Child Brides, Spousal Abuse and Estrangement in Watta Satta Arrangements

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Abstract

This paper empirically investigates the role of Pakistani bride exchange custom- *watta satta* on ex ante and ex post marital outcomes: child marriage, spousal abuse and estrangement. The results show that *watta satta* is significantly correlated to the likelihood of child marriage but has no significant impact on spousal abuse or estrangement. This paper finds the preference for sons to be the main driver of spousal abuse. A husband's use of violence is positively contingent on having more daughters than sons. A father is less likely to agree to a daughter's child marriage if he has more sons and is landed. Alternatively, estrangement is an indicator of a wife's bargaining power. In patrilocal societies, estrangement is less likely if in-laws are cohabiting and a woman has more contact with her natal family. Finally, dowry compensates for a bride's older age and has no influence on spousal abuse or estrangement.

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1 Introduction

Marriage actualises complex configurations of overlapping relationships. As there are no explicit rules governing these configurations, management of marital outcomes is complex. Economics explains this complexity by categorising marriage as an incomplete contract. Recent development in this literature attempts to understand the link between marital organisation and ex post outcomes with culture and social structure in traditional societies (Anderson 2007, Jacoby & Mansuri 2010, Maluccio 2003, Quisumbing & and Rao & Bloch 2002). In these societies, women have low bargaining power as they have patriarchal power structure. Pro-women policies often fail there as they are considered to be against cultural norms. A way to circumvent these policies and to maintain status quo, these societies modify the terms of the marriage contract. With alterations to marriage contracts, the question of how welfare of women and bargaining power is impacted is an interesting but a crucial one.

This paper argues that in case of Pakistan, *Watta satta* bride exchange is an example of modified marriage contract that is used to influence marital power relation. It examines the role of *watta satta* exchange in guiding ex post and ex ante marital outcomes. *Watta satta* is a practice where a family offers an unmarried woman in return to secure a bride for their son- commonly the younger sister to the spouse seeking son. Adoption of *watta satta* is motivated by non-compliance to Sharia act of 1967 that entitles daughters a portion of their father's estate (Ahmed et al. 2012 and Rauf 1987). The nature of *watta satta* ensures that a husband does not demand his wife's share in patrimony, because if he does, his sister's husband will also reciprocate. The same logic is extended to motivation of preventing spousal violence and estrangement. That is if a brother hits his wife, the other will reciprocate with his wife and if one sister-in-law becomes estranged, her counterpart would also be forced to return to her natal family.

Specifically, this paper uses three-stage-least- squares technique to address the question of does *watta satta* cause child marriage, and is spousal abuse and estrangement impacted by it. It also examines fertility behaviour in the context of partner violence. It also addresses the question of estrangement as a bargaining tool in situations of spousal

abuse where divorce is not an option.

This paper extends Jacoby & Mansuri (2010) model by incorporating variables that literature has shown to significantly contribute to partner abuse and estrangement and by adding child marriage to the system of structural equations. Due to the endogenous nature of *watta satta*, it is instrumented by the number of older but close siblings and incorporating extended family members maternal like paternal first female cousins. The logic behind this is the likelihood of a woman/girl entering a *watta satta* contract is increasing by number of older but not too far away in age brothers and female cousins she has.

Moreover, the contribution of this paper are threefold: (i) it provides insight on how preference of sons and can impact marital ex ante and ex post marital outcomes; (ii) it also provides insight about causes of child marriage; and (iii) build an understanding about the type of families who opt for *watta satta*.

The results show that *watta satta* is significantly correlated to the likelihood of child marriage but has no significant impact on spousal abuse or estrangement. It also finds that preference for sons to be a driver spousal abuse. A husband use of violence is positively contingent on having more daughters than sons. A father is less likely to agree to a daughter being a child bride if he has more sons and/or is landed. Alternatively, estrangement is an indicator of a wife's bargaining power. In patrilocal societies, estrangement is less likely if in-laws including brothers are cohabiting with the couple. The in-laws are motivated to prevent estrangement because if one woman of the household becomes estranged their wives might threaten to do it also; and also because when the news of estrangement becomes public, forming new marriage contracts might become difficult as the family honor would be compromised. Additionally, a woman who has more frequent contact with her natal family is less likely to be estranged. Lastly, dowry compensates for bride's older age and has no influence on spousal abuse or estrangement.

The rest of the paper is organised as follows: Section II describes the practice of *watta satta* in rural Pakistan, while section III discusses common ex ante and ex post marital outcomes. In section IV, describes the problem, while V discusses descriptive statistics.

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In section VI test reciprocity and VII presents empirical strategy adopted to test implications of *watta satta*. Section VIII presents the main results. Finally, section IX summarises and concludes the paper.

2   Watta Satta

Watta Satta is a type of marriage exchange observed in various communities of Pakistan. Like exchange marriage, it entails a reciprocal exchange of brides between two families. In order for *watta satta* to be possible, a family need to offer a woman of marriageable age for marriage in return to secure a bride for their son. This woman is commonly a close relation to the spouse seeking son.[1]

According to Britannica (2016), exchange marriages are common in societies with a uni-lineal decent system that emphasises patrilineality, typically with an expectation of post-marital residence being with or near the groom's family. Like most collective societies, contracting marriage in Pakistan not only symbolises commitment to transfers work and reproduction rights between corporate group but also can be seen as an assertion of sameness.

Moreover, Das (1973) observes that the decision of forming marriage alliances is far more concern of members of the senior generation than of actual participants. Senior members of the family are concerned about marriage alliances because they consolidate and improves social position of family in the community. Although formal right to the decision goes to fathers, older brothers, or the nearest male agnates, mothers have informal decision-making powers most often realised in the form of veto (Das 1973 and Rauf 1987). Overall Pakistani society's kinship structure patriarchal, where authority and power, within the family, are exercised by the oldest member of the extended family. Major decision making is done in the context of *Baradari's* (community's) expectations.

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[1] *Watta satta* is commonly exercised with brother and sister pairs. This means that if the brother wants to get married, his sister needs to get married to his potential brother-in-law. A form of it can be seen for uncle and niece pairs. Due to the nature of the sample employed, the analysis done is only for brother and sister pairs.

In the case of marriage, *Watta satta* is an expectation and an old tradition. And if members of family resist it, at times violence is exercised (Latif 2010).[2]

Jocoby & Mansuri (2010), rationalise *watta satta* by saying it is a bargaining tool to control son's violent impulses. That is if a daughter is mistreated her parent would sanction punishment on the abuser's sister. As a result abuser's parents would be incentivised to control their son. They ignore the fact that most spousal abuse happens in families where sons have observed their mothers being abused (Ulbrich & Huber 1981 and Pollark 2004) and assume perfect information. That is, long before a son gets married, parents have complete information about the probability of him being violent towards his wife.

