

Marriage, dowry, and women's status in rural Punjab, Pakistan

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Abstract Dowry is a common custom observed in South Asian countries. Despite alleged negative consequences caused by dowry and the legal ban or restrictions on its practice, the custom has been extended, and recently, dowry amounts seem to be increasing. Compared with public interest in and theoretical studies on dowry, empirical studies are relatively scarce mainly due to data unavailability and inadequacy. We conducted a household survey specifically designed to empirically investigate how dowry is associated with women's status in the marital household in rural Punjab, Pakistan. The dataset is unique because it gathers information on disaggregated marriage expenses, which enables us to examine the relation between each itemized component of dowry and women's status. Results show that a higher dowry amount, especially in terms of furniture, electronics, and kitchenware, is positively associated with women's status in the marital household. The positive association of these illiquid items adds suggestive evidence that in rural Punjab, Pakistan, dowry serves as a trousseau that the bride's parents voluntarily offer to their daughter.

Keywords Dowry · Intrahousehold decision making · Women's status · Marriage · Pakistan

JEL classification J12 · J16 · N35 · Z13

1 Introduction

Dowry, broadly defined as the transfer of wealth by the bride's parents at the time of marriage,¹ is often considered to be the root cause of unequal treatment of girls within

¹Although the definition of dowry is controversial, it is uncontested that it is the transfer of wealth by the bride's parents at the time of marriage (Kishwar 1988; Billig 1992; Srinivas 1994; Zhang and Chan 1999).

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the family, represented by sex-selective abortion, female infanticide, malnutrition of girls, under-education of girls, and so on. The notable phenomenon of “missing women,” referring to unnaturally low female-to-male ratios in South Asia, is often argued as being associated with the practice of dowry (Sen 1990; Croll 2000; Anderson and Ray 2010; Chakraborty 2015). Advertisements for sex-selective abortion read “Better Rs. 500 now than Rs. 500,000 later” (in dowry). Especially in India, the media reports sensationalist stories on dowry, and academics claim it to be a cause of domestic violence and a type of homicide called “dowry murder” (Stone and James 1995; Rudd 2001; Bloch and Rao 2002; Sekhri and Storeygard 2014). On the basis of this belief that dowry is a harmful custom, an anti-dowry movement emerged at the end of the 1970s, led by female activists and NGOs. The stance on dowry issues has also become politically important.² Dowry has been labeled an anti-social practice and is currently banned or restricted by law.³ Nevertheless, no legal, political, or social action seems effective in discouraging this practice; in fact, it seems to have intensified and extended in recent times.

Although it is claimed that dowry is an abominable practice, especially in India, its real meanings and roles are not well known. Despite the massive number of case studies conducted on dowry, many seem little more than a set of anecdotes and narratives, often focusing on extremely negative cases such as dowry murder.⁴ In contrast, a less prevailing view in South Asia holds that dowry, in fact, enhances women’s status in a context where women’s property rights and security are not sufficiently guaranteed in practice (Kishwar 1988, 1989; Narayan 1997; Leslie 1998; Oldenburg 2002). According to this perspective, most deaths recorded as dowry murder in India were actually unrelated to dowry. These differing views on dowry may be due to dowry being a heterogeneous concept serving multiple functions, as suggested by recent studies (Chan 2014; Anderson and Bidner 2015; Arunachalam and Logan 2016).

The chief reason for the dearth of rigorous evidence on dowry may be scarce or inadequate data needed to conduct empirical analysis. Dowry is an illegal social practice in India and Bangladesh; therefore, it is often reported that people are unwilling to reveal accurate dowry amounts. This may be one reason that aggregate marital expenses paid by a bride’s parents are often reported in a dataset without separating dowry and ceremony expenses (e.g., India Human Development Survey). Besides, dowry usually consists of jewelry, clothing, furniture, household items, livestock, cash, and so on; thus, assessing specific dowry value at the time of marriage becomes even more difficult (Jejeebhoy 2000). For the specific purpose of examining the roles played by dowry, especially how dowry is associated with women’s status in the marital household, we conducted a household survey in rural Punjab, Pakistan. We meticulously designed the survey questionnaire to obtain accurate information on every single item offered as part of dowry.

The studies most closely related to ours are those by Zhang and Chan (1999), Brown (2009), and Chan (2014), showing that dowries have positive effects on several

² For example, left-wing parties attach political stigma to marriages with dowry (Palriwala 2009).

³ The Dowry Prohibition Act of 1961 and its amendments in India, the Dowry Prohibition Act of 1980 and its amendments in Bangladesh, the Dowry and Bridal Gifts (Restriction) Act of 1976, and the Marriages (Prohibition of Wasteful Expenses) Act of 1997 in Pakistan.

⁴ One empirical study on dowry murder exists (Sekhri and Storeygard 2014); however, it cannot deny the possibility that reported dowry murders include all kinds of domestic homicide.

measures of women's welfare. Zhang and Chan (1999) originally incorporate assets brought into marriage into the Nash model of household bargaining (Manser and Brown 1980; McElroy and Horney 1981; McElroy 1990; Lundberg and Pollak 1993). The key to understand the model is one's (wife's or husband's) threat point, which is the function of anything that affects one's bargaining position in the marital household. The threat can be divorce (Manser and Brown 1980; McElroy and Horney 1981),⁵ or non-cooperative behavior within marriage (Lundberg and Pollak 1993). Expecting that assets brought into the marital family increase one's threat point, the theoretical implication of the model is that dowries, or any asset brought into marriage, affect the intrahousehold resource allocation in one's favor and have positive effects on one's private consumption in the marital family. Because one's private consumption is not necessarily reported in the datasets, these empirical studies use various measures of wife's welfare or status as a proxy for wife's private consumption.⁶

Zhang and Chan (1999) and Brown (2009) use East Asian datasets reporting both dowry and bride price. In the South Asian context where patrilocality is the norm, however, it may be inappropriate to consider dowry assets brought into a marriage because it is not clear who is the recipient or who controls the dowry. Chan (2014) conducts the first study to decompose dowry into two components, i.e., a bequest dowry over which the wife has control and a groom price over which she does not and shows that only a bequest dowry enhances women's status in the marital household. We employ an approach similar to Chan's by analyzing different components of dowry but are unique in our method of decomposition. We do not decompose dowry by the wife's subjective assessment regarding who controls each component as in Chan; rather, we decompose it by relatively objective measures, i.e., items composing the dowry. Some dowry components, such as furniture and kitchenware, are more easily considered assets brought into marriage compared with cash and gold/jewelry, which can be easily converted into cash and may be taken by the husband or his parents, even if not intended to be part of the groom price. We contribute to the empirical literature on dowry by introducing a unique dataset that allows us to analyze (1) various itemized components of dowry and other marriage expenses and (2) how each is related to women's status in the marital household. To the best of our knowledge, this is the first empirical study separating each itemized component of dowry from the aggregate total, an approach that offers a more direct test of the Nash bargaining model.

