 Robustness Checks

Since marriage timing may be affected by the law changes, we also estimate equation 1 replacing the dummy indicators contained in μ_y - which indicate whether a respondent was married by the time of each law change - with indicators of whether a respondent had turned 13 by the time of each change. Results from these regressions are presented in Table 4. In this fairly demanding specification, all results are unchanged except for the estimated effect of the MFLO on mehr, which switches signs and loses significance when year of marriage is replaced by year of birth. All other coefficient estimates on variables contained in μ_y are unaffected. A likely explanation for the increased imprecision on the MFLO dummy is that a greater number of girls got married before age 13 at that point in time, so the results will be more sensitive to the choice of age at which marriage decisions are made (hence girls who were 13 in 1963 will be classified as "after" the change, even if they married at age 11, before the change). Since dowry took longer to respond to the law change, misclassifying affected and unaffected girls in this manner will make less of a difference to the point estimates across specifications.

To test whether our coefficient estimates are mistakenly picking up time trends in marriage payments that are independent of legal rulings, we run two placebo tests, the results of which are presented in columns 1 and 2 of Table 5. The first isolates the sub-sample of marriages among Hindu families that were randomly drawn from the selected enumeration areas as part of the survey sample. This comparison is similar to the identification strategy used by Esteve-Volart (2003). Hindus are an appropriate control group for studying time trends in dowry since most Hindu marriages involve dowry, but are not subject to Muslim Family Law governing polygamy or divorce. Hence, they should be unaffected by the legal regime changes. Indeed, the results in column 1 provide no evidence of external forces driving observed patterns of dowry evolution.

Our second placebo test replaces the dependent variable with dowries given as bequest from a parent to a daughter. As described in Section 4, we have no reason to expect bequest dowries to respond in the predicted manner to legal changes since they cannot by definition be a form of compensation to the groom in exchange for marriage contract terms that are favorable to the bride. If anything, bequest dowries can be expected to rise in response to the laws passed in both 1961 and 1974 and fall in response to the rulings of 1990 and 1998. Indeed, there is no evidence that the limited amount of dowry given entirely to a bride changes in level or frequency (unreported) in conjunction with the legal rulings (column 2, Table 5).

To study further whether there is evidence of sorting effects in the marriage market that could be biasing our results, the final two regressions in Table 5 examine the impact of legal regimes on characteristics of brides and grooms - bride's age and the age difference between bride and groom. Once again, we find no evidence of significant changes in marriage timing or choice of spouse in

response to the rulings.

Another potential concern which arises from the retrospective nature of the data is differential mortality by type of marriage contract. For instance, if wealthier women live longer, they are overrepresented in pre-MFLO marriage data relative to post-MFLO marriage data. We have three basic responses to this concern. First, selective mortality according to socioeconomic status as described in the previous example would generally give rise to a decrease in values of dowry or mehr over time, which is the opposite of what we observe in the data. Second, selective mortality could not explain the non-monotonicity of the time trends in both dowry and mehr unless there was a large cohort effect that coincided with the constitutional amendments. Second, selective mortality could only account for the difference-in-difference results if that cohort effect was only present among relatively urban populations. We have no reason to suspect such a pattern, nor is such a pattern visible from looking simply at the number of respondents by age, which is monotonically decreasing.

6 Comparison with Predictions from Alternative Models

In this section we argue that traditional models in which dowry serves either a bequest role or a price role equating supply and demand in the marriage market, but without the possibility of binding prenuptial agreements, cannot explain the set of empirical results obtained on how dowry levels adjusted after important legal changes. We also show that the qualitative predictions of the model would also be inconsistent with the empirical results if the 1961 and 1974 legal changes operated not through the channels we postulated, but through increasing the probabilities of marriage contracts being enforced. We keep the discussion in this section at an informal level, but formalizing these arguments would be straightforward.

6.1 Effect of the Law Changes in Traditional Models of Dowry

Consider first a model in which dowry plays the traditional price role of equating demand and supply in the marriage market, but there is no possibility of signing a binding agreement that would affect later marriage outcomes.[41] Since the 1961 legal change makes abandonment more costly, it simultaneously decreases the supply of grooms in the market and reduces the risk of marital separation. If women strictly prefer official divorce to abandonment then the legal change increases the supply of women in the market. Hence, this model has the same prediction as the one with contracted mehr, namely an increase in dowry levels, after the 1961 change. In contrast, the 1974 legal change unambiguously makes divorce more costly for men under a pure price model of dowry, which, in the absence of prenuptial agreements decreases the supply of men and increases the supply of women in the marriage market. Hence, after the 1974 change, a model in which dowry

[41] For concreteness, the reader can think about the model presented in Section 3, with the restriction that the only contract feasible is the null contract (the one specifying zero mehr). However, our arguments apply to a broader class of models in which dowry is an equilibrium price that only depends on exogenous variables.

plays only a traditional price role has the opposite prediction than what we observed empirically: an *increase* in dowries after 1974.

Consider next a model in which the only motive behind dowries is leaving bequest to daughters. Dowries in principle are payments from the bride's families to the groom, but it is reasonable to assume that wives benefit from increases in the resources of husbands. However, this is only true as long as the couple stays together, since after separation it is reasonable to assume that the woman no longer benefits from the husband's resources (or at least she benefits less). Hence, the amount of dowry governed by bequest motives should decrease in the probability of separation. Since the 1961 legal change, by imposing restrictions on abandonment, decreased the probability of separation, the prediction of this model is an increase in dowries. The predicted effects of the 1974 law are the same since this amendment increased the cost of divorce for men. As a result, the predictions of this model are once again consistent with the data (and our model's predictions) with respect to the 1961 but not the 1974 impact on dowry levels. The same conclusions would hold for models in which prenuptial agreements are absent but dowries serve both the price role and the bequest role as in Arunachalam and Logan (2006).

To conclude the above discussion, while the predictions of our model coincide with predictions from alternative models of dowry with respect to the 1961 legal change, our model has distinct predictions with respect to the 1974 legal change, verified by the empirical results.

6.2 Effect of the Laws on the Enforcement of Prenuptial Agreements

Aside from alternative theories of dowry in which prenuptial agreements are absent and dowry is unrelated to mehr, it is also important to consider alternative interpretations of how legal changes might have affected mehr, within the context of models in which mehr affects dowry. The main alternative theory here is that the legal changes, instead of (or besides) changing the contract-independent costs of abandonment and divorce, affected the enforcement of prenuptial agreements specified in marriage contracts. In particular, both the MFLO and the MMDA could have increased the probability that the payment of mehr is enforced after divorce, or increased the expected fraction of mehr received by a divorced woman.[42] This was indeed one of the intended objectives of both the 1961 and the 1974 legal amendments.

If there is an increase in the probability that the mehr specified in the contract is enforced, or in general an increase in the expected fraction of the mehr enforced, couples will specify mehr levels that yield exactly the same level of expected enforced mehr as before. That is, they will equate the expected values before and after the change. This results in decreased mehr levels after both legal changes, while dowry levels are unaffected since only "nominal" mehr levels are changing, not actual expected mehr transfers in case of divorce. Hence, the above alternative interpretation of the effects of legal changes implies that mehr levels decrease and dowry levels stay constant after both

[42] In our theoretical model, for simplicity we assumed that mehr is enforced with certainty. However, our model would still be valid if the probability of enforcement, p was less than 1. In this case, the equilibrium would remain the same as in the original model, with the exception that all couples would specify a mehr that is 1/p times the original level, to keep the expected mehr, hence the level of exit barrier unchanged.

the 1961 and the 1974 legal changes, that are in contrast with the empirically observed patterns (and with the predictions of our model with the interpretation that the legal changes operated mainly through altering the costs of abandonment and divorce for men).

7 Conclusions

Our results provide evidence that an important component of dowry in Bangladesh is payment from a bride's family to the groom in exchange for higher prenuptial agreements. Our estimates indicate that this aspect of dowry could be responsible for a large amount of the observed variation in dowry levels and participation over time, including recent "dowry inflation" that has been discussed extensively in the literature: According to our regression estimates, dowry response to legal changes account for 75% of the observed increase in average dowry over the last 50 years. In contrast, our empirical examination of bequest dowries provides little direct evidence that dowry increases are going to women as a form of bequest in this context, as has been hypothesized in past work.