So the question becomes why is *watta satta* practiced. Ahmed et al. (2012) and Rauf (1987) give an interesting explanation. They observe that in rural Pakistan there is huge resistance to the application of Islamic law pertaining to the inheritance of land by women. Under Sharia act of 1967, daughters are legally titled to a proportion of their father estate. The nature of *watta satta* ensures that a husband does not demand his wife's share in patrimony, because if he does, his sister's husband also might reciprocate. So *watta satta* acts as a safeguard from claims from sons-in-law. That is, sisters can forfeit their right of inheritance to their brother. The forfeit is a guarantee that the brother would not make a similar patrimony claim on behalf of his wife with his sister's husband. This is why most *watta satta* arrangements are made at a young age by a patriarch to ensure that holding does not fragment in later generations.

3   Ex Ante and Ex Post Marital Discontents

3.1   Child Marriage

Traditional societies take elaborate steps to protect women because they view female identity as a honor concern (Fischer 1991). A major component of honor is the pro-

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[2]Latif (2010) documents mothers commonly resist this practice but due to low bargaining power, this resistance has no effect.

tection of chastity in unmarried child/woman. Parents are motivated to marry their daughter off at age of menarche as it reduces the amount of effort required for her protection (Bettencourt, 2000 and Lari, 2011). Of course with greater number of daughters, these effort saving traditions are more pronounced and are unquestionably be adopted.

Alternatively delaying daughter's marriage is viewed as increased risk of female transgression, including higher probability of her refusal to marry the selected partner. In turn, a daughter's transgressions raise questions about family's honor, resulting in damaging implications for all stakeholders. That is, members of community/extended family would hesitate in forming new marriage alliances as well as avoid fulfilling prior promises. Moreover, unmarried members of family would have problems in finding partners.[3] In situation like this, honor killing is observed as the woman concerned no longer holds any economic value to the family.[4] Hence to circumvent this, parents prefer to promise off daughters while they are young so they can share protection effort with her betrothed's family and marry her off as soon as she becomes fertile.

From the prospective of the groom side, parents prefer to have child brides for two reasons: (i) increased years of fertility that would lead to a higher probability more sons; and (ii) reduced opportunity to daughters for transgressions. An extension of this parental preference is acquiring brides from extended family. This is to demonstrate the solidarity to the family and more importantly as parents have access to information about the woman, they feel more secure about her chastity than a strangers (Charsley 2007 and Fricke et al. 1986).

Since *watta satta* predominantly takes place between first cousins, parents' consent to it at an early age out of fear that potential mates might get taken up by other more attractive matches. This competition causes *watta satta* to be one of the major causes of child marriage in Pakistan (Lane 2011, Nasrullah et al. 2014a and Nasrullah et al. 2014b).

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[3]This includes siblings, maternal and paternal uncles, and aunts.

[4]In Pakistan, honor killings are done by immediate family members like father, brothers, uncles and cousins.

Legislation wise, under the United Nations charter (2017), child marriage is a marriage or union of a spouse under 18 years. In Pakistan, legal age of marriage is 16 years, while in Islam, age of marriage coincides with age of menarche. Since Pakistan is predominantly Muslim, it is not taboo to be married as young as 13 years. Furthermore like most traditional societies, couples are married in a religious ceremonies called *Nikah*. Given parental preference, *Nikah* frequently happens at engagement ceremony and brides start their married life after *Ruqsati*.[5] This is evident in the sample where mean age of engagement for *watta* bride is 12.87 years, while for non-*watta* is 15.25 years. Additionally, mean age of *watta Nikkah* is 16.41 years while *watta Ruqsati* is 16.92 years. These figures show that (i) under the international definition, on average Pakistani girls are child brides; and (ii) brides part of *watta satta* tradition overall tend to engage, marry and leave their parents' house for in-law younger than their non-*watta* counterpart.

Moreover, child marriage literature frequently identifies poverty, lesser demand for dowry, religion, partners education and large age gap between spouses as common causes to child marriage(Jain & Kurz 2007, Nour 2009 and Parsons et al. 2015).[6] Among the consequences of child marriage, medical literature proves that intimate partner violence is positively correlated with child marriage (Kidman 2016, Nasrullah et al 2014c, and Santhya et al 2010) and negatively correlated with woman's decisional independence (Klugman et al. 2014). That is child brides are more likely to be discounted from household decision making process including fertility choice (Parson et al. 2014 and Santhya et al. 2010).

3.2   Spousal Abuse

Spousal violence encompasses wide range of behaviors and behavior patterns. Riggs et al. (2000) state that two common strategies to examine this problem are: (i) to directly examine aggression perpetrated against a spouse, and (ii) by studying correlates and consequences of battering a repetitive pattern of physical and emotional relationship

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[5]This is when a bride formally leaves her parents house for her husbands.

[6]Parsons et al. (2015) states that younger and lesser educated bride requires less dowry.

violence that functions to control and entrap the victim. He states that demographic characteristics of the abuser, that positively influence partner violence, are lower socioeconomic status and culture.

Specifically, an understanding of local mores and how they serve to define social relationships need to be incorporated when analysing spousal violence. Common cultural attributes associated with South Asia are gender stratification via patrilineal descent, patrilocal residence, discounting women from inheritance and secession practices and hierarchical relations in which patriarch or his relatives have authority over family members (Jejeebhoy & Sathar 2001). Vandello & Cohen (2003) states that in Pakistan culture of defending family honor is a driver of partner violence. Moreover, a family's lost honor can partially be redeemed through the use of violence. In case of married women, those who face spousal aggression in silence are considered to be loyal and honorable, while those who report bring disgrace to the family. Additionally, the practice of patrilocal residence has spillovers in the sense that if the husband is prone to spousal violence, higher ranking members of the household can intervene. This intervention can lead to either more or less violence for the woman. Fernandaz (1997) finds that given the context of spousal violence, husband's kin are often participants in the abuse.[7] Alternative, husband's kin can also act as peacekeepers in extreme spousal altercations. Peacekeeping function would be motivated by honor system, as in if the information of spousal abuse gets leaked in the community, new marriage contracts would be harder to form. Hence, both husband's parents and brothers are some of the indirect stakeholders in this situation.

Moreover, in Pakistan, 40 percent of ever-married women aged between 15 and 49 have suffered a form of spousal violence in their lifetime (National Institute of Population Studies and ICF International, 2013). Furthermore, reporting of spousal abuse range of 30 to 79 percent (Khan et al. 2009). A common reason for it is visiting natal home without permission from husband or his family (Sami & Ali 2006). Additionally, pregnancy adds vulnerability to partner violence (Gul et al. 2013 and Shaikh 2003).

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[7]Here context violence includes conflict of loyalties between wife and in-laws.