The current study provides new evidence on dowry's roles in the Pakistani context. With empirical studies being scarce as a whole, to our knowledge, only one empirical study concerning dowry payments in Pakistan has been conducted to date (Anderson 2000, 2004). Dowry's effect on women's welfare is an empirical question because its meanings and roles can be diverse across time and space, depending on the context. Jejeebhoy's (2000) study shows that a larger dowry size positively affects women's decision-making power in the northern part of India but not in the southern part. Dowry's heterogeneous effects may also be related to women's property rights, which are relatively more protected in southern India compared with northern India (Makino

⁵ Although divorce is rare in South Asian society, McElroy (1990) gives an example of the divorce threat in Indian society such that a wife has an option to physically go back to her parents without divorce.

⁶ The wife's welfare or status measures include, for example, the level of husband's help with household chores, household consumption of women's goods, the time that the wife allocates to leisure, and the wife's satisfaction with life.

2017). Dowry may exemplify seemingly gender-discriminatory practices that function as an informal mechanism that, in fact, serves to protect women's rights under a weak legal system.⁷ If dowry compensates for institutional failures to protect women's property rights, dowry's effect on women's welfare in rural Pakistan, where property rights are legally guaranteed but are not enforced, may be positive.

Potential endogeneity problems arise when conducting an empirical study on dowry. In particular, unobserved characteristics of the bride's parents may affect not only how the bride is treated in the marital household but also the dowry amount. The type of endogeneity we most suspect here is that richer families may pay larger dowries, and brides from richer families may be better treated in the marital household. On the other hand, we are less worried about the specific type of reverse causality such as more progressive parents increasing the dowry amount in the expectation that it will lead to better treatment of their daughter in the marital household. In this case, the ultimate factor enhancing the bride's status may be her parents' progressiveness, but the fact remains that even such parents believe that a higher dowry will lead to better treatment of their daughter. Because any instrumental variables for dowries, including those used by Zhang and Chan (1999), Brown (2009), and Chan (2014), face difficulty in convincingly satisfying the exclusion restriction on their own, in the current study, we do not impose an implausible exclusion restriction. Instead, three methods are used to address the specific endogeneity concern that women from richer families may be better treated in the marital household irrespective of the dowry amount. The first method is to include a rich set of observed characteristics concerning the marriage. In particular, we include the bride's natal family's income at the time of marriage and the bride price paid by the groom's parents. The former directly controls the richness of the bride's parents, and the latter indirectly does because it directly reflects the value of the bride's and her parents. We compare this with univariate regressions and follow Altonji et al. (2005) to demonstrate how much larger the effects of unobservables would have to be in order to completely eliminate the effects of dowry on women's status.⁸ The second method is to include disaggregated marriage expenses explained above, which enables us to extract item-specific association with women's status controlling for the value of other items that can be offered by the households with similar wealth. The third method is to conduct a series of reduced-form regressions of women's status on three different sets of dowry and bride price paid to others, namely, average amount of dowry (bride price) paid by the wife's brothers' (sisters') in-laws, the village-level average amount of dowry (bride price) excluding her own, and the community-based dowry (bride price).

From a broader perspective, this study is related to literature on the relation between empowerment and economic development (World Bank 2011; Duflo 2012). In general, a positive association between women's empowerment and economic development can be observed. In South Asian countries, however, economic development is not necessarily accompanied by women's equal treatment. For example, the skewed male–female ratio seems to have become rather exacerbated in recent years (Croll 2000).

⁷ *Watta satta* (literally “give–take,” bride exchange) is an example of such an informal mechanism (Jacoby and Mansuri 2010). Cultural value can be strengthened as an equilibrium when formal institutions are underdeveloped. Recent research investigates the interaction between informal mechanisms, or culture, and institutions (Alesina and Giuliano 2015).

⁸ For examples of the same procedure, see Kingdon and Teal (2010) and Bellows and Miguel (2009).

Dowry practice, often a symbol of women's disempowerment, is disappearing with the spread of modernization (Anderson 2003). The only exception is South Asia where the practice not only continues but is actually expanding. In a context where women's legal protection is underdeveloped, interpreting dowry as a symbol of women's disempowerment may be misleading. Rather, in such a context, dowry may empower women by enhancing their decision-making power in the marital household.

Our empirical analysis reveals that in rural Punjab, Pakistan, higher dowry amounts, especially when given in forms other than cash/gold/jewelry, are associated with a woman enjoying an increased status in the marital household. The positive association adds suggestive evidence that the nature of dowry in rural Punjab, Pakistan is a trousseau, and is consistent with the view that the bride's parents voluntarily offer a higher dowry to their daughter, expecting that she will be better treated in the marital household. Our findings provide for a new perspective on the policy debate concerning the custom of dowry in Pakistan, where dowry is not yet legally banned but is a controversial policy topic because of its alleged negative consequences. In a society where women do not inherit parental land in practice, a dowry might be the only asset that women can take into marriage and serves as their only source of protection after marriage.

The remainder of this study is constructed as follows. Section 2 overviews related research and existing data. Section 3 describes our unique household survey and the dataset. Section 4 presents the empirical results. Section 5 concludes.

2 Related research and existing data

2.1 Literature on dowry

Although empirical evidence is scarce, economists have actively conducted theoretical studies on dowry (Becker 1991; Botticini and Siow 2003; Anderson 2003, 2007; Boserup 2007). The two main interpretations of dowry see it as (1) a price determined in the marriage market (price model) and (2) the pre-mortem inheritance (bequest model). The definition of dowry has been the subject of discussions that aim to define its nature. In line with the price hypothesis, dowry is often defined as a transfer of cash, gifts, or both from the bride's parents to the groom and his parents at the time of marriage, which is expected or even demanded by the groom and his family. However, the bequest hypothesis considers dowry as property taken by the bride to her new home or given to her during the marriage rituals by her parents.

These two interpretations of dowry are often considered mutually exclusive (Zhang and Chan 1999; Anderson 2003; Arunachalam and Logan 2016), and existing studies focus on the question of whether dowry is, in fact, a price or a bequest. Such a definitive definition is considered important because the two hypotheses are believed to lead to opposite policy implications. If dowry is a pre-mortem bequest voluntarily offered by the bride's parents, laws prohibiting dowry practice might not be necessary. If dowry is a price that can be driven up in the current marriage market where the bride's income-earning ability or higher human capital accumulation does not seem to be fairly evaluated as compared with the groom's, it potentially decreases girls' or wives' chances of survival; thus, its prohibition by law may be effective in enhancing women's welfare.