These findings indicate that enforceable marriage contracts governed by Muslim Family Law among nearly one fifth of the world's population serve to generate more efficient marriage market outcomes. Furthermore, they imply that dowry is more likely to fall if social penalties on divorce fall than if female economic opportunities increase without shifting stigma of divorce. In fact, our model suggests that the latter could even lead to an increase in average dowry payments. In this manner, laws governing polygamy and divorce, commonly intended to protect women from unfavorable marital outcomes exacerbated by the gender inequality in legal rights, may under certain circumstances have unintended economic consequences for women in the form of increasing equilibrium dowries. Our findings highlight the role of religious and legal institutions in influencing trends in marriage payments and marital separation, and the effect they have on private contracts. According to our analysis, the 1961 constitutional amendment affected mehr and dowry levels through expanding the set of contracts that could be enforced by religious courts. In contrast, the 1974 constitutional amendment only had an affect on dowry levels because it induced a change (the increase in mandatory alimony payments) that some couples could not privately contract around (because of the nonnegativity constraint on mehr).

Marriage practices have obvious implications for poverty in developing countries through their influence on outcomes such as fertility and investments in child health and education. Understanding the origins of institutions such as dowry is therefore critical to predicting their interaction with economic development. The fact that dowries appear to be rising in both Bangladesh and Pakistan makes the question one of current and not just historical importance (Rao, 1993a, 1993b). In future work we plan to investigate the origin of deferred mehr, which we hypothesize arises out of the unique combination of asymmetric divorce rights and severe restrictions on polygamy.

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Appendix A: Bangladesh Marriage Registration Form (Translated by Sultana Kamal)

Form of Nikahnama Prescribed by Clause 9 of the Muslim Marriage and Divorce (Registration) Act, 1974.

1. Name of ward, town, union, tahsil, police station, and district where marriage took place.....
2. Names and addresses of the bridegroom and father.....
3. Age of the groom.....
4. Names and addresses of the bride and father.....
5. Whether the bride is a virgin, widow or divorcee.....
6. Age of the bride.....
7. Name and address of the pleader on behalf of the bride, if appointed....
8. Names, fathers' names and addresses of the witnesses in connection with pleader's appointment and their relationship with the bride. (2)...
9. Name and address of the pleader on behalf of the groom, if appointed.....
10. Names, fathers' names and addresses of the witnesses in connection with the appointment of the pleader on behalf of the groom. (2) ....
11. Names, fathers' names and addresses of the witness to the marriage. (2).....
12. Date of betrothal.....
13. Amount of dower.....
14. Amount of prompt and deferred dower.....
15. Whether any amount of the dower has been paid at the time of marriage? If so, how much?.....
16. Whether any transfer of any kind of property has been made in lieu of the agreed amount of dower or part of it?.....
17. Any special conditions.....
18. Has the groom delegated his wife the power to divorce? If yes, what are the conditions?.....
19. Has the husband's right to divorce been curtailed by any condition?.....
20. Has any document been made in connection with dower, maintenance? If so, describe..
21. Whether the groom has any other wife/wives and if yes, whether he has obtained permission from the Salish Council (Arbitration Council) for the marriage as per the Muslim Family Law Ordinance 1961?.....
22. Number and date of letter of permission from Arbitration Council for the marriage.....
23. Name, father's name of the person solemnizing the marriage.....
24. Date of marriage registration.....
25. Amount of the Registration Fee paid.....

[Signatures of bride, groom, witnesses]

Appendix B: Proofs

Proof of Claim 1: Consider any two mehr levels m and $m' > m$ that are chosen by someone in equilibrium. By the definition of equilibrium this implies that these mehr levels are chosen by some men in equilibrium, too. The difference in expected utility for man i between choosing mehr level m versus m' is $d(m') - d(m) - \int_{-\infty}^{-c_{m'}} \varphi(x)(c_{m'} - c_m)dx - \int_{-c_{m'}}^{-c_m} \varphi(x)(-c_m - x)dx$. Since this term is the same for all men, either all men are indifferent between the two mehr levels, or all men strictly prefer one versus the other. The latter contradicts that both m and m' are chosen by some men in equilibrium. Hence, $d(m') - d(m) - \int_{-\infty}^{-c_{m'}} \varphi(x)(c_{m'} - c_m)dx - \int_{-c_{m'}}^{-c_m} \varphi(x)(-c_m - x)dx = 0$ for any m,m' chosen in equilibrium. This implies that there is $d_0 \in R$ such that $d(m) = d_0 + \pi(m)$, where $\pi(m) \equiv \int_{-\infty}^{-c_m} \varphi(x)(c_m - c_0)dx + \int_{-c_m}^{-c_0} \varphi(x)(-c_0 - x)dx$. ■

Proof of Claim 2: First, note that in equilibrium no woman chooses mehr level $m > q - m_0$, since the latter implies abandonment with probability 1 in case of separation, but then $A_j > D_j + m_0$ implies that the woman would be better off by choosing mehr level $q - m_0 - \varepsilon$ for small enough $\varepsilon > 0$. For any $m \in (0, q - m_0)$, the differential utility for woman j to be in a marriage with mehr m, relative to being in a marriage with mehr 0 is: $\beta(m) = \int_{-\infty}^{-c_m} \varphi(x)(c_m - c_0)dx + \int_{-c_m}^{-c_0} \varphi(x)(D_j - m_0)dx$. The first integral term is the expected increase in divorce-contingent transfers to the woman for match quality realizations that induce divorce given mehr m, and the second term is the net benefit for the woman from the husband staying in the marriage for match quality realizations between $-c_m$ and $-c_0$. By Claim 1, $d(m) - d(0) = \int_{-\infty}^{-c_m} \varphi(x)(c_m - c_0)dx + \int_{-c_m}^{-c_0} \varphi(x)(-c_0 - x)dx$. Note that $\beta(m) - (d(m) - d(0))$ is continuous in m, increasing in m if $c_m - c_0 < D_j - m_0$, and decreasing in m if $c_m - c_0 > D_j - m_0$. These properties imply parts (i) and (ii) of the claim.

Consider now a woman j such that $q \leq D_j$, and it is optimal for her to marry in equilibrium (by our distributional assumptions there always exist women like that; in particular $X_j > D_j + d(0)$ implies that not marrying cannot be optimal for woman j). If there was a positive probability that at mehr level $m = q - m_0$ separation involved abandonment in equilibrium, there would not be an optimal mehr level to choose for woman j (intuitively, she would like to choose a mehr level arbitrarily close to $q - m_0$). This contradicts the definition of equilibrium. Hence, at mehr level $m = q - m_0$ men in equilibrium choose divorce with probability 1, contingent on separation, and all women with $q \leq D_j$ who marry choose $m = q - m_0$. ■

Proof of Claim 3: By Claim 1, men are indifferent among all mehr levels $m \in [0, q - m_0]$. Hence, it is strictly optimal for man i to marry if choosing $m = 0$ yields a higher expected utility than not marrying, and it is strictly optimal for man i to stay single if choosing $m = 0$ yields a strictly lower expected utility than not marrying. Given $m = 0$, a man divorces if $\varepsilon < -c_0$ and stays in the marriage if $\varepsilon > -c_0$. Hence, choosing $m = 0$ is better than not marrying if

$X_i > -d_0 - \int_{-\infty}^{-c_0} \varphi(\varepsilon)[-c_0]d\varepsilon - \int_{-c_0}^{\infty} \varphi(\varepsilon)\varepsilon d\varepsilon$, and choosing $m = 0$ is worse than not marrying if $X_i < -d_0 - \int_{-\infty}^{-c_0} \varphi(\varepsilon)[-c_0]d\varepsilon - \int_{-c_0}^{\infty} \varphi(\varepsilon)\varepsilon d\varepsilon$. This implies the claim. ■

Proof of Claim 4: By Claim 2, the optimal mehr choice for woman j is $m(D_j)$. Hence, $Y_j - d_0 - \pi(m(D_j)) + \int_{-\infty}^{-c_{m(D_j)}} \varphi(x)[m_0 + m(D_j) - D_j]dx < 0$ implies woman j is better off staying single, while $Y_j - d_0 - \pi(m(D_j)) + \int_{-\infty}^{-c_{m(D_j)}} \varphi(x)[m_0 + m(D_j) - D_j]dx > 0$ implies woman j is better off marrying. This implies the claim. ■

Proof of Proposition 1: By Claim 3, in any equilibrium base level dowry $d(0) = d_0$ determines $d(m)$ for every $m \in [0, q-m_0]$. Below we establish that there exists exactly one value of d_0 consistent with stationary equilibrium.