According to Niaz (2004), dowry-related violence in Pakistan is also common. Women, who fail to bring a sizable dowry, are threatened of divorce and tortured. Jacoby & Mansuri (2010) find that exchange marriage such as *watta satta* provide protection to women because of a reciprocal threat to the exchanged bride. Alternatively Bhutta et al. (2015) finds that exchange marriages frequently lead to complicated situations of physical abuse on one or both brides involved. This abuse is sustained because divorce is a social stigma and need to be avoided at every cost. Women sustain abuse silently because they fear that retaliation will result in two divorces.

3.3 Estrangement

According to Jacoby & Mansuri (2010), a majority of Pakistani women live in close geographical distance from natal families. Parental home is a potential exile from the husband's household. In the sample 56.3 percent of women live close to natal family that they are able to visit and return home on the same day with 52.8 percent of women in *watta satta* arrangements and 58.6 otherwise fall into this category.

In the sample 19 percent of the women reported that they have at least once over their married life have returned to live at their natal house due to estrangement from their husband.[8] Similar to Jacoby & Mansuri (2010), the modal length of estrangement is less than one month.

In terms of motivation for estrangement, going to the natal residence is equivalent to seeking refuge in a women's shelter. Since there are no formal shelters available in rural Pakistan; the natal household is a logical choice. In a way, the decision of leaving can be viewed as a female bargaining power indicator. That is, leaving decision mechanism requires the failure of two negotiations: first, failure to resolve issues directly with husband, followed by failure of communication with other higher ranking family members (namely mother-in-law, father-in-law and brothers-in-law) who act as husband's inter-

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[8]It is important to note that all the respondents in the sample are women who are actively married. Due to missing information, women who are permanently estranged, divorced or widowed are not part of the analysis.

mediaries. Moreover, in the honor system, an estranged woman (even for a short time period) represents a negative signal about her husband's family. This is because community interprets an act of estrangement as a sign of moral weakness in husband's family, which can potentially act as an impediment for forming new and maintaining current contracts (marriage).

Moreover similar to the case of women escaping to domestic abuse shelters in developing countries, a majority of Pakistani women also return back to their abusive husbands after a short time. This is because the woman's parents are required to pay back the bride price the husband has paid for if the wife leaves him permanently. They discourage daughters from returning as it would lead to increases expenses. Furthermore, if she has children, this would be even more costly for the parent, as they would have to afford her and her children. Hence, estrangement is more common in higher income household as the parents can afford to have their daughter and potentially her children.

4 The Problem

To understand *watta satta* exchange's role in child marriage, spousal abuse and estrangement outcomes, an understanding of family preferences is required. The previous section shows that rural families have the following preferences:

- Landed families *resist compliance to Muslim Personal Law (Shariat) Application Act of 1962*. Under this law, daughters are entitled to one portion of the deceased's estate (men have a double share compared to women). Ahmad et al. (2016) state that *watta satta* exchange acts as a means to circumvent this law and ensures agnatic kinship maintained without having legal repercussions.

- *Preference for sons over daughters*. Child marriage is a cultural tradition that is adapted to maximize chances for the birth of male heirs. Cain (1982) finds that having a young wife is a strong indicator of preference of son. With a younger wife, the probability of conceiving a male offspring is higher as her higher number of fertile years would give her more opportunity to have sons. Furthermore, it is

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considered a woman failure if she is not able to conceive a son. In cases when a woman fails to deliver a male heir, husbands are legally allowed to marry another woman. This is apparent in our sample as there are 388 households that practice polygamy.[9]

- *Enforcement of spousal abuse*: Conjunction to the previous point, spousal abuse is exercised for two reasons- first because a woman fails to conceive a son or because husband desires to obtain post marital transfers from the wife's father. These two reasons are not mutually exclusive.

Moreover, the size of parental holdings also plays a part in this dynamic. In Pakistan, a majority of the rural community are either landless or are owners of uneconomic holding. Uneconomic holding is fragmented plots of land that are not profit making holdings. According to the West Pakistan Land Revenue (Amendment) Ordinance 1978, holding of less than 200 kanals are considered to be uneconomic and are not required to pay any land revenue tax.[10] In light of this law, it is reasonable to believe that owners of uneconomic holdings are more likely to practice *watta satta* to ensure that the land does not become more fragmented in generational transition. Alternatively, owners of holdings greater than 200 kanals are also likely to practice *watta satta* for the same reason. For fathers who are landless, the only reason they would prefer *watta satta* would be potential low dowry requirement. But the same objective can be achieved if they offered their daughters as child brides. Hence, it is reasonable to conclude that they would be less motivated to opt for *watta satta* exchanges.

Under these specifications, following game between two sets of landed fathers in normal form can be observed

Under this structure if both fathers have a similar sized holding, *watta satta* would be enough to secure their holdings. More interesting, when there is an economic disparity in holding size, the father with an uneconomic holding (less than 200 kanals) would need to offer an incentive to ensure a successful *watta sutta* agreement- agreeing to a

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[9]This information could not be incorporated into the analysis due to missing information about the older wife.

[10]In the sample average size of a holding is 110.6 kanals

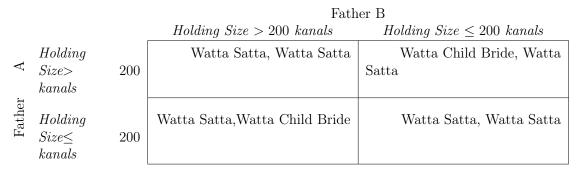|		$Holding\ Size > 200\ kanals$	$Holding\ Size \leq 200\ kanals$
Father	$Holding\ Size> 200\ kanals$	Watta Satta, Watta Satta	Watta Child Bride, Watta Satta
A	$Holding\ Size\leq 200\ kanals$	Watta Satta,Watta Child Bride	Watta Satta, Watta Satta

Table 1: PARENTAL DECISION OF AGE OF MARRIAGE

child bride. Here the incentive is advantageous to both families. First, both can reduce wedding expenditure by having a joint wedding ceremony of the two couples. For the uneconomically landed father a child bride would also mean that the family can now divert resources previously used the need for the unmarried daughter to more beneficial uses.

For ex post marriage outcome of abuse, it is hypothesised that in a *watta satta* arrangement, a woman's likelihood of being an abuse victim depends on her ability to have a son and how landed her father is. There are three types of potential abuse outcomes: both sisters-in-law are abused, both are not abused and one of them is abused while the other is not. If both *watta* brides are successful in giving birth to the desired number of sons, they would less likely be abused, hence less likely be estranged. Alternatively, if both sisters-in-law fail to provide sons, they would experience equal abuse only if both natal families are equally landed. In this situation, if both fathers holding size is more than 200 kanals, abuse more likely will result in estrangement as both natal families can afford to support them if they return. Hence, women from landed natal families have better leverage when dealing with spousal violence than non-landed counterparts. That is, women from landed natal families in *watta satta* arrangements less are likely to experience abuse than women from uneconomically landed families. In case both women have natal families with uneconomic holdings, they cannot negotiate as their natal families are less likely to support their estrangement decision. Hence, these *watta* wives will keep on tolerating violence until the desired number of sons are born .