Although these two models are often considered mutually exclusive, typical empirical studies construct an estimation model to test the price or the bequest model independently; thus, such studies cannot reject one over the other even if they claim their results support such a conclusion. Those testing the price model typically regress the dowry amount on the bride's and the groom's characteristics (Behrman et al. 1995, 1999; Deolalikar and Rao 1998; Mbiti 2008), and most of them find no, or at most weak, evidence supporting the price model.⁹ Those testing the bequest model usually regress women's welfare measures on the amount of dowry (Zhang and Chan 1999; Brown 2009). They claim that the finding that dowry enhances women's welfare supports the bequest model; however, the finding does not necessarily reject the price model because women's welfare could increase with a higher dowry amount under the price model. Possibly, dowry is determined in the marriage market, but the bride's parents may also voluntarily pay a higher amount so that the groom and his parents will treat their daughter better after marriage.

The current study is not the first to empirically investigate the relation between dowry and women's welfare and empowerment. Zhang and Chan (1999) and Brown (2009) use East Asian datasets and show that dowries have positive effects on several measures of women's welfare. Jejeebhoy (2000) demonstrates that dowry size is positively associated with women's decision-making power in north India but not in the south. Bloch and Rao (2002) and Srinivasan and Bedi (2007), both using data from a few specific Indian villages, indicate that women with higher dowry amounts are less likely to suffer domestic violence from their husbands, while Suran et al. (2004), using data from rural Bangladesh, find a completely opposite effect. These mixed empirical results may be due to the fact that dowry has different meanings and roles across both time and space. Chan (2014) uses data from Karnataka, India to consider dowry's heterogeneous nature and decomposes it into two components, i.e., a bequest dowry over which the wife has control and a groom price over which she does not; it is only the former that enhances women's status in the marital household. In sum, the relation between dowry and women's welfare remains an open empirical question because its precise nature likely varies depending on the social context.

2.2 Problems with existing data

The biggest obstacle to conducting empirical studies on dowry is the lack or inadequacy of data. Because dowry is legally banned in India and Bangladesh, people usually hesitate to reveal accurate dowry amounts. The standard question on dowry in the Indian dataset asks about community-based dowry. For example, the India Human Development Survey asks "Generally in your community for a family like yours, what are the kind of things that are given as gifts at the time of the daughter's marriage?" A community-based dowry is not necessarily the same as an individual dowry, which is paid by the bride's parents at the time of marriage. Alternatively, the question regarding dowry allows only a binary answer, i.e., whether or not a positive

⁹ Behrman et al. (1999) support the price model by showing that a bride's literacy decreases the dowry amount; however, the evidence seems weak, based on about 250 households, without considering reverse causality. Field and Ambrus (2008) can be considered a rare example of supportive evidence for the price model, showing that an exogenous increase in the bride's age at marriage leads to a higher dowry.

amount of dowry was paid (e.g., Survey on the Status of Women and Fertility both in India and Pakistan). A binary answer, of course, does not provide much additional information. The norm of whether a positive dowry amount is provided corresponds to, and is largely explained by, ethnic, religious, and caste backgrounds in South Asia.

Since dowry is not legally banned in Pakistan, the amount personally paid by the female respondent's parents can be asked without reservation in a Pakistani dataset such as the Pakistan Rural Household Survey. Although Pakistani interviewees may not intentionally conceal true information on dowry practices, the survey may nonetheless contain recall errors because respondents must recall the dowry amount paid by their parents several years ago. Figure 1a plots the predicted amount of real dowry values measured in Pakistani Rupees in 2004 onto marriage year using data from the Pakistan Rural Household Survey. Because the consensus is that real dowry amounts are increasing, or at least exhibit a non-declining trend, the figure implies the general tendency of recall errors. In other words, the longer the gap between the interviewees' marriage and the recall time, the more likely they are to overestimate the dowry amount.

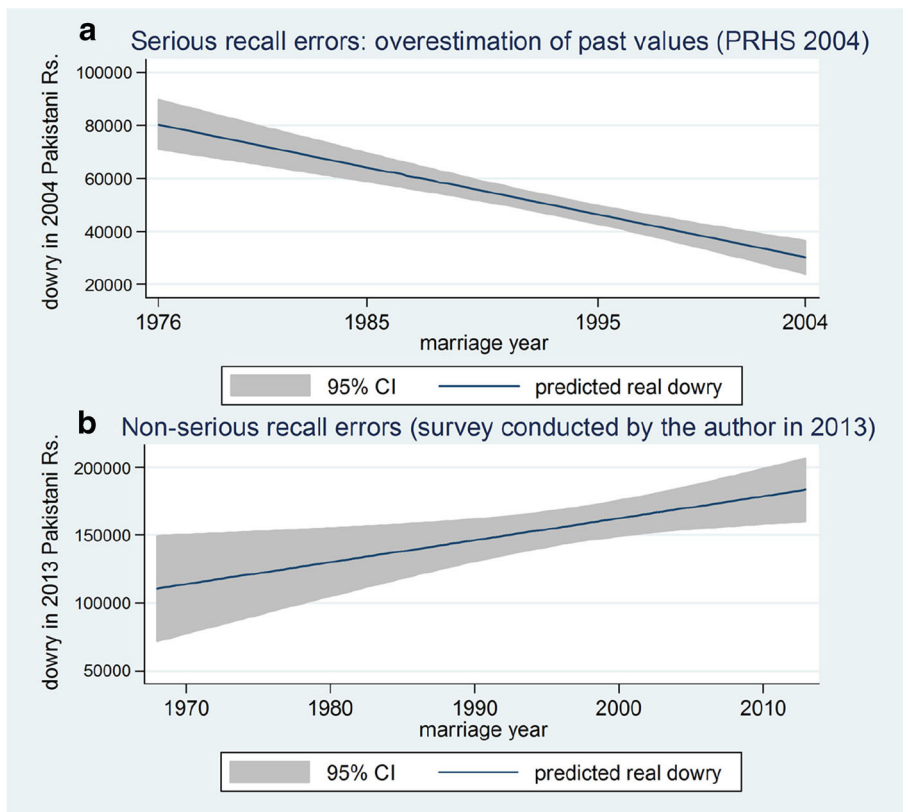


Fig. 1 Relationship between women's marriage year and real dowry amounts. The line shows the predicted real amount of dowry regressed on women's marriage year. The shaded area shows 95% confidence interval of the predicted amount of dowry. The data sources of (a) and (b) are Pakistan Rural Household Survey 2004, and the rural household survey conducted by the author in 2013, respectively

3 Data

To the best of our knowledge, data collected in this study are the first to consider explicitly a general tendency to overestimate an amount paid a long time ago. Similar to the characteristics of previously collected data, ours are also retrospective; however, based on this tendency, we particularly adopted certain efforts to minimize survey recall errors. For example, we asked for the amount of both community-based dowry (non-retrospective) and personal dowry amount paid at the time of the respondent's marriage (retrospective). Since Pakistani dowry consists of gold/jewelry, clothing, furniture, kitchenware, and so on, we queried dowry amounts by item. If we sensed a respondent's overestimation of the dowry amount, especially in the case of a marriage that took place a long time ago, because dowry is displayed, we could and did check these amounts with those who attended the ceremony. Consequently, our data on predicted real amounts of dowry (Fig. 1b) do not show any decreasing trend, in contrast with those reported in Fig. 1a.