Note that in equilibrium the masses of women and men wanting to marry have to be equal. Note that X^c is continuous and strictly increasing in d_0, and that $X^c \to -\infty$ if $d_0 \to -\infty$, and $X^c \to \infty$ if $d_0 \to +\infty$. This implies, by Claim 3, that the proportion of men deciding to marry is continuous and strictly increasing in d_0, and it goes to 0 if $d_0 \to -\infty$, while it goes to 1 if $d_0 \to \infty$. Also note that $Y^c(D)$ is continuous in both d_0 and D, and strictly decreasing in d_0 for every fixed $D \geq 0$. Moreover, for any $\overline{D} > 0$ and any $\overline{Y} > 0$ there is $\overline{d_0} > 0$ such that $d_0 > \overline{d_0}$ and $D \in [0, \overline{D}]$ imply $Y^c(D) < -\overline{Y}$, and that $d_0 < -\overline{d_0}$ and $D \in [0, \overline{D}]$ imply $Y^c(D) > \overline{Y}$. This implies that the mass of women deciding to marry is continuous and strictly decreasing in d_0, and it goes to 0 if $d_0 \to \infty$, while it goes to 1 if $d_0 \to -\infty$. Therefore, there is exactly one level of d_0 at which the proportions of women and men wanting to marry are equal. By Claim 3, in any equilibrium base level dowry $d(0) = d_0$ determines $d(m)$ for every $m \in [0, q - m_0]$, establishing part (ii) of the proposition. Claim 2 implies parts (i) and (iv) of the proposition, while Claims 3 and 4 imply part (iii).

Finally, if the masses of men and women wanting to marry are equal, then since men are indifferent among all mehr levels, there is obviously a profile of mehr choices by men such that the market clears, establishing the existence of equilibrium. ■

Proof of Proposition 2: First note that Claim 2 implies that every woman who marries in both regimes chooses a weakly higher m in Regime I than in Regime II, and that a positive fraction of marrying women choose strictly higher m. By Claim 1 this also implies that the dowry payment of every marrying woman is higher in Regime I than in Regime II, and that it is strictly higher for a positive fraction of women.

Next, note that by Claim 3, if d_0 remains unchanged after the regime change, the mass of men wanting to marry in each cohort stays constant. However, $Y^c(D)$ decreases for every $D > q^I - m_0^I$, since any woman j with $D_j > q^I - m_0^I$ is strictly better off in Regime II than in Regime I, her mehr choice is no longer being constrained by $m \leq q^I - m_0^I$. Continuity of $Y^c(D)$ then implies that the

mass of women in each cohort wanting to marry strictly increases, and therefore there is an excess supply of women in the market. Since the supply of man in the market is strictly increasing in d_0, while the supply of men is strictly decreasing in d_0, the above result implies that the market clearing d_0 in Regime II has to be higher than in Regime I. Claim 1, together with the result shown above that women choose weakly higher mehr levels in Regime II than in Regime I, implies that the dowry payment of every woman who marries in both regimes is higher in Regime II than in Regime I. ■

Proof of Proposition 3: Suppose $d_0^{III} = d_0^{II} + \pi(m_0^{III} - m_0^{II})$. Then for any man, the expected utility from marrying remains the same. To see this, note that $d_0^{III} = d_0^{II} + \pi(m_0^{III} - m_0^{II})$ implies that the dowry belonging to any mehr $m \geq 0$ in Regime III is exactly the same as the dowry belonging to mehr $m + m_0^{III} - m_0^{II}$ in Regime II. This implies the claim, since c_m in Regime III is the same as $c_{m+m_0^{III}-m_0^{II}}$ in Regime II (both are equal to $m + m_0^{III}$), and in both regimes men are indifferent among all available mehr levels in equilibrium. The above implies that the supply of men remains the same in Regime III as in Regime II. Similarly, the expected utility of any woman j such that $D_j \geq m_0^{III}$ is the same in Regime III as in Regime II. To see this, denote the optimal mehr choice of woman j (as defined in Claim 2) in Regime II by m_j^{II}. Then choosing mehr level $m_j^{II} - (m_0^{III} - m_0^{II})$ in Regime III yields the same expected utility for woman j, and it yields strictly higher expected utility than any other mehr choice. However, for any woman j such that $D_j < m_0^{III}$, the expected utility from getting married in Regime III is strictly lower than the expected utility from getting married in Regime II, since the optimal mehr choice in Regime III, that is $m = 0$, yields a strictly lower expected utility than the optimal mehr choice in Regime II. This implies that $Y^c(D)$ strictly increases for $D < m_0^{III}$. Continuity of $Y^c()$ then implies that the mass of women wanting to marry is strictly smaller in Regime III than in Regime II. Therefore there is an excess supply of men in the market.

Since the mass of men wanting to marry strictly increases in d_0 and the mass of women wanting to marry strictly decreases in d_0, the above argument establishes that $d_0^{III} < d_0^{II} + \pi(m_0^{III} - m_0^{II})$.

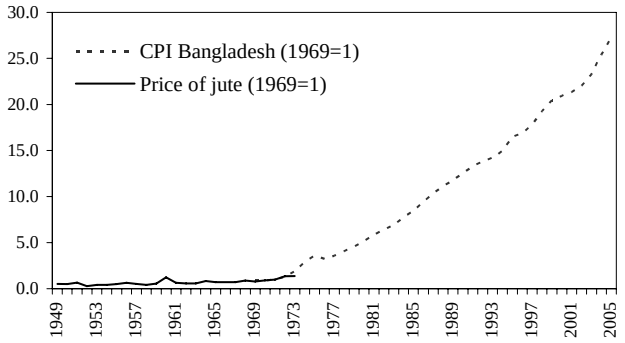
Let woman j be such that she wants to marry in both regimes. Claim 2 implies that the optimal mehr choice of woman j in Regime III is weakly lower than m_j^{II}, and strictly lower than m_j^{II} for $m_j^{II} \neq 0$.

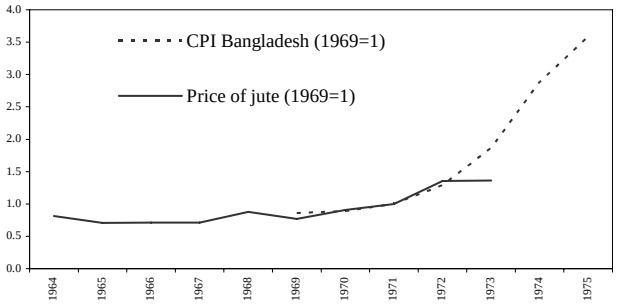
Let now woman j be such that she wants to marry in both regimes, and $D_j \geq m_0^{III}$ (that is, by Claim 2, the nonnegativity constraint on mehr does not bind for woman j in Regime III). Let m_j^{III} denote the optimal mehr choice of this woman in Regime III. Then $d_0^{III} < d_0^{II} + \pi(m_0^{III} - m_0^{II})$ implies that $d(m_j^{III})$ in Regime III is strictly lower than $d(m_j^{III} + m_0^{III} - m_0^{II})$ in Regime II. ■

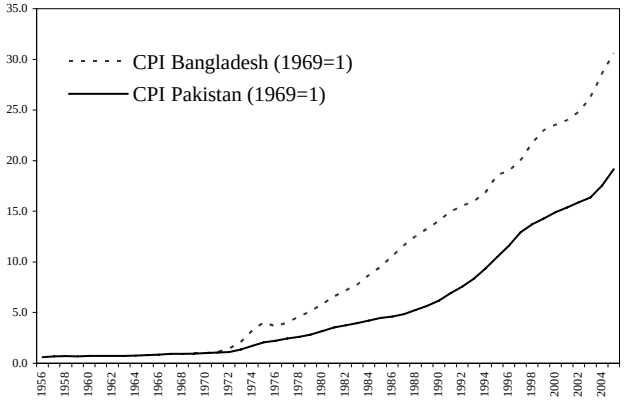
Appendix C: Adjusted Consumer Price Indices

A country-level consumer price index (CPI) for Bangladesh is available for the period 1969-2004 from the International Labor Office. The following two price series extend the Bangladeshi CPI by 15-20 years prior using: (i) the average price of jute 1949-1969; and (ii) the Pakistani CPI 1956-1969. The graphs below show a wider period of overlap between the Bangladeshi CPI and the two alternative adjustment measures. Since the price of jute tracks the Bangladeshi CPI more closely from 1969-1972, it is chosen as the preferred price series in the empirical analysis. However, since there is little difference between the two alternatives between 1956 and 1969, the estimates are robust to using either method.