In situations when only one *watta* wife has an economically landed natal, abuse would be less likely for the one who has a landed family. This is because in a perfect information setup, *watta satta* can provide protection to those women can make a credible threat of estrangement to their husband. The credibility of this threat is contingent on whether natal family can afford estrangement. Cost of estrangement to both families comprises of two things: (i) living expenses of the daughter and her children, and (ii) loss of daughter-in-law (counter *watta* wife) and potential heirs. If a natal family has an economic landholding, and the counter *watta* wife has failed to deliver preferred number of sons, the family can afford their daughters estrangement. If the counter *watta* wife has borne the preferred number of sons, the estrangement would not be encouraged. Rather the natal family would encourage the daughter to stay with her husband and keep on having children until she has the desired number of sons. In case a woman still is unable to provide the preferred number of sons, her husband can demand post marital transfer to prevent spousal abuse. Moreover, if a *watta* wife from an uneconomically landed natal family fails to deliver the preferred number of sons, while her counterpart (from landed natal family) succeeds, she would more likely to experience spousal abuse but would less likely have a credible threat of estrangement. This is because her natal family would be less willing to support her as they have a limited amount of income (due to the uneconomic holding) and they most likely lose custody of the male heirs (sons of counterpart *watta* wife). Here the reciprocal effect of Jacoby & Mansuri (2010) is observed- if one *watta* wife becomes estranged, the counter *watta* wife would also become estranged.

5 Data

This paper uses cross section data from Pakistan Rural Household Survey (PRHS 2004 henceforth) undertaken in 2004-2005. The sample consists of 1,110 currently married women between ages 15 to 53 from 967 households. These households were randomly sampled from 94 villages in 10 districts of provinces of Sindh and Punjab. The survey has detailed modules on marital history, marriage related transfers and women's welfare. Key characteristics of the sample are summarised in table 2.

Outcome variables, child marriage, spousal abuse and ever estranged are binary indicators, where 1 means that respondents have experienced these outcomes once in their life. Specifically, the variable child marriage is based on *Ruqsati* age. This age is a prudent measure for the consummation of marriage, as the problem with age of *Nikah* is that even after *Nikah* ceremony a woman can continue to live in her natal home. Age of *Ruqsati* is the age that she leaves her natal residence for her husband's. The sample confirms this, as the average age of *Nikah* is 17.14 years and the average age of *Ruqsati* is 17.58 years. *Watta* brides tend to have *Ruqsati* earlier than non-*Watta* ones, by a difference of 1.32 years.[11] These indicates that under international convention, average woman in the sample is a child bride.

To construct the variable ever experienced spousal abuse, women were asked if their husband ever used physical violence against them.[12] This variable does not include sexual violence (non-consensual sex), verbal threats, and psychological coercive acts. Furthermore, it is only administered by the husband and not by the other members of household. Besides the couple and their children, household members include husbands parents, brothers and unmarried sisters. It is important to note that abuse variable does not only represent incidence of spousal violence, but it also shows whether women publicly acknowledge being victims of spousal assault. It interesting to see that the percentage of women who reported being abused is very similar to the percentage of women acknowledging to estrangement.[13]

Exogenous variables used include a combination of individual, natal and in-law's characteristics. Individual characteristics include establishing whether husband is a blood relative, the age gap between the couple and level of education attainment. Other controls include wife's natal family structure, the total value of dowry and post marriage variables.

The variable *watta satta* is directly observed in PRHS (2004). The survey asks currently

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[11]*Watta* brides leave natal house at 16.92 years while non-*watta* at 18.25.

[12]In this paper, the term spousal abuse means physical violence including being slapped, pushed, thrown, kicked, chocked, burned or attacked with a weapon.

[13]Like most domestic abuse data, there is a strong suspicion of censoring in the data.

Variable definition	All women (1)	$WattaSatta$ (2)	Non-$WattaSatta$ (3)
Woman age of marriage≤ 18	0.582	0.659	0.521
Ever been physically abused by husband	0.212	0.234	0.191
Ever been estranged from husband	0.194	0.228	0.162
Number of brothers ≤ 5 years older than woman	0.949	1.243	0.681
Number of sisters ≤ 5 years older than woman	0.820	8.340	0.807
Number of female cousins related to woman ≤ 5 years older than her	4.532	5.532	3.619
Husband is a blood relative	0.684	0.730	0.521
Husband attended primary school	0.357	0.326	0.384
Husband attended secondary school	0.180	0.157	0.202
10 year age difference between husband and wife	0.187	0.162	0.210
Woman went to school	0.171	0.117	0.221
Age of the woman	28.444	28.052	28.802
Age of husband	33.972	33.19	34.0682
Wife's total number of siblings	5.659	6.117	5.241
Wife's total number of sisters	2.790	2.749	2.827
Wife total number of brothers	2.869	3.368	2.414
Wife's father owned no land at time of marriage	0.536	0.582	0.495
Wife's father owned < 200 kanals of land	0.417	0.379	0.455
Wife's father owned ≥ 0 and < 100 kanals of land	0.366	0.330	0.403
Wife's father owned ≥ 100 and < 200 kanals of land	0.049	0.045	0.054
Wife's father owned ≥ 200 kanals of land	0.049	0.045	0.054
Per brother natal land holding	32.998	31.316	34.502
Per brother natal land holding > 0 and ≤ 10 kanals	0.230	0.230	0.230
Per brother natal land holding > 10 and ≤ 30 kanals	0.116	0.094	0.139
Per brother natal land holding > 30 kanals	0.127	0.118	0.136
Wife's father can read	0.284	0.245	0.319
Total value of dowry is greater than sample mean	0.220	0.126	0.314
In-laws living in the household	0.605	0.603	0.607
Three or more brothers-in-law live in the household	0.194	0.207	0.181
Couple has more daughters than sons	0.331	0.336	0.326
Couple has one son	0.561	0.564	0.559
Number of observations	1,110	530	580

Table 2: DESCRIPTIVE STATISTICS

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married women are asked if they are in a *wattta satta* marriage. 48.18 percent of respondent categorised themselves as *watta* brides while 51.82 percent of the sample were not. For the variable husband is a blood relative, this paper only considers maternal or paternal first cousin husband as a blood relative. For level of education, schooling is divided into primary and secondary category. Education up to grade eight is primary and onwards is secondary. In the case of women's education, only 17.12 percent of the sample have been to school, out of which 74.63 percent have some primary and 97.43 having some secondary education. Additionally, 12.79 percent of *watta* brides have some form of primary education, while none have secondary. With these low percentages, it is reasonable to use disaggregated education indicator- that is whether women have been to school or not.