3.1 Survey

When conducting our survey between June and October 2013, we intended to capture the heterogeneous aspects of the Punjab province in Pakistan. We divided Punjab (36 districts) into five regions: Pothohar (or North), Central, East, West, and South Punjab. Climate, culture (including marriage/inheritance practices), and socioeconomic conditions differ across regions but are similar within each region. We randomly selected one district from each region, namely, Rawalpindi, Mandi Bahauddin, Narowal, Muzaffargarh, and Bahawalnagar (Fig. 2). We used the district census for 1998–1999, the latest census available in Pakistan as of 2013, to randomly select six villages in rural areas in each of the five districts. We restricted sampling villages to those with a population of at least 1000 at the time of the census. In each village, we selected 22 households, following a stratified random sampling methodology. First, with assistance from the village chief, we made a list of households in the village and categorized them into a stratum. The strata are *kammees*¹⁰ (i.e., traditional service or lower caste, with annual income \leq PKR 200,000, $>$ PKR 200,000) and *zamindars* (i.e., landowning farmers with land $<$ 5, 5–12.5, and $>$ 12.5 acres). Eligible households in our survey are defined as those with an economically active husband and wife aged 15–65. Second, we performed stratified random sampling so that the share of each stratum in our sample corresponds to the share of each stratum of the village population (= households).

On the basis of the sampling process explained above, we conducted questionnaire-based structural interviews. Ninety-nine percent of those selected responded to our interviews. The questionnaire was carefully designed to comprehensively understand marriage practices in rural Punjab, Pakistan. The questionnaire consists of two parts;

¹⁰ *Kammees* are the traditional service caste in village society in Pakistan. They are landless and have provided various services to landowning farmers (*zamindars*) as carpenters (*tarkhan*), barbers (*nai*), blacksmiths (*lohar*), tailors (*darzi*), and so on. Muslims deny the caste system but hierarchical relationships do exist between *zamindars* and *kammees*, called the *seyp* system (Hirashima 1977). *Kammees* are conceptually different from caste; however, they effectively indicate social class and, thus, we call them caste in this study for descriptive purposes.

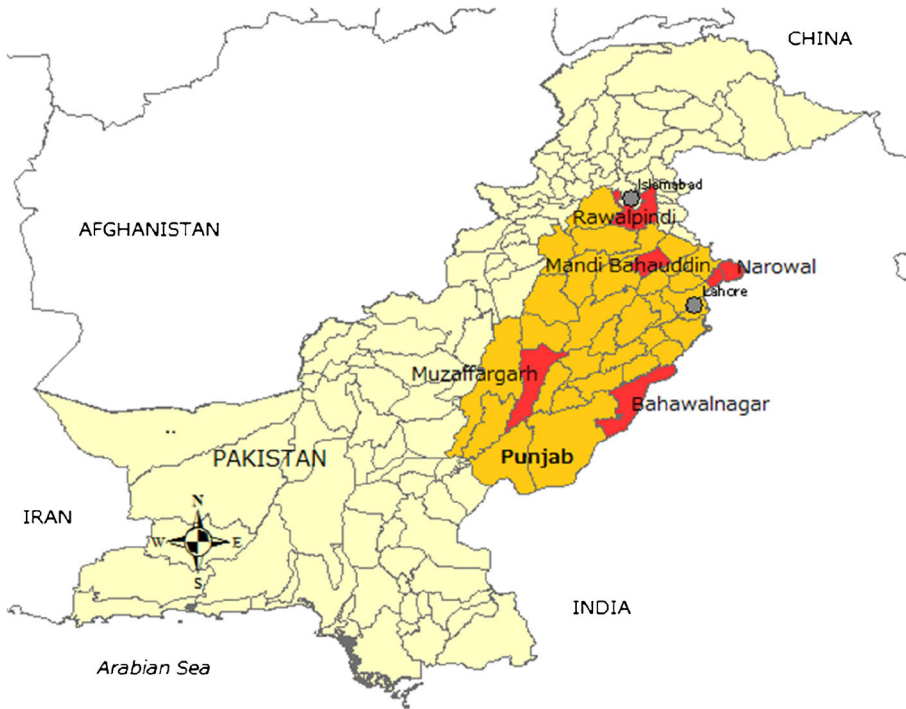


Fig. 2 Locations of rural household survey conducted by the author in 2013

the first contains questions for the husband, and the second has questions for the wife. Because the second part contains sensitive questions to assess the wife's status in the marital household, we attempted to maintain the wife's privacy as much as possible, for example, by requesting a separate interview room so that the wife could answer without feeling pressure from her husband.

3.2 Marriage practices

The summary statistics of the husband's and wife's socioeconomic characteristics, marriage expenses, and wife's empowerment are presented in Table 1. Column (1) reports the statistics for the full sample, and column (2) reports them for the subsample, i.e., wives who have at least one brother and one sister. The summary statistics for the subsample are reported since one particular reduced-form estimation with a set of marriage expenses paid to the wife's sisters and brothers by their respective in-laws can only be conducted with the subsample. The average age of husbands is 40.6 years. Husbands, on average, completed primary education (5 years), and 56% of them are literate. The average age of wives is 35.8 years. Wives, on average, did not complete primary education, and only 30% of them are literate. *Kammee* households account for 27% of total households surveyed. The average size of agricultural land per household is 3.24 acres, with almost 40% of households being landless.¹¹ For 39% of the wives, their birth village is the same as that of their husbands, 66% of them are married to a

¹¹ "Landless" means those without agricultural land. Most respondents own residential land.