Year	CPI_Jute, 2004=1	CPI_Pakistan, 2004=1
1949	0.0227	
1950	0.0215	
1951	0.0292	
1952	0.0116	
1953	0.0176	
1954	0.0177	
1955	0.0214	
1956	0.0273	0.0217
1957	0.0228	0.0236
1958	0.0181	0.0244
1959	0.0237	0.0236
1960	0.0544	0.0253
1961	0.0282	0.0257
1962	0.0249	0.0256
1963	0.0255	0.0259
1964	0.0357	0.0270
1965	0.0311	0.0285
1966	0.0312	0.0306
1967	0.0313	0.0327
1968	0.0386	0.0327
1969	0.0338	0.0338
1970	0.0350	0.0350
1971	0.0393	0.0393
1972	0.0506	0.0506
1973	0.0733	0.0733
1974	0.1134	0.1134
1975	0.1410	0.1410
1976	0.1275	0.1275
1977	0.1407	0.1407
1978	0.1592	0.1592
1979	0.1794	0.1794
1980	0.2031	0.2031
1981	0.2299	0.2299
1982	0.2513	0.2513
1983	0.2714	0.2714
1984	0.3043	0.3043
1985	0.3318	0.3318
1986	0.3704	0.3704
1987	0.4070	0.4070
1988	0.4371	0.4371
1989	0.4636	0.4636
1990	0.4920	0.4920
1991	0.5232	0.5232
1992	0.5423	0.5423
1993	0.5586	0.5586
1994	0.5883	0.5883
1995	0.6483	0.6483
1996	0.6638	0.6638
1997	0.6995	0.6995
1998	0.7583	0.7583
1999	0.8046	0.8046
2000	0.8224	0.8224
2001	0.8389	0.8389
2002	0.8669	0.8669
2003	0.9160	0.9160
2004	1.0000	1.0000
2005	1.0704	1.0704







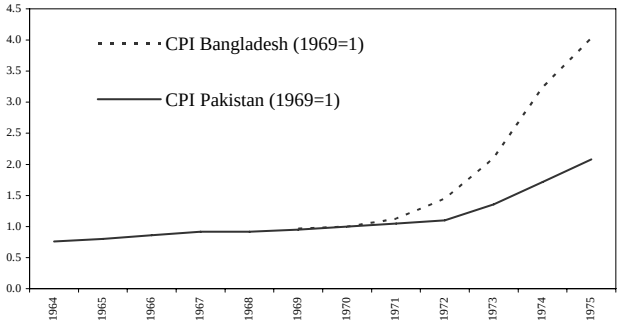


Figure 1a: Correlation between Dowry and Mehr, 1962-2004

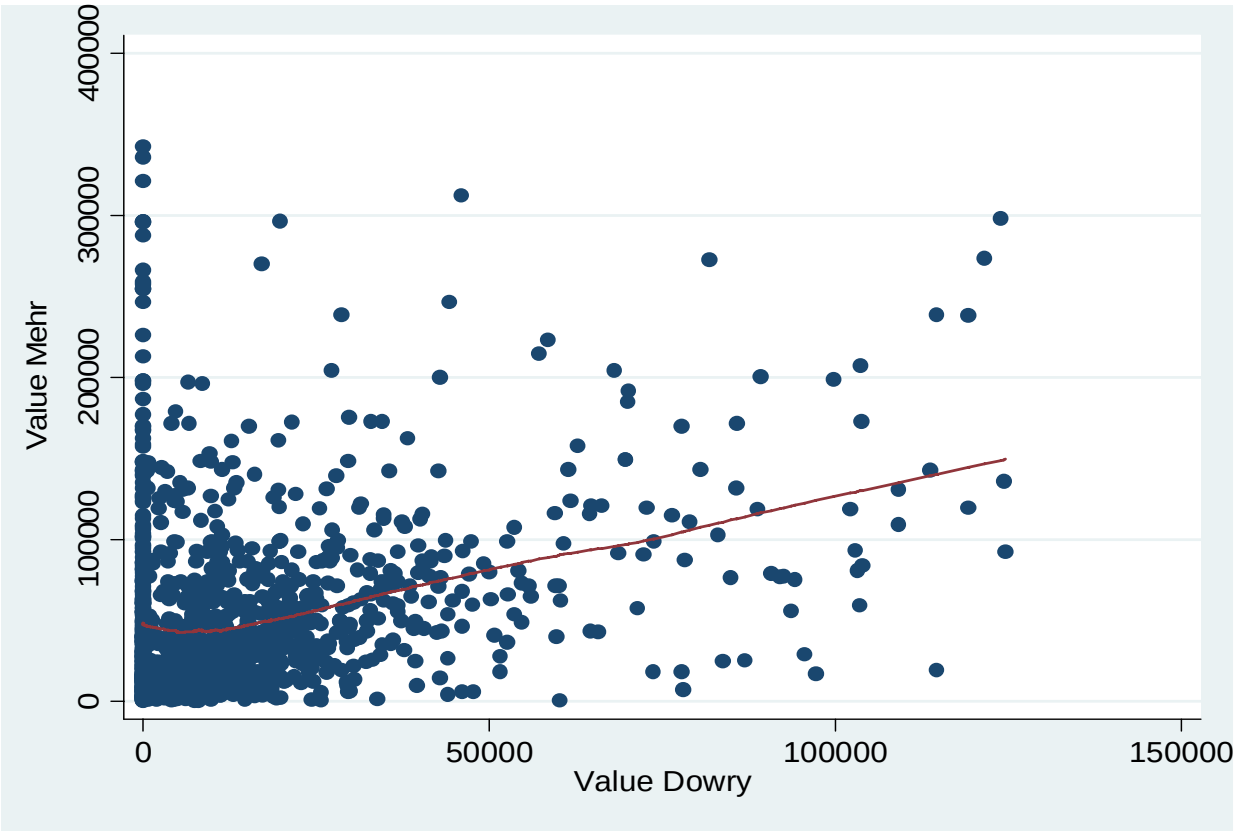


Figure 1b. 1962-1974

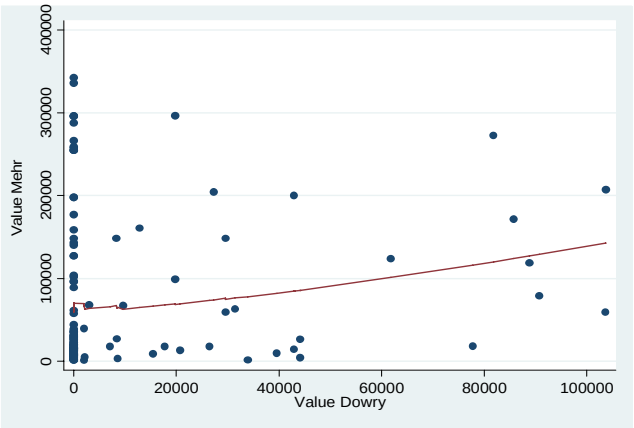
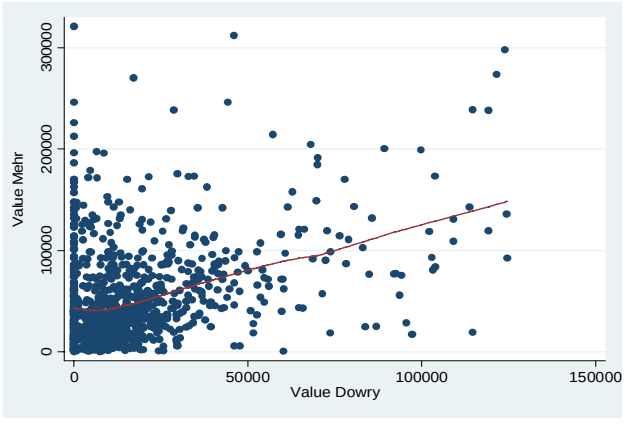
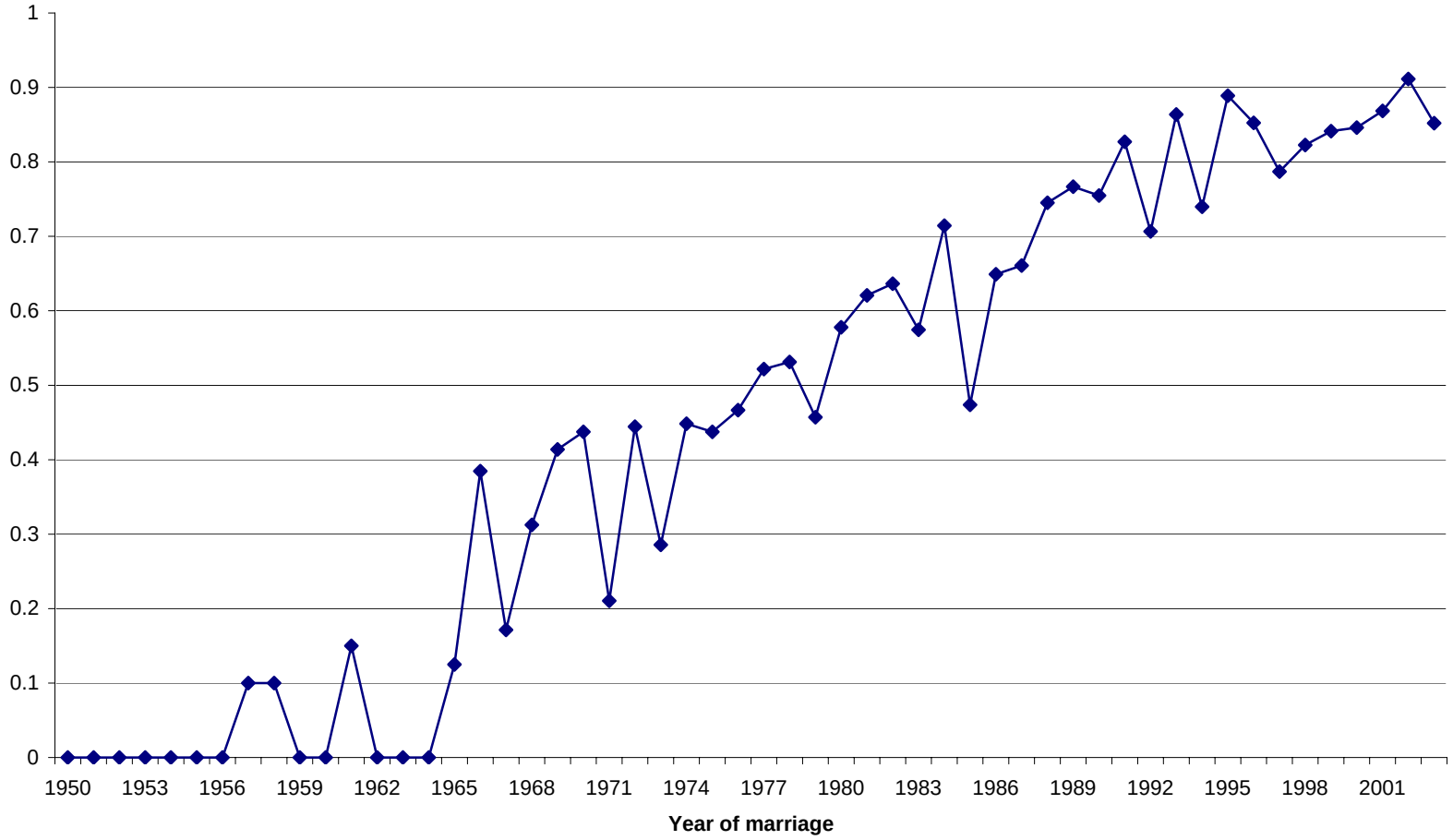