To control for natal family characteristics, this paper uses wife's total number of siblings at time of marriage, whether her father can read and whether he owns land. It is important to highlight that the reason for using father's ability to read rather than level of schooling, is that it has lower probability of recall error. For estimation of dowry, PRHS (2004) has a detailed section of dowry disbursement. 61.70 percent of the sample reported to received gold, while 17.92, 98.62 and 4.60 percent received silver, household goods and cash respectively. In Pakistan, both dowry and bride price is exchanged at the time of marriage. The variable proportion of dowry in total marriage proceeds is constructed by first summing total perceived value of dowry and bride price and then taking a fraction. Table 1 shows that 60 percent of the proceeds are dowry for both *watta satta* and non-*watta satta* brides. Additionally 47.31 percent of non-*watta* brides have dowry proportion less than 60 percent of the wedding proceeds, while for *watta satta* is 44.3 percent.

Ex post marriage control variables include household structure and preference indicators. Household structure is controlled by modeling whether father-in-law, mother-in-law and three or more brothers-in-law reside in the same household. Preferences indicators are frequency of wife seeing a natal family member, if a couple has more daughters than sons and if couple has one son. The frequency of wife seeing her natal family members is determined on a rating scale of three where zero means never and three means daily

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to weekly seeing a member of natal family.

6   Reciprocity and Concordance

Before exploring *watta satta* exchange's role in child marriage, spousal abuse and estrangement, the concordance and reciprocity outcomes of *watta satta* exchange discussed in section IV need to be investigated. To do this, PRHS (2004) provides data pertaining to 265 matched pairs of sister-laws who were either in *watta satta* marriage and otherwise.

Following Jacoby & Mansuri (2010) methodology, by controlling for duration of marriage (in spousal abuse and estrangement), a linear seemingly unrelated regression procedure is used. The outcome variable y_j where $j = c, a$ and e, indicating child marriage, spousal abuse and estrangement for a given sister-in-law. Correspondingly, y_j^s are the same outcomes for a corresponding sister-in-law. The descriptive regression for this form is

$$y_j = \lambda_0 + \lambda_1 y_j^s + \lambda_{2j} WS + \lambda_{3j} WS \times y_j^s + \lambda_{4j} \Delta m + \phi, \tag{1}$$

where WS indicates whether the sisters are in *watta satta* marriage, Δm is difference in the years married, ϕ is the error term. Δm can be either positive or negative depending on the sequence of marriage.

Marital Outcome	p-value
Woman age of marriage≤ 18	0.736
Ever abused by husband	0.344
Ever estranged from husband	0.000
Controlling for blood	
Woman age of marriage≤ 18	0.811
Ever abused by husband	0.424
Ever estranged from husband	0.001

Table 3: CONCORDANCE TESTS ON SISTER-IN-LAW PAIRS

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The parameter of interest is λ_3. Under the null hypothesis of equal concordance for *watta satta* sister-in-laws can be tested against one-sided alternative of greater concordance for *watta satta* sisters-in-law, $\lambda_3 j > 0$.

The summarised results for the test is given in table 3. The reported p-values show that *watta* wives are more concordant than non-*watta*. It indicates that once one *watta* wife becomes estranged from husband, her counterpart would also be sent back to her natal home.

Additionally, it also shows that for child marriage and spousal abuse, concordance is less likely. That is, there is no evidence of the fact that if one *watta* wife is a child bride than her counterpart would also be one and if one *watta* wife is being abused, her counterpart would also experience abuse. These results support the hypothesis outlined in section IV- *watta* wives likelihood of experiencing abuse depends on their natal family's holding size and ability to provide sons and not because of *watta satta*.

7 Empirical Strategy

7.1 Econometric Strategy

Following the notation of Jacoby & Mansuri (2010), θ represents the unobserved statehood in the marriage. Three observed latent variables are child marriage *(c)*, abuse *(a)* and estrangement *(e)*. These latent variables are denoted by binary indicators y_j, where $j = c, a$ and e. A system of j equations, where the jth equation is of the form

$$y_j = 1(\beta_j \theta + \mathbf{X}\omega_j + u_j > 0),\tag{2}$$

where $\beta_j < 0$, $\mathbf{X}$ is a matrix of exogenous characteristics and error term u_j is i.i.d and is uncorrelated with diagonal of covariance matrix. The variable of interest is *watta satta*, which has the following indicator function

$$\theta = \alpha WS + \epsilon.\tag{3}$$

Here ϵ is the error terms with variance σ_ϵ^2.[14] The main variable of interest is embodies in parameter α. Substituting (3) into (2) leads to

$$y_j = 1(\alpha_j WS + \mathbf{X}\omega_j + \nu_j > 0), \tag{4}$$

where y_j is a vector of the dependent variable, $\alpha_j = \beta_j \alpha$ and ν_j is the composite disturbance term that is contemporaneously correlated for j.

According to Jacoby & Mansuri (2010), a family's decision of agreeing to a *watta satta* marriage depends on their ability and willingness to do. This willingness depends on personal and cultural factors which might be related to the marriage circumstance and later state of marriage. They give the example of how *watta satta* might be more prevalent in households where women have low status, thus are more likely to be treated badly by their husbands. To extend this in the context of child marriage, lower status of women also means that unmarried girls are viewed as a liability and uneconomic consumers by parents. Therefore, parents would be motivated to marry daughters at a younger age, as the resources saved from daughter not residing could be spent on a more economic agent (namely their sons). Alternatively, *watta satta* might lead to more violence as in the case of Latif (2010), states that a woman who when refused to offer her children in *watta satta* arrangement is subjected to 'discipline' by her husband. Hence, there is no doubt to Jacoby & Mansuri (2010) conclusion that a selection into *watta satta* on the basis of some latent variable also affects marital discord and age of marriage.

To deal with the endogeneity problem, *watta satta* is governed by a 'first stage' equation given by

$$WS = 1(\mathbf{Z}\gamma + \eta), \tag{5}$$

where $\mathbf{Z}$ are the instruments and η is the disturbance term. The instrumental variables and disturbance term for structural equation j are uncorrelated.[15]

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[14]Like Jacoby & Mansuri (2010) without loss of generality $\mathbf{X}$ has been left out from equation (3).

[15]Smidth (1990) states that in order to consistent estimators from 3SLS, $E[v_i^T Z_j = 0 \forall i, j]$. Since this cannot be avoided, his developed approach is adopted for the estimation. Under his method

$$\hat{\beta} = (\hat{X}^T \hat{\Omega}^{-1} \hat{X})^{-1} \hat{X}^T \hat{\Omega}^{-1} Z (Z^T Z)^{-1} Z^T y;$$

Three-stage-least-squares (3SLS henceforth) is found to be suitable for this estimation as it is a combined form of seemingly unrelated regression (SUR henceforth) and instrumental variables. This paper uses instrumental variable to deal with the endogeniety problem and uses SUR to account for correlations between child marriage, spousal abuse and estrangement.