Table 1 Summary statistics

	(1) Full sample	(2) Wives with at least 1 brother and 1 sister	(3) <i>t</i> test (2)–(1)
Panel A. Socioeconomic characteristics			
Husband's age	40.63 (11.35)	42.06 (10.77)	4.47***
Husband's education	3.16 (1.91)	3.10 (1.92)	– 1.12
Husband's literacy	0.56 (0.50)	0.53 (0.50)	– 2.24**
Kammee (= lower caste; yes = 1)	0.27 (0.44)	0.26 (0.44)	– 0.19
Size of agricultural land (acre)	3.24 (6.33)	3.51 (6.93)	1.71*
Wife's age	35.76 (10.45)	37.24 (10.04)	5.12***
Wife's education	2.18 (1.77)	2.08 (1.67)	– 1.91*
Wife's literacy	0.30 (0.46)	0.28 (0.45)	– 1.70*
Wife's age at marriage	19.99 (4.07)	20.01 (4.11)	0.18
Wife's natal family's annual household income at the time of marriage (PKR in 2013)	171,695 (169,562)	175,405 (179,984)	0.84
Village endogamy (yes = 1)	0.39 (0.49)	0.37 (0.48)	– 1.08
Cousin marriage (yes = 1)	0.66 (0.48)	0.65 (0.48)	– 0.37
Watta satta (= exchange marriage; yes = 1)	0.17 (0.38)	0.20 (0.40)	2.24**
Panel B. Marriage expenses			
Personal dowry (PKR in 2013)	158,011 (164,876)	154,749 (152,559)	– 0.67
Personal bari (= customary bride price, PKR in 2013)	75,498 (82,075)	73,837 (77,690)	– 0.69
Mehr (= deferred bride price)	22,564 (76,144)	22,235 (74,169)	– 0.15
Ceremony expenses by bride's side (PKR in 2013)	92,749 (104,329)	89,146 (85,603)	– 1.08
Community-based dowry	297,244 (322,264)	303,971 (354,929)	0.84
Breakdown			
Gold/jewelry to bride	76,651 (117,196)	78,281 (130,004)	0.57
Gold/jewelry to groom	12,435 (15,624)	12,188 (15,248)	– 0.56
Clothing to bride	29,404 (25,344)	29,953 (27,099)	0.84
Clothing to groom	7461 (29,646)	7970 (36,083)	0.84
Land to bride	1214 (31,164)	1831 (38,269)	1.00
Vehicle to bride	4360 (63,250)	6414 (77,549)	1.64
Vehicle to groom	3808 (59,466)	4788 (72,396)	0.82
Electronics to bride	41,439 (41,554)	41,588 (39,640)	0.12
Furniture to bride	60,984 (47,019)	59,626 (41,493)	– 0.94
Kitchenware to bride	33,967 (24,868)	33,709 (25,459)	– 0.38
Sewing machine to bride	3622 (2250)	3616 (2265)	– 0.09
Livestock to bride	12,724 (43,260)	14,362 (48,281)	1.57
Cash to bride	5420 (8616)	5685 (9382)	1.22
Cash to groom	3759 (6054)	3957 (6781)	1.36

Table 1 (continued)

	(1) Full sample	(2) Wives with at least 1 brother and 1 sister	(3) <i>t</i> test (2)–(1)
Community-based dowry compensated by groom's side	10,713 (50,541)	11,127 (53,305)	0.31
Community-based bari	108,007 (105,011)	109,524 (104,693)	0.52
Community-based ceremony expenses by bride's side	89,515 (86,514)	90,598 (91,491)	0.48
Community-based ceremony expenses by groom's side	178,803 (161,636)	183,414 (170,581)	1.09
Community-based moajel (= immediate) mehr	7253 (25,114)	6165 (22,945)	-1.45
Community-based non-moajel (= deferred) mehr	32,366 (97,646)	34,332 (104,566)	0.78
Panel C. Measures of women's empowerment			
Wife has the most say on (yes = 1)			
What to cook	0.75 (0.44)	0.76 (0.43)	1.07
Purchase of expensive items	0.18 (0.38)	0.19 (0.39)	0.89
How many children to have	0.26 (0.44)	0.29 (0.45)	2.53**
What to do if a child falls sick	0.63 (0.48)	0.63 (0.48)	0.08
Children's marriage	0.26 (0.44)	0.28 (0.45)	2.06**
Wife does not need permission from her husband to go to (yes = 1):			
Local clinic	0.70 (0.46)	0.74 (0.44)	3.04***
Friends/relatives in the village	0.75 (0.43)	0.78 (0.41)	2.83***
Local shop	0.75 (0.44)	0.79 (0.41)	3.59***
Observations	659	437	

Standard deviations are in parentheses. The variable "education" takes discrete values: 1 if no education, 2 if below primary, 3 if primary completed (5 years), 4 if middle completed (8 years), 5 if matric completed (10 years), 6 if intermediate completed (12 years), and 7 if degree or post-graduate. Household-level variables such as *kammee* and size of agricultural land are all about husband's family due to patrilocality. The *t* test for two independent samples with unequal variances are reported in column (3)

*10% significant level; **5% significant level; ***1% significant level

cousin, and 17% are married in *watta satta* (bride exchange, or literally, "give-take").¹² All of these are unique features of marriage in Punjab, Pakistan. In contrast, the north-western part of India, including Indian Punjab, has been traditionally known for hypergamy, wherein wives are married to husbands of higher status. Hypergamy contrasts with endogamy and cousin marriage. *Watta satta* is also excluded from hypergamy because two families arranging *watta satta* cannot technically observe hypergamy at the same time, and they are most likely to be from the same social class and economic condition. Wife's natal family's household income at the time of marriage was PKR 171,695¹³ on

¹² *Watta satta* usually involves a joint marriage in which a brother and a sister of one family marry a sister and a brother of another family. The composition of groom and bride from one family is not necessarily a brother-sister pair; sometimes it can be an uncle-niece pair.

¹³ On average, US\$1 = PKR 102.84 between June and October 2013. All values are reported in 2013 PKR.

average. It was answered retrospectively by the wife and is, therefore, likely subject to recall errors similar to those found in the amount of personal dowry and other marriage expenses, although income may be easier for respondents to recall compared with a personal dowry consisting of various items. We adopted similar efforts to minimize survey recall errors.

The first part of the questionnaire asks husbands about their marriage practices, including dowry amount. Because dowry is well known to consist of various items that enable a young couple to start their married life immediately after marriage, we asked about the value of each item within the dowry. The actual question is “Generally, in your community, for a family like yours, what is the approximate value of each item given as dowry at the time of the daughter’s marriage?” We explicitly asked about dowry as observed in their community, or *jati* (= sub-caste), because we are interested in the practice of dowry itself as well as the personal amount of dowry their parents paid. Their answer to the question about dowry in the community is likely to convey precise information about dowry practices. Their reply might report how much they would pay for each item if they are currently in the process of providing a dowry to their daughter. In either case, the answer is likely to provide more precise measures on the itemized value of dowry. Presumably, remembering every single item of their personal dowries from several years ago would be difficult. The second part of the questionnaire asks wives about their personal dowries and other marriage expenses, i.e., “How much dowry (bride price) did your parents (in-laws) provide at the time of your marriage?” These personal amounts are used in the main empirical analysis. The correlation coefficient between the personal dowry amount and community-based



Fig. 3 High correlation between community (*jati*)-based dowry and personal dowry paid at the time of marriage. The figure is a scatter plot of current community (*jati*)-based dowry in 2013 Pakistani Rupees and personal dowry paid at the time of respondent’s marriage in 2013 Pakistani Rupees

dowry amount is 0.65 (Fig. 3). The community-based dowry amount is higher than the personal dowry amount paid by the wives' parents, which is not surprising given the alleged increasing trend in the real amount of dowry.