Figure 1c. 1975-2004



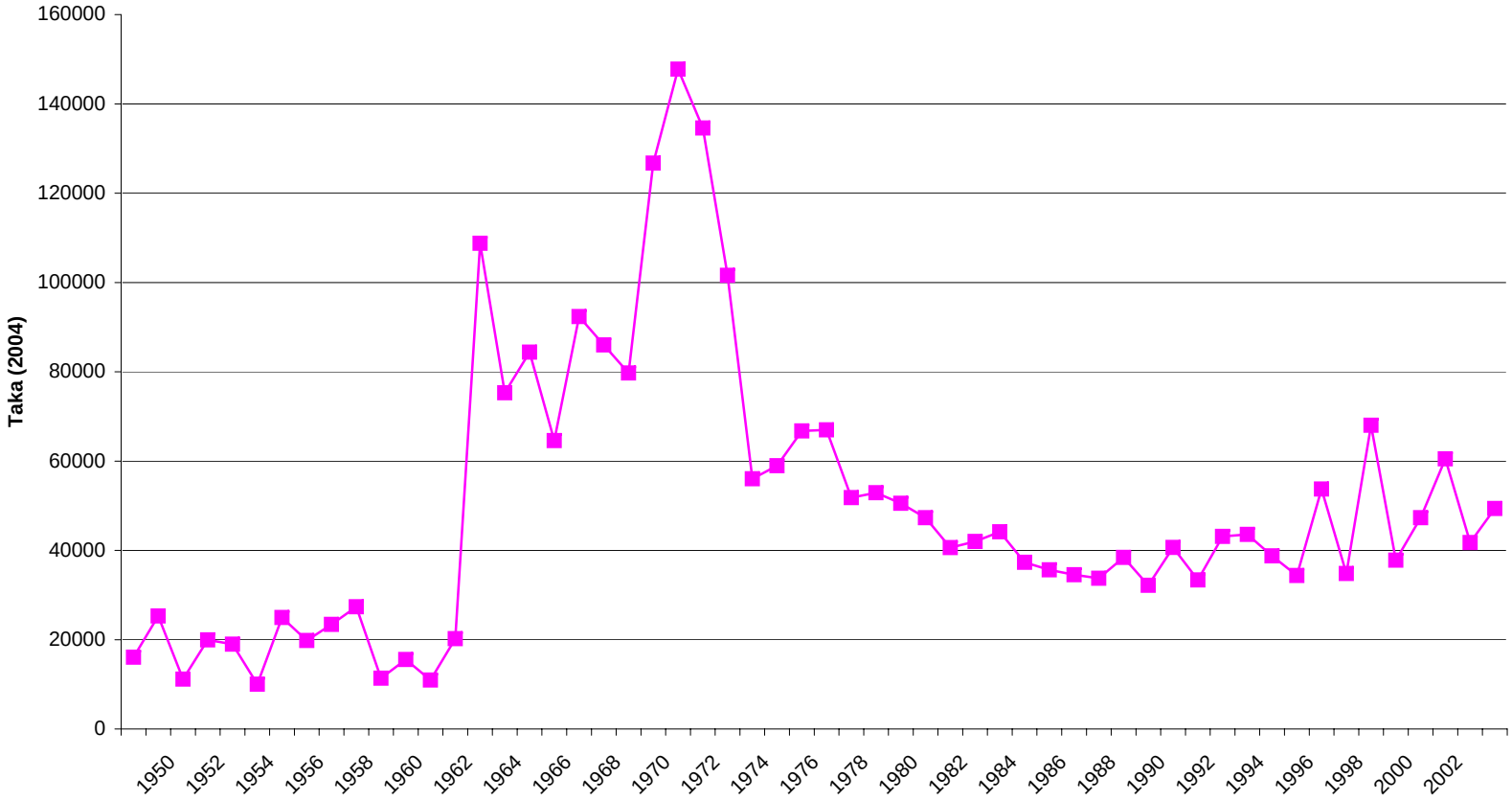
Notes: Nonparametric regressions, lowess smoother. Bandwidth is 0.8. Corresponding linear regression coefficient in Figure 1a is 0.801, SE is 0.066; linear regression coefficient in Figure 1b is 0.660, SE is 0.341; and linear regression coefficient in Figure 1c is 0.857, SE is 0.060. Data come from the 2004 Bangladeshi Rural-Urban Linkages Survey conducted by IFPRI. Sample includes first marriages of all ever-married men and women. Prices of mehr and dowry adjusted to 2004 levels using price of jute. Dowry is defined as any transfer from the bride's family to the groom at the time of marriage, mehr values are amounts specifed on marriage contracts (at the time of marrigae) to be paid by the husband to the bride in the event of divorce.