7.2 Identification

Identification of the econometric model requires instruments to have an exclusion restriction and need to be valid. They must be exogenous and must be partially correlated with endogenous explanatory variable (Woldridge 2013). This paper uses information from PRHS (2004) from men and women section to construct number, age, sex composition of the woman and man's siblings, and maternal and paternal first cousins at the time of marriage.

Jacoby & Mansuri (pg. 1817, 2010) build their first stage on the argument that

> "... having an older brother ... increases the likelihood of the woman's entering *watta satta* (bride exchange). Likewise, a woman's sisters, particularly older ones not too far away in age will be competition with her for an available brother to form a *watta* so that the probability declines as the number of close older sisters increases."

Though this argument is valid, the first stage can be further extended. Since the concept of family in rural Pakistan is not nuclear and is patrilocal in nature, incorporating extended family members like maternal and paternal first cousins will make a stronger instrument. The logic of this addition remains consistent with Jacoby & Mansuri (2010) argument. That is, likelihood of a woman/girl entering *watta satta* contract is increasing by the number of older but not too far away in age female cousins. This number positively impacts the likelihood because female cousins can be considered as potential

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$$\hat{COV}[\hat{\beta}] = (\hat{X}^T\hat{\Omega}^{-1}\hat{X})^{-1}\hat{X}^T\hat{\Omega}^{-1}Z(Z^TZ)^{-1}Z^T\hat{\Omega}Z(Z^TZ)^{-1}Z^T\Omega^{-1}(\hat{X}^T\hat{\Omega}^{-1}\hat{X})^{-1},$$

where $\hat{X}_i = Z_i(Z_i^TZ_i)^{-1}Z_i^TX_i$.

exchange brides available to the older brother offered for *watta*.[16]

The system of three structural equations in 3SLS, have nonidentical specification.[17] Based on literature besides endogenous variable *watta satta*, equation 4 have the following exogenous variables:

1. for child marriage, the analysis controls for husband characteristics like whether he is a blood relative, his education level, whether the age difference between the couple is of ten years. Ex ante marriage characteristics include whether woman ever attended school, number of siblings she has,whether her dowry was above the country mean, type of father's land holding at the time of marriage and whether he could read

2. For spousal abuse, controls are husband being a blood relative, 10 years age gap between the couple, husband's schooling, dowry being above the mean, wife's sibling composition, type of father's land holding at time of marriage, frequency of seeing natal family, whether in-laws reside in the same household, three or more brothers-in-law are residing in the household and variables reflecting preference for boys in the household.

3. Estrangement is modeled by controlling for husband as a blood relative, frequency of seeing members of natal family, in-laws and three or more brothers-in-law living in the household and preference for son variables. Additionally, income effects as in whether a natal family can afford daughter's estrangement is modelled with variable type of land holding father owned at the time of marriage and whether the dowry was above the country mean.

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[16]Alternatively, a higher number of male cousins would also increase this likelihood. Unfortunately total number of male cousins and male cousins who are less than 5 years older, both are not significantly correlated with *watta satta* in the sample. Hence are not considered as valid instruments.

[17]Though the instrument used for *watta satta* are the same for all three structural equations.

8 Results

8.1 First Stage

Column (1), (4) and (7) of Table 4 reports the determinants of *watta satta* under a linear probability model (LPM henceforth). This difference between three column is due to the individual structural specification of outcomes j. Column (2), (5) and (8) estimate the first stage in a probit specification. Overall, the sign and significance of the instruments and all the exogenous variables are consistent under LPM and probit estimates with the exception of father's holding size less than 200 kanals. This control is insignificant in child marriage (refer column (1)and (2)) but is significant in both spousal abuse and estrangement.

Focusing on instrument relevance, number of brothers and female cousins five or fewer years older are significant with a consistent magnitude in three specifications. The instrument relevance the older close brother, sister and female cousin are highly significant ($\chi^2 = 27.533$ and p-value≤ 0.000).[18] Moreover, results confirm the logic of having more brothers and older female cousins increases the likelihood of entering *watta satta*, while having older but close aged sisters has no impact.

Additionally, consanguineous marriage is most likely be a *watta satta* marriage. Interestingly when ex post marriage controls are not in the first stage, natal family holding size is insignificant. Table 4 shows that once post marriage controls are introduced in the first stage, fathers with uneconomic holdings are less likely to offer their daughter in a *watta satta*. This result is counter to expectations. Additionally, magnitude, sign and significance of dowry size indicator show that *watta* brides are given lower valued dowry than non *watta* counterpart. Also, having more brothers positively impacts the likelihood for *watta satta*. Lastly, first stage also shows that *watta* brides have more frequent contact with their natal families than non-*watta* brides. It is hypothesised that this correlation can be due to either *watta* wives being in consanguineous marriages or

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[18]Wald test compares instruments and exogenous variables with a specification that includes only exogenous variables. Wald test is done in linear probability setup.

due endogamy in the overall sample.[19]

In reference to education, if a man has primary schooling he is less likely opt for a *watta* bride. This result advocates importance of education for men in patriarchal societies, as it acts a tool to inculcates values inimical to traditional practices. Women attending school also negatively impacts *watta satta*. Lastly, a father's ability to read has no effect. Table **??** shows first stage results in a 3SLS setup. Model 1 results are similar to that of table 4 in magnitude, sign and significance for both instruments and controls.

8.2   Main Results

8.2.1   Model I: Controlling for Aggregate Natal Family Holding Size

Column (3), (6) and (9) of table 4 presents initial estimates of outcomes, child marriage, ever abused and estrangement in a static two-stage-least- squares set up (2SLS). Table 4 ignores the underlying correlations between child marriage, spousal abuse and estrangement. It shows that *watta satta* does not have any significant effect on child marriage, spousal abuse and estrangement. Consanguineous arrangements contribute to the likelihood of women being child brides, while education for men and women can be seen as a deterrent. In a 2SLS setup, no significant impact of education on child marriage is found for men while girls attending school is enough for a reduction. Lastly, the results confirm that child brides receive relatively lower valued dowry than a non-child bride.

Column (6) also shows that the likelihood of reporting spousal abuse decreases in a household where in-laws cohabit. This result gives credence to the fact that in patrilocal households husband's parents can influence the amount of violence within a relationship.[20] Likewise if a woman has increased contact with her natal family, she will less likely to experience spousal violence. Counter to the intuition provided in the literature, the results show that increased frequency of contact with natal family decreases spousal

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[19]53 percent of women sampled live under a day's travel distance from natal family.