Panel B of Table 1 shows the itemized average dowry values generally provided by a daughter's parents at the time of her marriage. Contrary with our expectation, the amount of cash is not very large, and cash included in a dowry, especially cash given to the groom, seems a token payment, with an average negligible amount of PKR 3759. The average value of gold/jewelry offered to the bride by her parents is the largest among all items, PKR 76,651. Both cash and gold/jewelry are offered by approximately 90% of brides' parents. Also, somewhat to our surprise, the average value of electronics, furniture, and kitchenware offered to the bride by her parents is high, and these items are offered by an even higher percentage of the brides' parents (95 to 100%). Although each item has an average value lower than that of gold/jewelry, the average value of furniture, electronics, and kitchenware combined amounts to PKR 136,390—much greater than that of the gifted gold/jewelry. Although we should carefully interpret the amount of gold/jewelry offered to the bride by her parents as gifts to the bride because such items can easily be converted into cash and might be taken by the groom and his parents, items such as furniture, electronics, and kitchenware can be safely interpreted as gifts to the bride by her parents. In India, the groom's parents are reported as often asking the bride's parents for dowry to prepare future dowries for their daughters (circulating dowry). However, in rural Pakistani Punjab, the largest share of dowry being furniture/electronics/kitchenware makes it difficult to support the hypothesis of circulating dowry. Looking at items' values in detail, dowry seems a trousseau voluntarily offered by the bride's parents to their daughter at the time of her marriage and is at her disposal once in the marital household.

Although dowry expenses incurred by the bride's parents are notoriously known and, in fact, are the single greatest expense in marriage, the expenses incurred by the groom's parents are far from negligible. Panel B also shows the average value of marriage expenses generally incurred by both sides. In addition to the ceremony expense,¹⁴ the groom's side also bears the cost of gifts to the bride called *bari*, an indispensable part of the ceremony. *Bari* typically consists of jewelry and clothing offered to the bride and her female relatives, and it can be considered a customary bride price. These two major marriage expenses incurred by the groom's side, i.e., the ceremony expense and *bari*, together are equivalent to the amount of dowry incurred by the bride's side. This indicates that marriage expenses in Pakistani Punjab are not disproportionally borne by the bride's parents.

Also, dowry is sometimes partially incurred by the groom's side. We observed that in some communities, the groom's side customarily bears 50–60% of the dowry expense. Although groom-side households bearing half the expense of dowry account for only 7% of the sample, and therefore, the average value is only PKR 10,713, this custom is far from negligible because it does not fit into either the price hypothesis or the bequest hypothesis. Under the price model, dowry payment

¹⁴ In the survey, we asked for itemized average expenses of a marriage ceremony, generally paid by both the groom's and bride's parents. On average, the groom's parents incur more ceremonial expenses for each item. In particular, the groom's parents usually pay a substantial amount for the procession ceremony (*baraat*) and the feast (*walima*).

should be one-sided, made by the side gaining from marriage or oversupplied in the marriage market (Zhang and Chan 1999). Under the bequest model, dowry should be paid entirely by the bride's parents (Botticini and Siow 2003). The fact that the groom's side bears approximately half the dowry expenses can be consistent with the idea that dowry serves as a resource to help the new couple start their marital life. It also fits into the interpretation of dowry as trousseau, implied by the itemized average value of dowry.

Marriage is a contract for Muslims, and *mehr* (Islamic bride price), not dowry, is required to conclude the marriage. *Mehr* consists of two parts: (1) *moajel*, the immediate transfer at the time of marriage from the groom's to the bride's side and (2) *non-moajel*, a deferred transfer promised for payment at the time of divorce. A substantial amount of *mehr* is *non-moajel*, PKR 32,336 on average, though only 17% of those interviewed answer that they generally specify *non-moajel* in the marriage contract. *Moajel* is considered to become a token payment in contemporary rural Punjab, Pakistan, and a negligible amount (PKR 7253 on average) is reported.¹⁵ Because the amount of *mehr* is written into the marriage contract and is binding, it might enhance women's status in the marital household because their husbands cannot obtain a no-fault divorce without incurring substantial costs corresponding to the amount of *mehr*.¹⁶ We do not find any strong correlation between the practice of writing *non-moajel* into the marriage contract and household status (whether *zamindars* or *kammees*) or household wealth (quality of living and size of land ownership).

We asked wives why the real amount of dowry differed among siblings.¹⁷ Excluding "emotional attachment" to one daughter and an "upward trend" in dowry amounts, which are less meaningful answers in our study, dowry offered to the bride by her parents tends to be higher when (1) the groom is of higher quality (higher education, higher earning ability), (2) the groom's family's status/economic condition is better, (3) the bride's parents are in a better financial condition (compared with the groom's family and/or to the time of their other daughters' marriages), and/or (4) the marriage is arranged out of *biradari* (literally "brotherhood," a group of male kin). As determinants of the dowry amount, these factors seem to reinforce the importance of groom quality and the bride's parents' financial capacity to pay. The idea that a higher quality groom increases the dowry amount is better explained by the price model, while the idea that the financial capacity of the bride's parents increases the dowry amount is closer to the bequest model. This seems to indicate that these two major hypotheses about dowry, the price and bequest hypotheses, are not exclusive. To suggest effective policies aimed at improving women's welfare, examining the relation between dowry and women's welfare in the given context could be more useful rather than discussing which hypothesis best captures the true nature of dowry.

¹⁵ The major reason for *moajel* (immediate *mehr*) becoming merely symbolic in establishing a marriage in Pakistani Punjab seems to be shame over perceptions of *moajel*, which reminds people of a father selling his daughter to a husband (Eglar 1960; Oldenburg 2002).

¹⁶ For the expected functions of *mehr* in protecting women, see Ambrus et al. (2010).

¹⁷ The reasons given by wives are reported in Appendix Figure 5. We also asked husbands about any differences in future dowries they expect to pay or receive at the time of their children's marriage. The reasons for differences are consistent with the wives' answers.

3.3 Measures of women's status

The questions designed to gauge women's status/empowerment are all answered by wives and summarized in Panel C of Table 1. The first measure is women's decision-making power; we asked wives who has the most say in decision making regarding (1) what to cook on a daily basis, (2) whether to buy an expensive item such as a television or refrigerator, (3) how many children to have, (4) what to do if a child falls sick, and (5) whom the children should marry. Each variable for women's decision making equals one if the wife has the most say in deciding each item and zero otherwise. As expected, the majority of wives, 75 and 63%, have the most say on what to cook and what to do when a child falls sick, respectively. In contrast, only a small fraction of wives, 18, 26, and 26%, make decisions on major household expenses, fertility, and children's marriages, respectively. We construct the decision-making index by principal component analysis allowing for correlations across decision-making variables (see Gorsuch 2003). The index variable equals the only factor having an eigenvalue greater than one.