Figure 2. Fraction first marriages involving dowry



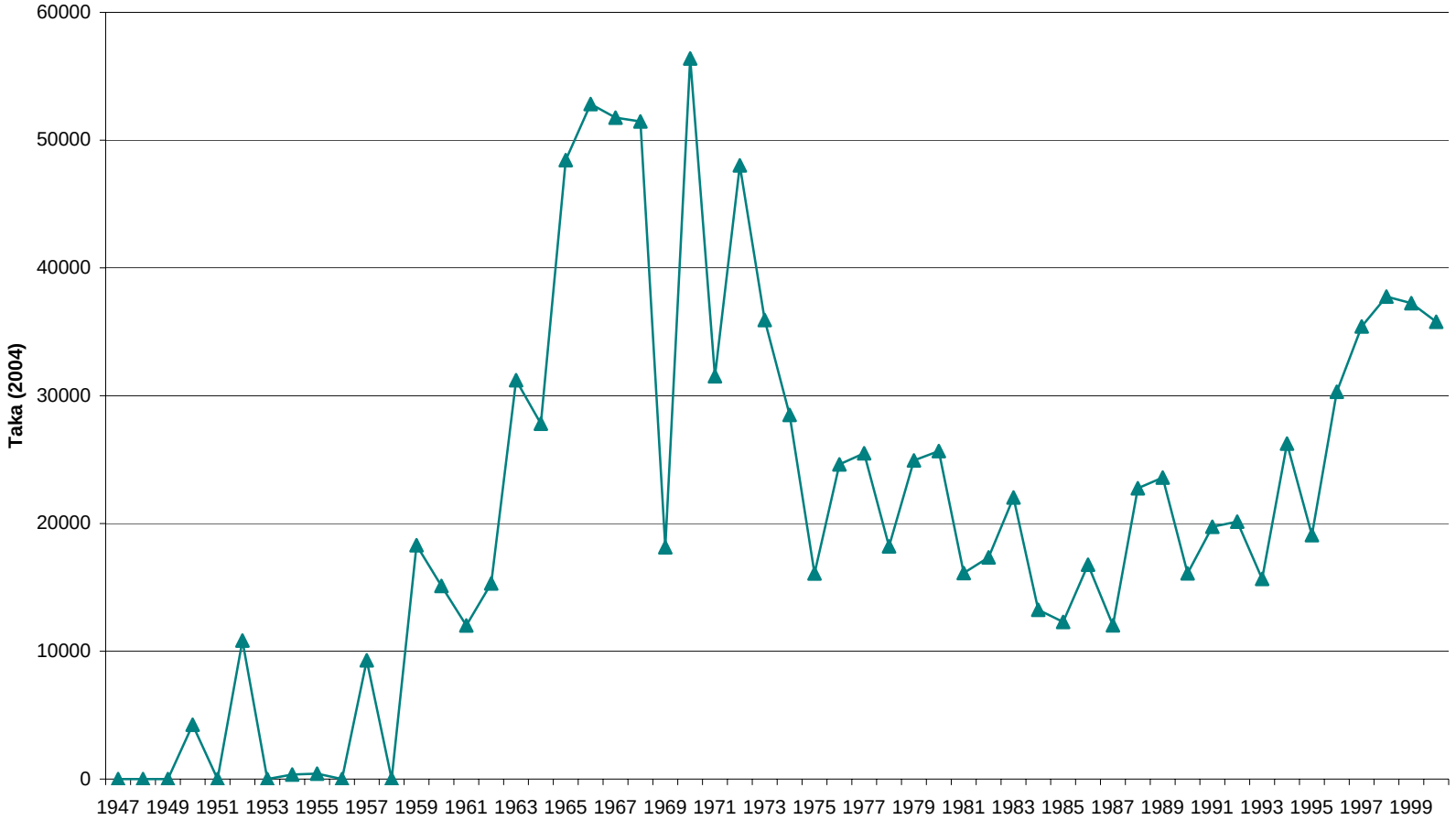
Notes: Data from the 2004 Bangladeshi Rural-Urban Linkages Survey (BRULS) conducted by IFPRI. Values of dowry adjusted to 2004 levels using price of jute. Sample includes first marriages of all ever-married men and women. In the above figure, a marriage is defined to involve dowry if the respondent reports a transfer at the time of marriage from the bride's family that is destined for the groom.

Figure 3. Mean Value Mehr by Year of Marriage



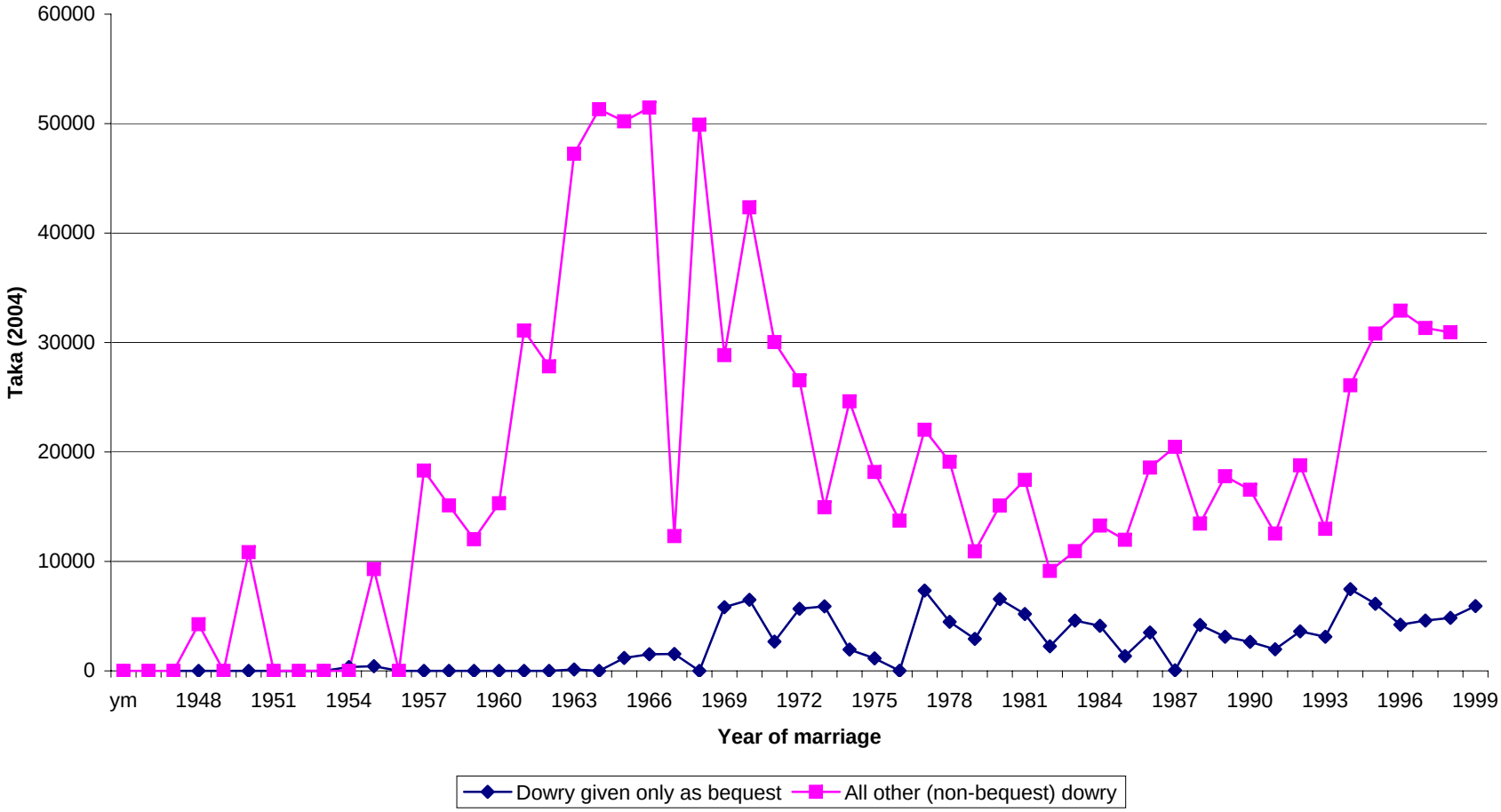
Notes: Data from the 2004 Bangladeshi Rural-Urban Linkages Survey (BRULS). Sample includes first marriages of all ever-married men and women. Mehr values are amounts specifed on marriage contracts (at the time of marrigae) to be paid by the husband to the bride in the event of divorce. Values of mehr adjusted to 2004 levels using price of jute.

Figure 4. Mean Value Dowry by Year of Marriage



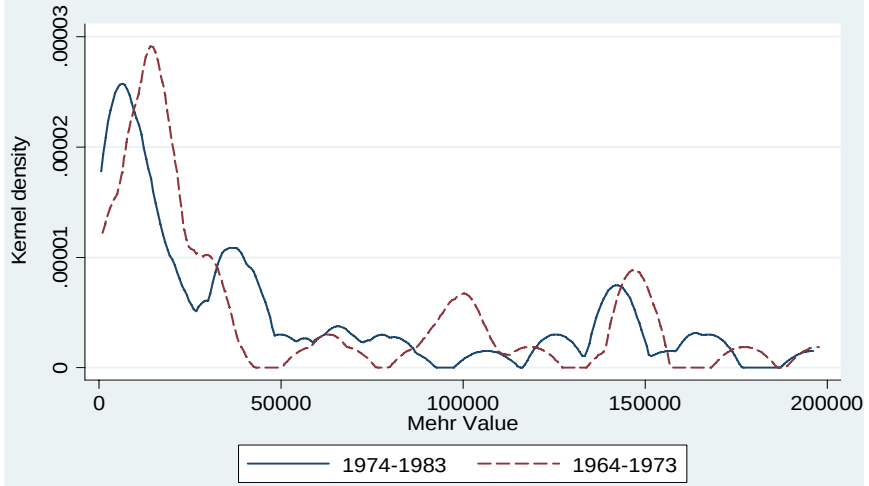
Notes: Data from the 2004 Bangladeshi Rural-Urban Linkages Survey (BRULS). Sample includes first marriages of all ever-married men and women. Dowry is defined as any transfer from the bride's family to the groom at the time of marriage. Value of dowry is given in 2004 prices, adjusted according to teh price of jute.