[20]Albeit, no conclusion can be reached about the role of in-laws in spousal altercations- do they act as peacekeepers in the relationship or carry out disciplining on behalf of the spouse. Though it can be concluded that reporting of spousal violence significantly negatively correlated with in-laws cohabitation.

	Child Marriage			Ever Abused		
	Watta Satta-LPM (1)	*Watta Satta*-Probit (2)	2SLS (3)	*Watta Satta*-LPM (4)	*Watta Satta*-Probit (5)	2SLS (6)
Intercept	0.316*** (0.046)	−0.528*** (0.132)	0.602*** (0.082)	0.069 (0.074)	−1.262*** (0.218)	0.462*** (0.067)
Watta Satta			0.228 (0.191)			−0.121 (0.166)
Number of brothers ≤ 5 years older than woman	0.038*** (0.014)	0.110*** (0.043)		0.042*** (0.014)	0.122*** (0.043)	
Number of sisters ≤ 5 years older than woman	−0.022 (0.016)	−0.061 (0.046)		−0.019 (0.016)	−0.056 (0.046)	
Number of female cousins related to woman ≤ 5 years older than her	0.011*** (0.003)	0.032*** (0.008)		0.010*** (0.003)	0.031*** (0.009)	
Husband is a blood relative	0.105*** (0.030)	0.306*** (0.087)	0.064* (0.037)	0.072* (0.031)	0.212* (0.091)	−0.041 (0.030)
Husband attended primary school	−0.069** (0.031)	−0.192** (0.089)	−0.005 (0.035)	−0.069** (0.031)	−0.199** (0.089)	0.014 (0.030)
Husband attended secondary school	−0.039 (0.040)	−0.106 (0.117)	−0.037 (0.042)	−0.057 (0.040)	−0.164 (0.117)	−0.122*** (0.037)
10 years age difference between husband and wife				−0.035 (0.037)	−0.096 (0.105)	−0.038 (0.033)
Wife attended school	−0.092** (0.040)	−0.294* (0.116)	−0.092* (0.045)			
Wife's total number of sisters	−0.006 (0.009)	−0.019 (0.026)	0.008 (0.008)	−0.006 (0.009)	−0.017 (0.026)	−0.001 (0.007)
Wife's total number of brother	0.053*** (0.009)	0.152*** (0.027)	−0.030* (0.016)	0.054*** (0.009)	0.157*** (0.027)	0.005 (0.014)
Wife's father owned < 200 kanals of land	−0.041 (0.030)	−0.117 (0.084)	−0.057 (0.031)	−0.068** (0.030)	−0.198** (0.086)	−0.018 (0.029)
Wife's father owned ≥ 200 kanals of land	−0.037 (0.068)	−0.069 (0.198)	−0.069 (0.069)	−0.077 (0.067)	−0.209 (0.199)	0.006 (0.061)
Wife's father can read	−0.035 (0.032)	−0.098 (0.094)	−0.018 (0.034)			
Dowry value more than country mean	−0.175*** (0.036)	−0.507*** (0.106)	−0.244*** (0.051)	−0.185*** (0.035)	−0.530*** (0.104)	−0.033 (0.045)
Wife's frequency of seeing natal family				0.104*** (0.023)	0.308*** (0.069)	−0.043 (0.027)
In-laws residing in the household				−0.019 (0.031)	−0.052 (0.090)	−0.065** (0.028)
Three or more brother-in-law living in the household				0.007 (0.038)	0.026 (0.110)	0.004 (0.034)
Couple has more daughters than sons				0.016 (0.030)	0.035 (0.085)	0.045* (0.027)
Couple has one son				0.016 (0.032)	0.035 (0.091)	−0.027 (0.028)
Num. obs.	1110					

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

Table 4: MARITAL MODEL

violence. This can due to information dissemination treat. That is, the community is more likely to find out about mistreatment of wives in a household if the natal family knows about it and chooses to share. Once this information is made public, household reputation in the honor system would be compromised. Natal family hence can use this strategy as a bargaining device to reduce violence. Lastly, the positive significance of couple having more daughters than sons emphasises the cultural son preference. Women who have more daughters are more vulnerable to violence. Lastly, under 2SLS specification dowry size being above the sample mean does not have an impact on domestic violence nor spousal estrangement.

Estrangement outcomes are reported in column (9). Besides *watta satta*, external shareholders namely husband's immediate kin and woman's natal family can reduce the incidence of estrangement. This is because with in-laws and husband's brothers cohabiting, a woman's bargaining power reduces. Additionally, the significance of frequency of seeing natal family supports the conclusions about estrangement as discussed in the previous sections.

Table ?? specification accounts for correlations between different outcome variables in the estimation. That is, child marriage can contribute to spousal violence, spousal abuse can lead to estrangement and estrangement can cause spousal abuse. Here, model I follows the same specification as table 4 and includes variable categorising natal holding size as economic and uneconomic. Model 1 results for child marriage are very similar to that under 2SLS with exception of blood relations, *watta satta* and land holding. The estimates show that in a 3SLS *watta satta* and consanguineous marriage arrangements are positively correlated with likelihood of child marriage. Education for women highly significant for in likelihood of child brides. Interestingly, more brothers imply less likelihood for child marriage. This correlation infers that with more sons, households expect a higher future income and can afford to invest in daughters- via more valuable dowries, education and later marriage. Furthermore, a family also can afford the extra effort required for in protection of unmarried daughter as parents can delegate a daughter's economic costs and honor protection responsibility to sons. Lastly, model I results are counter to intuition in terms of holding categorisation- that is for child marriage is less

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likely in uneconomically landed natal families.

Under model I specification, *watta satta* does not have an impact on domestic abuse nor estrangement. The estimates show there is an underlying culture of son preference drives spousal violence and that in-laws cohabitation acts as a deterrence to spousal violence. Alternatively, it could also mean that respondents were less willing to acknowledge spousal violence if their in-laws were residing in the house. Higher frequency of seeing natal family and husband having secondary education is found to reduce domestic violence.

The results for estrangement outcome do not change at all from the 2SLS estimates. They support that estrangement is dependent on bargaining power of women. If there are more household members in the form of in-laws and brothers-in-law, women are less likely to become estranged. The role of these additional household members is not clear. Here they can act as peace-keepers and negotiate with the woman when she wants to become estranged. Role of brothers-in-law is particularly interesting. Significance of the negative coefficients supports the logic that brothers-in-law married are indirect stakeholders in estrangement outcomes. They are motivated to prevent estrangement because of two reasons: (i) if one woman of the household becomes estranged their wives might threaten to do it also; and (ii) if the news of estrangement becomes public, forming new marriage contracts might become difficult as the family honor would be compromised. Additionally, parents-in-law would be motivated to intervene for the same reason.