The second measure is women's autonomy; we asked the wife whether she has to ask for her husband's permission to go to (1) the local health center, (2) the home of relatives/friends in the village, and (3) the neighborhood shop. Each variable for women's autonomy equals one if the wife does not need to ask permission from her husband and zero otherwise. Wives in Pakistani Punjab seem, on average, to have autonomy. Approximately 70% of wives do not have to ask permission from their husbands to go to the local health center, and approximately 75% of wives can visit their relatives/friends and a neighborhood shop without asking for permission. The reason for their modest autonomy could be partially because of the prevalence of village endogamy, implying that village people are relatives, and the practice of *pardah*¹⁸ is relatively relaxed within the village. As in the case of the decision-making index, the autonomy index is constructed using principal component analysis. Figure 4 demonstrates the kernel densities of these two indices.

4 Estimation

4.1 Estimation model

We are interested in how dowry amounts are associated with women's status in the marital household, which is represented by

$$Y_{ij} = \beta_0 + \beta_1 D_{ij} + \beta_2 B_{ij} + \mathbf{X}_{ij} \beta_3 + v_j + \varepsilon_{ij}, \quad (1)$$

where D_{ij} (B_{ij}) is the amount of the wife's dowry personally paid by her parents (bride price, both customary *bari* and Islamic *mehr*, personally offered to the wife and her natal family by her in-laws) in household i in village j measured in 2013 Pakistani Rupees. Note that D_{ij} can take a negative value when more than half of the dowry is

¹⁸ *Purdah* literally means "curtain" in Urdu. *Purdah* is the practice of gender segregation and seclusion of women in public observed in South Asian countries.

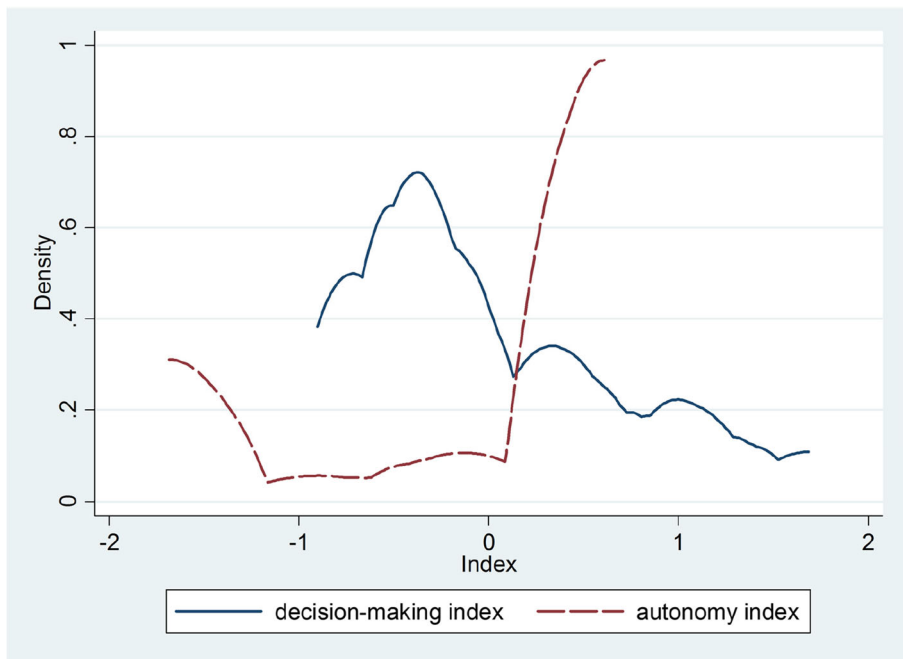


Fig. 4 Kernel densities of women's decision-making and autonomy indices. The solid line shows the Kernel densities of women's decision-making index, and the dotted line shows those of women's autonomy index. Both indices are constructed by the principal component analysis and take 0 (lowest decision-making power or autonomy) to 1 (highest decision-making power or autonomy)

borne by the groom's parents, whereas B_{ij} is strictly non-negative. We subtract dowry expenses incurred by the groom's parents from gross dowry in calculating D_{ij} because we are interested in testing the Nash bargaining model that implies that assets brought into marriage are key to determining one's bargaining position. In contrast, B_{ij} takes the gross amount because bride price is entirely paid by the groom's parents. Bride price is offered to both the bride and her natal family, and which party gets to keep its majority share seems to vary across regions and families (Anderson 2007). We lack concrete data on the portion received by the bride's natal family. According to the existing literature (Ashraf et al. 2015), the share of bride price received by the bride's natal family decreases her bargaining position in the marital household because she may be under pressure to not go back to her natal family. The portion received by the bride likely increases her position if she has control over it, while it may decrease her position if she does not. We consider it an entirely empirical question whether bride price paid at the time of marriage increases or decreases the wife's status in the marital household. In our empirical exercise, *non-moajel mehr* (deferred bride price) is included separately from the bride price paid at the time of marriage. Deferred bride price is not exactly assets brought into marriage, as it is never paid unless divorce occurs. However, as already discussed, the amount of *mehr* that is written in the marriage contract is binding, it increases the cost of unilateral divorce from the husband's side and might enhance the wife's status in the marital household (Ambrus et al. 2010). X_{ij} is a set of covariates of household i , namely, the wife's age at marriage, wife's and her husband's age and education level, household's wealth measured by the size of land owned and

wife's natal household's income at the time of marriage, and indicator variables of whether they belong to the lower caste (*kammee*), whether the marriage is endogamous, and whether the marriage is *watta satta*. The village fixed effects, v_j , are controlled. The outcome variable, Y_{ij} , is either of those indices measuring women's status in the marital household: the decision-making index or the autonomy index.

As the dowry amount is presumably endogenous, we address the endogeneity concern in three ways. First, we include a rich set of observed characteristics such as the bride's natal family's income at the time of marriage and the bride price paid by the groom's parents. Then, we follow the procedure developed by Altonji et al. (2005) to indicate how large the effects of unobservables should be in order to remove the effects of dowry. Second, we include disaggregated marriage expenses, namely, cash/gold/jewelry, furniture/electronics/kitchenware, ceremony expenses paid by the bride's household, and bride price (immediate and deferred). The objective here is to compare the association between women's status and a component of dowry, either cash/gold/jewelry or furniture/electronics/kitchenware, among the households who can afford the same level of ceremony expenses. Third, we conduct a series of reduced-form regressions of women's status on three different sets of dowry and bride price paid to others. We do not impose an implausible exclusion restriction.¹⁹ Instead, we would like to show that women enjoy higher status in the marital household when they come from a family that tends to exchange higher dowries; when they come from a higher-dowry village; or when they come from a higher-dowry community.