Figure 5. Mean Value Dowry, Bequests and Non-bequests



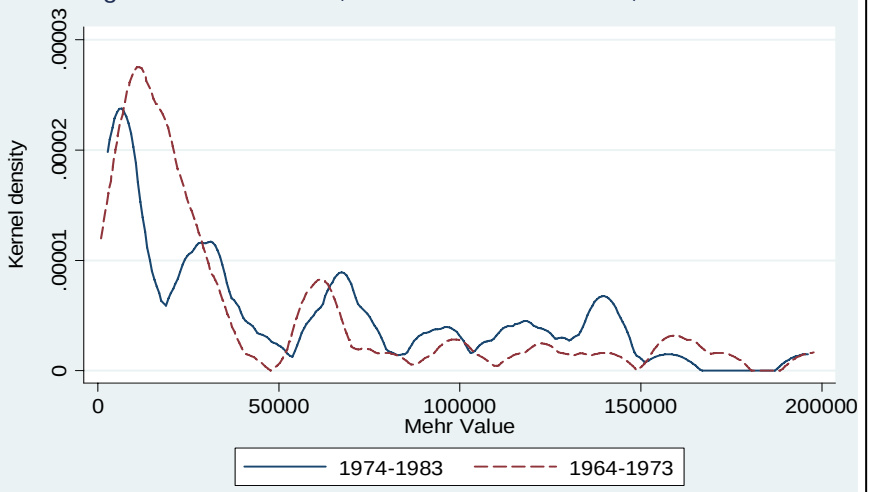
Notes: Data from the 2004 Bangladeshi Rural-Urban Linkages Survey (BRULS). Sample includes first marriages of all ever-married men and women. Value of dowry is given in 2004 prices (adjusted using the price of jute). Dowry is defined as any transfer from the bride's family to the groom at the time of marriage. Dowry considered only for purpose of bequest if the respondent reports that all transfers from the bride's family at marriage were intended to be property of the bride.

Figure 6a: Mehr Value, Before and After MMRA, Non-Remote Areas



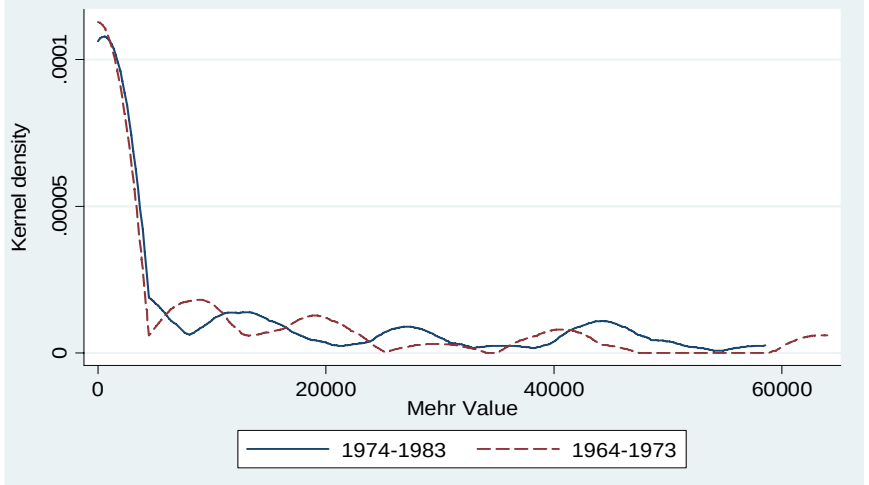
Notes:Data from the 2004 Bangladeshi Rural-Urban Linkages Survey (BRULS).
Epanechnikov kernel, bandwidth=4000.

Figure 6b: Mehr Value, Before and After MMRA, Remote Areas



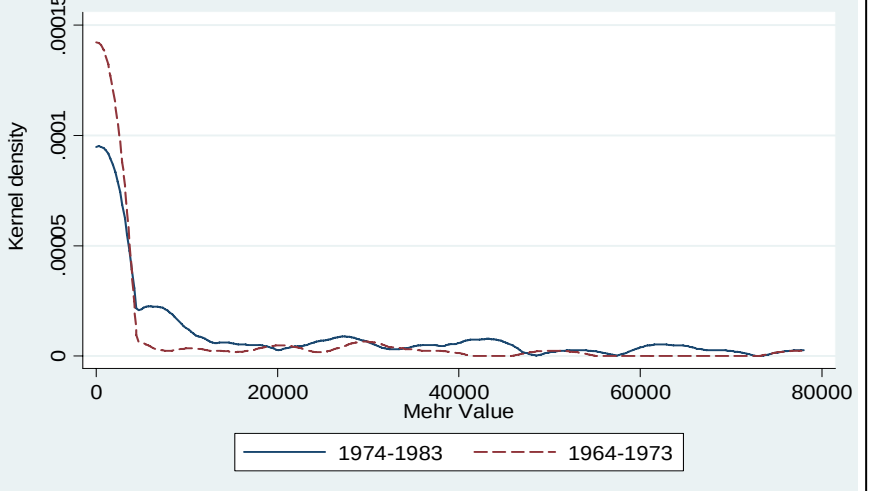
Notes:Data from the 2004 Bangladeshi Rural-Urban Linkages Survey (BRULS).
Epanechnikov kernel, bandwidth=4000.

Figure 6c: Dowry Value, Before and After MMRA, Non-Remote Areas



Notes:Data from the 2004 Bangladeshi Rural-Urban Linkages Survey (BRULS).
Epanechnikov kernel, bandwidth=2000.

Figure 6d: Dowry Value, Before and After MMRA, Remote Areas



Notes:Data from the 2004 Bangladeshi Rural-Urban Linkages Survey (BRULS).
Epanechnikov kernel, bandwidth=2000.

Table 1: Summary Statistics

	(1)	(2)	(3)	(4)	(5)	(6)
	All marriages over period	*Regime I marriages (before 1963)*	*Regime II marriages (1963-1974)*	*Regime III marriages (1975-1990)*	*Regime IV marriages (1991-1998)*	*Regime V marriages (1999-2004)*
Value mehr	63429.73	38684.6	137840.30	52367.94	48929.52	73609.40
	(3190.7)	(12339.3)	(17259.4)	(2616.0)	(2450.4)	(12482.4)
Marriage involves any dowry	0.670	0.128	0.338	0.634	0.813	0.857
	(0.013)	(0.049)	(0.038)	(0.021)	(0.019)	(0.026)
Marriage involves dowry transfer to groom	0.600	0.100	0.300	0.570	0.740	0.770
	(0.013)	(0.049)	(0.038)	(0.021)	(0.019)	(0.026)
Fraction of marriages involving bequests:						
All of dowry property of bride	0.092	0.167	0.151	0.084	0.090	0.090
	(0.010)	(0.167)	(0.050)	(0.015)	(0.015)	(0.023)
Any dowry property of bride	0.229	0.500	0.358	0.201	0.193	0.321
	(0.014)	(0.224)	(0.067)	(0.022)	(0.021)	(0.037)
Value dowry	18945.99	8368.07	24466.87	14031.00	17684.99	34620.75
	(1136.9)	(5086.9)	(4429.6)	(1545.1)	(1242.6)	(4966.3)
Value dowry excluding pure transfers to bride	18945.99	8368.07	24466.87	14031.00	17684.99	34620.75
	(1136.9)	(5086.9)	(4429.6)	(1545.1)	(1242.6)	(4966.3)
Any dowry cash	0.787	0.167	0.245	0.730	0.891	0.885
	(0.014)	(0.167)	(0.060)	(0.024)	(0.017)	(0.026)
Any dowry land	0.032	0.000	0.057	0.035	0.031	0.019
	(0.006)	(0.000)	(0.032)	(0.010)	(0.009)	(0.011)
Any dowry productive assets	0.193	0.333	0.377	0.218	0.140	0.192
	(0.013)	(0.211)	(0.067)	(0.022)	(0.018)	(0.032)
Any dowry consumer goods	0.403	1.000	0.717	0.349	0.350	0.513
	(0.016)	(0.000)	(0.062)	(0.026)	(0.025)	(0.040)
Education bride	2.765	1.213	1.452	1.961	3.041	6.033
	(0.104)	(0.372)	(0.236)	(0.138)	(0.188)	(0.334)
Education groom	3.208	2.191	2.439	2.398	3.392	6.110
	(0.114)	(0.565)	(0.297)	(0.158)	(0.201)	(0.356)
Age marriage bride	15.643	12.660	14.038	15.158	16.128	18.071
	(0.080)	(0.438)	(0.188)	(0.100)	(0.147)	(0.201)
Age marriage groom	22.544	21.745	21.924	22.355	22.535	23.868
	(0.123)	(0.843)	(0.312)	(0.195)	(0.197)	(0.395)
Bride's family richer	0.326	0.277	0.331	0.326	0.342	0.297
	(0.013)	(0.066)	(0.038)	(0.020)	(0.023)	(0.034)
Groom's family richer	0.262	0.191	0.229	0.265	0.257	0.313
	(0.012)	(0.058)	(0.034)	(0.019)	(0.021)	(0.034)
Observations	*1368*	*47*	*157*	*543*	*439*	*182*

Notes: Mean values, standard errors in parentheses. Data come from the 2004 *Bangladeshi Rural-Urban Linkages Survey* conducted by IFPRI. Prices of mehr and dowry adjusted to 2004 levels using price of jute. Dowry is defined as any transfer from the bride's family to the groom at the time of marriage, mehr values are amounts specifed on marriage contracts (at the time of marrigae) to be paid by the husband to the bride in the event of divorce.