8.2.2 Model II: Controlling for Per Male Member Holding Size

Instead of equation 3, suppose that the correct model is $\theta = \alpha WS + \pi M + \epsilon$. Here M is a natal family holding characteristic that influences both the first stage and the three structural equations. Omission of M may cause false rejection of $\alpha = 0$. In other words, *watta satta* coefficient estimated in table ?? might be biased, as characteristic M might influence ex ante and ex post marital outcomes. To correct for this, following is added to the econometric model:

$$M = 1(\mathbf{Z}\delta + \mu > 0). \tag{6}$$

Table 5: MARITAL MODEL ESTIMATES UNDER 3SLS

	Model I First Stage	Model I c	Model I a	Model I e	Model II First Stage	Model II c	Model II a	Model II e
Intercept	0.551*** (0.074)	0.493*** (0.068)	0.202** (0.066)	0.549*** (0.070)	0.477*** (0.067)	0.193*** (0.066)		
Watta Satta	0.336* (0.150)	-0.112 (0.143)	-0.253 (0.133)	0.347* (0.147)	-0.088 (0.138)	-0.248 (0.128)		
Husband is a blood relative	0.084* (0.036)	-0.059 (0.030)	-0.017 (0.036)	0.084* (0.030)	-0.059* (0.030)	-0.020		
10 years age difference between husband and wife		-0.040 (0.031)	(0.067)	-0.042	(0.031)			
Husband attended school	-0.024 (0.037)	0.011 (0.030)	-0.024 (0.036)	0.016 (0.030)				
Husband attended secondary school	-0.061 (0.043)	-0.137*** (0.035)	-0.091** (0.035)	-0.053 (0.043)	-0.128*** (0.035)	-0.080* (0.035)		
Wife attended school	-0.144** (0.045)	-0.143** (0.045)						
Wife's total number of sisters	0.006 (0.009)	-0.005 (0.008)	0.002 (0.008)	0.007 (0.009)	-0.004 (0.007)	0.002 (0.008)		
Wife's total number of brother	-0.034* (0.014)	0.002 (0.013)	0.015 (0.012)	-0.035* (0.014)	0.001 (0.013)	0.015 (0.013)		
Wife's father owned ≥ 200 kanals of land	-0.128 (0.081)	0.022 (0.069)	-0.097					
Wife's father owned ≥ 100 and < 200 kanals of land	-0.060 (0.035)	0.060 (0.061)	-0.019 (0.063)					
Wife's father owned ≥ 0 and < 100 kanals of land	-0.100 (0.072)	-0.044 (0.032)	-0.037 (0.033)					
Per brother natal land holding > 30 kanals		-0.162*** (0.048)	-0.025 (0.041)	-0.031 (0.042)				
Per brother natal land holding > 10 and ≤ 30 kanals		-0.080 (0.050)	-0.067 (0.044)	-0.108* (0.045)				
Per brother natal land holding > 0 and ≤ 10 kanals		-0.049 (0.043)	-0.026 (0.037)	-0.009 (0.039)				
Childmarriage: sm	-0.101* (0.042)	-0.107** (0.041)						
Z-score for dowry ration to total wedding procceeds	-0.049** (0.015)	0.014 (0.013)	0.022 (0.013)	-0.048** (0.015)	0.016 (0.013)	0.024 (0.013)		
Wife's father can read	-0.012 (0.035)	-0.011 (0.035)						
Wife's frequency of seeing natal family		-0.042 (0.026)	0.063* (0.026)		-0.040 (0.026)	0.067** (0.026)		
In-laws residing in the household		-0.072* (0.028)	-0.051 (0.029)		-0.075** (0.028)	-0.053 (0.029)		
Three or more brother-in-law living in the household		0.010 (0.036)	-0.062 (0.037)		0.010 (0.036)	-0.067 (0.037)		
Couple has more daughters than sons		0.043 (0.028)	0.013 (0.028)		0.045 (0.027)	0.013 (0.028)		
Log likelihood	-1782.085				-1776.721			
Number of observations	1,110				1,110			

Here $\mu = \beta_m \epsilon + \zeta$. It is assumed that ζ is uncorrelated with u_j. Model II in table **??** incorporates this. Rather than using aggregate holding size to determine whether the holding is economic or otherwise, total holding size is divided by total number of brothers a woman has. Then, per brother holding is classified in three categories: (i) per brother holding is between zero and ten kanals, (ii) holding per brother is between ten to thirty; and (iii) holding is greater than equals to 30 kanals. Holding greater than 30 kanals means that these natal families are above average in wealth, while holding lower than 30 is assumed to be a subsistence holding. [21] Based on State Bank of Pakistan (2003) and Saquib et. al (2016) classification, natal families with per brother holdings between zero and ten are classified as lower-subsistence farmers, while farmer with holding between ten and thirty are upper-subsistence farmers.

With these classifications, the magnitude, significant and sign of all the variable and instruments are identical to that estimated in Model I. Interestingly, the significance of per brother land variables tells an elaborate story. *Watta Satta* is exercise by natal families with lower subsistence holding. The size of these holding is marginal that if all brother inherits equally, the land would not be enough for survival. Natal families with this type of holdings are the ones who practice *watta satta*, while families with upper subsistence farms are less likely to practice. Additionally, women from upper subsistence natal families are less likely to be child brides, experience domestic abuse and be estranged from their husbands.

9   Conclusion

Culture and family characteristics guide ex post and ex ante marital outcomes. This paper explores this relation by examining the impact of bride exchange custom on the welfare of married women. It addresses questions like does bride exchange cause child marriage and is spousal abuse and estrangement impacted by it. It examines the role of

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[21] Average per brother holding size is 32 kanal after correcting for outliers and removing non-landed.

gender preferences in context of partner violence and seeks to find if estrangement is a bargaining tool used by the abused in cultures where divorce is stigmatised.

The results show that *watta satta* is practiced by landowners with extremely small subsistence farms. It is used to potentially circumvent the state law that allows daughters to inherit a portion of their father's estate. To optimise for their sons' inheritance, fathers are motivated to arranged *watta satta* for their daughter. Results also indicate that women with higher number of brothers are more likely to become *watta* brides. Correspondingly, if a woman has more brothers she is less likely to be a child bride. Also, child marriage likelihood increases with matrimony between first cousins and bride being given lower dowry.

In Pakistan, spousal abuse is motivated by son preference and presence of parents-in-law in the household acts a deterrent. Correspondingly, estrangement is an indicator of wife's bargaining power. In patrilocal society, estrangement is less likely if parent and brothers-in-law are cohabiting with the couple. They are motivated to prevent estrangement because of two reasons: (i) if one woman of the household becomes estranged their wives might threaten to do it also; and (ii) when the news of estrangement becomes public, forming new marriage contracts might become difficult as the family honor would be compromised.

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