Table 2: Impact of Legal Changes on Value of Mehr and Dowry

	(1)	(2)	(3)	(4)	(5)
	Value Mehr	*Value Mehr*	*Value Dowry*	*Value Dowry*	*Value Dowry Excluding Bequests*
Value Mehr					
Post_1963	114815.22	111595.54	18195.30	15337.21	17292.14
	[30035.36]**	[30914.24]**	[8940.67]*	[8912.71]+	[8580.88]*
Post_1974	-85567.57	-79436.01	-14832.58	-14168.30	-10001.58
	[21761.93]**	[21980.51]**	[8005.37]+	[8111.59]+	[7097.00]
Post_1990	12435.01	13857.03	5790.54	6522.23	7674.07
	[7470.96]+	[7476.26]+	[4209.75]	[4105.87]	[3322.41]*
Post_1998	42653.02	37401.98	13881.31	11989.80	15721.96
	[34998.87]	[32588.15]	[9502.40]	[9300.60]	[9131.76]+
Year marriage	-3198.92	-3969.55	451.80	323.95	-307.09
	[1538.56]*	[1614.49]*	[717.96]	[717.66]	[438.95]
Education groom		1207.62		1381.10	
		[1092.74]		[531.61]**	
Age marriage groom		-144.89		-40.58	
		[724.28]		[273.24]	
Bride's family richer		3757.48		4007.34	
		[8240.13]		[2268.81]+	
Groom's family richer		-4692.44		6199.84	
		[8695.65]		[3097.57]*	
Education bride		2317.29		-128.41	
		[1189.90]+		[470.14]	
Age marriage bride		5181.33		1034.52	
		[1800.77]**		[443.79]*	
$F_{(Post63=Post74=Post90=Post98=0)}$	*8.73*		*2.73*		*3.38*
Observations	*1368*	*1368*	*1368*	*1368*	*1368*

Notes: Regression estimates, outcome in columns 1-2 is real value of amount transferred to wife in case of divorce specified on marriage contract ("Value mehr"), outcome in columns 3-5 is real value of dowry given from bride to groom at marriage. Post_1963, post_1974, post_1990 and post_1998 are binary variables indicating that marriage took place after four each year indicated, which correspond to key changes in Muslim Family Law. In column 5, dowry equal to zero if all is reported to be property of the bride. Prices of mehr and dowry deflated to 2004 levels using price of jute. Regressions also control for relation to household head, a linear trend in year of marriage and seven 8-year period indicators to allow for non-linear time trends in marriage payments. Data come from the 2004 Bangladeshi Rural-Urban Linkages Survey conducted by IFPRI. Standard errors in brackets. + significiant at 10% level; * significant at 5% level; ** significant at 1% level.

Table 3: Impact of Legal Changes on Value of Mehr and Dowry, Difference-in-difference estimates

	(1)	(2)	(3)	(4)
	Any dowry	*Any dowry*	*Value Dowry*	*Value Mehr*
Value Mehr				
Post_1963	0.035	0.115	27707.053	123852.041
	[0.103]	[0.109]	[11846.150]*	[50095.613]*
Post_1974	-0.053	-0.168	-27795.61	-100898.032
	[0.057]	[0.083]+	[9925.360]*	[37267.146]*
Post_1990	0.006	-0.061	1515.933	4861.525
	[0.080]	[0.090]	[5675.216]	[8770.851]
Post_1998	-0.062	-0.08	11934.828	55404.731
	[0.059]	[0.078]	[16916.384]	[44518.686]
Post_1961*(Non-municipality subdistrict)		-0.176	-22906.98	-12491.372
		[0.077]*	[8224.494]*	[79069.779]
Post_1974*(Non-municipality subdistrict)		0.253	29244.494	40348.004
		[0.077]**	[10210.650]*	[46457.238]
Post_1990*(Non-municipality subdistrict)		0.112	4930.57	6997.257
		[0.050]*	[2510.014]+	[7564.468]
Post_1998*(Non-municipality subdistrict)		0.033	-85.717	-31484.65
		[0.064]	[13272.222]	[27813.782]
Non-municipality subdistrict (upazila/thana)		-0.269	-27738.54	-89252.901
		[0.075]**	[10648.248]*	[54203.525]
Year marriage	0.023	0.025	721.888	-2735.372
	[0.008]*	[0.008]**	[945.077]	[816.707]**
$F_{(Post63=Post74=Post90=Post98=0)}$	*0.55*	*2.32*	*2.17*	*17*
Observations	*1367*	*1368*	*1368*	*1368*

Notes: Regression estimates, outcome in columns 1-2 is whether any amount of dowry reported to be given at marriage, outcome in column 3 is real value of amount transferred to wife in case of divorce specified on marriage contract ("Value mehr"), outcome in column 4 is real value of dowry given from bride to groom at marriage. Post_1963, post_1974, post_1990 and post_1998 are binary variables indicating that marriage took place after four each year indicated, which correspond to key changes in Muslim Family Law. Prices of mehr and dowry deflated to 2004 levels using price of jute. Regressions also control for relation to household head, a linear trend in year of marriage and seven 8-year period indicators to allow for non-linear time trends in marriage payments. Data come from the 2004 Bangladeshi Rural-Urban Linkages Survey conducted by IFPRI. Standard errors in brackets. + significiant at 10% level; * significant at 5% level; ** significant at 1% level.

Table 4: Impact of Legal Changes on Value of Mehr and Dowry, Intent-to-treat

	(1)	(2)
	Value Mehr	*Value Dowry*
Age_13_Post_1963	-16388.893	22450.259
	[76883.015]	[7416.775]**
Age_13_Post_1974	-71641.402	-20499.102
	[27533.416]**	[10682.303]+
Age_13_Post_1990	29674.035	2634.12
	[15486.999]+	[4145.845]
Age_13_Post_1998	4696.425	-4254.841
	[9126.677]	[5920.679]
Year birth	-5216.179	764.531
	[2642.401]*	[651.150]
Observations	*1368*	*1368*
Sample	*All*	*All*

Notes: Regression estimates are identical to those in columns 1 and 3 of table 2, except that dummy variables for legal changes measure whether respondent turned 13 by the time of each ammendment (rather than whether she married). See notes to Table 2 for other details of estimates.

Table 5: Robustness checks

	(1)	(2)	(3)	(4)	(5)
	Value dowry	*Value dowries in which all property of bride*	*Bride's age at marriage*	*Age difference spouses*	*Bride's family wealthier*
Post_1963	0.000	0.125	1.774	-0.152	-0.152
	[0.000]	[0.134]	[1.348]	[1.367]	[1.367]
Post_1974	-7961.97	-0.148	-0.584	0.576	0.576
	[8703.63]	[0.114]	[0.577]	[0.854]	[0.854]
Post_1990	-8131.21	0.029	-0.143	-0.022	-0.022
	[5719.55]	[0.053]	[0.333]	[0.487]	[0.487]
Post_1998	-14483.58	0.096	0.15	-0.543	-0.543
	[10681.55]	[0.063]	[0.330]	[0.537]	[0.537]
Year marriage	2078.73	-0.001	0.107	-0.005	-0.005
	[1115.28]+	[0.008]	[0.041]**	[0.069]	[0.069]
Sample	*Hindus*	*Muslims*	*Muslims*	*Muslims*	*Muslims*
Observations	*137*	*1368*	*1368*	*1368*	*1368*

Notes: Regression in column 1 identical to that of column 3 in Table 2, except that sample is restricted to randomly sampled set of Hindu hosueholds that were included in the survey (these observations are excluded from all other regressions in the paper). Regression specifications in columns 2-4 are identical to those in column 1 of table 2, except for outcome variables. Column 2 outcome is the value of dowries that were reported in survey data to be given exclusively to the bride at marriage. Column 3 dependent variable is bride's age at marriage, and column 4 dependent variable is groom's age minus bride's age. See notes to Table 2 for other details of estimates.