In a series of reduced-form regressions, we make the variables of dowry and bride price that reflect the marriage market, excluding the bride's and groom's personal unobservables by construction. In the literature, this is known as the “ $-i$ method”, which is used to construct an instrument when no instrument exists (Aizer 2010; Vogl 2013). In Punjab, Pakistan, the marriage market is defined among relatives rather than within the village. Thus, the first set considers the wife's brothers' average amount of dowry paid by the brothers' in-laws ($\overline{D}_{br,j}$) and the wife's sisters' average amount of bride price paid by the sisters' in-laws ($\overline{B}_{sis,j}$). Because of the prevalence of endogamy and strong assortative mating in rural Pakistani marriages, the average dowries (bride prices) that the wife's brothers' (sisters') in-laws paid are presumably positively associated with the dowry (bride price) amount that the wife personally received from her parents (in-laws). A drawback of using $\overline{D}_{br,j}$ and $\overline{B}_{sis,j}$, is the reduction in sample size and the possibility of selection bias given that only women with at least one sister and one brother can be included in the sample. We address this concern in the estimation. The second set considers village-level average amounts of dowry (bride price) excluding the wife's own. This is closer to the original $-i$ method proposed by the existing literature (Aizer 2010; Vogl 2013), arguing that the instruments based on a leave-out village average do not include household unobservables by construction. In addition, they neither reduce the sample size nor induce sample selection bias. However, the second set also poses drawbacks. That using the second set, \overline{D}_{-ij} and \overline{B}_{-ij} , cannot be estimated with village fixed effects because this set captures the village

¹⁹ In order to avoid imposing an implausible exclusion restriction, we do not report two-stage least square (2SLS) regressions. The implication of 2SLS estimation results by utilizing dowry and bride price paid to others as instruments is not substantially different from that of a series of reduced-form estimation results, and the former results are available upon request.

average excluding the own dowry (bride price) amount and, thus, is spuriously negatively correlated with the own amount when the village average is controlled. Instead, we control for the village-level wealth measure, which is constructed by principal component analysis using information on the condition of housing, namely, roof, walls, and flooring. The third set considers the community-based dowry (bride price) as a proxy for the personal dowry (bride price) as in Chan (2014). Here, community means *jati* (= sub-caste), sharing the same standard of living and a common marriage market. The questionnaire to the husband asks for the community-based amount of dowry and bride price typically paid at the time of marriage, as discussed in Section 3.

4.2 Main results

The OLS estimation results given by Eq. (1) are presented in Table 2.²⁰ The estimates show that the dowry amount is significantly associated with enhancement of the wife's decision making and autonomy. Because the magnitude of association is not obvious with the indices, the estimation is repeated by replacing the indices with each one of the binary variables, i.e., decision making or autonomy, and the results are presented in Appendix Tables 5 and 6. One standard deviation above the mean for dowry (i.e., 16.49) increases the probability of the wife having decision-making power over the number of children and children's marriages by 3.5 and 6.4 percentage points, respectively; these are large, given that only 26% of wives have the most say in the number of children and children's marriages. Similarly, one standard deviation above the mean dowry increases the probability that the wife does not need permission from her husband to go to the local clinic by 4.2 percentage points.

One might argue that positive association between dowry and women's status simply reflects household affluence, and women in more affluent families are usually better treated and, thus, more empowered. However, if this argument holds, the association between immediate bride price and women's status should be positive and stronger because it directly reflects the wealth of the groom's household and, thus, the marital household. Although not statistically significant, the amount of bride price that the wife received from her in-laws at the time of marriage decreases her status in the marital household. Overall, these results imply that the greater the dowry, the more likely that the wife has decision-making power and autonomy, even after controlling for household wealth.

In contrast, the amount of *non-moajel mehr* (deferred bride price) shows a positive and significant association with the wife's autonomy. This is in line with Ambrus et al.

²⁰ Additionally, the estimation is conducted by controlling for household demographics, namely, the number of infants, children, and adults in the household as in Brown (2009), and an indicator for whether the groom's parents are still alive. Patrilocality is a key assumption behind the bequest model of dowry (Botticini and Siow 2003; Anderson and Bidner 2015), but we cannot control for patrilocality because it is the norm in rural Punjab, Pakistan and is observed in almost every household. However, we can at least control for the presence of the husband's parents in the household. For completeness, we also control for the number of siblings. In sum, all of these demographic variables are not significantly associated with dowry or bride price, and their inclusion does not affect the stability of the main estimation results. The estimation results including household demographics are available upon request.

Table 2 Association between wife's personal dowry (bride price) paid by her parents (her husband's parents) and her status in the marital household (OLS, values in PKR 10,000 in 2013)

	(1) Decision making index	(2) Autonomy index
Dowry	0.0057** (0.0022)	0.0043* (0.0024)
Bride price (= bari + immediate mehr)	-0.0051 (0.0036)	-0.0074 (0.0047)
Mehr (= deferred bride price)	0.0000 (0.0006)	0.0012*** (0.0004)
Husband's age	-0.0030 (0.0074)	0.0142 (0.0091)
Husband's education	0.0119 (0.0279)	0.0361 (0.0373)
Husband's literacy	-0.175* (0.0866)	-0.162 (0.119)
Kammeer (= lower caste)	-0.0132 (0.0705)	0.0462 (0.0813)
Size of agricultural land	0.0047 (0.0074)	-0.0110 (0.0104)
Wife's age	0.0032 (0.0074)	0.0020 (0.0087)
Wife's education	0.117*** (0.0353)	0.0472 (0.0331)
Wife's literacy	-0.440*** (0.121)	-0.236 (0.140)
Wife's age at marriage	-0.0071 (0.0102)	-0.0209* (0.0114)
Wife's natal family's annual household income at the time of marriage	0.0025 (0.0029)	0.0043 (0.0032)
Village endogamy	-0.238*** (0.0665)	-0.140 (0.0893)
Cousin marriage	-0.208*** (0.0501)	-0.0877 (0.0922)
Watta satta (= exchange marriage)	0.0326 (0.0627)	-0.0923 (0.0892)
Constant	0.324 (0.205)	-0.0859 (0.296)
Observations	656	656
R-squared	0.282	0.200

Cluster (village)-robust standard errors are in parentheses. The village fixed effects are controlled. Bride price equals bari (= customary bride price) plus a portion of mehr that is written in the marriage contract and immediately paid at the time of marriage. The variable mehr (= deferred bride price) equals the amount that is written in the marriage contract but is paid only when the marriage dissolves. In other words, mehr (= deferred bride price) is never paid unless divorce occurs

*10% significant level; **5% significant level; ***1% significant level

(2010), by suggesting that *mehr* increases the cost of unilateral divorce from the husband's side and functions to protect the wife in rural Punjab, Pakistan.

As expected, the higher a wife's education, the higher her decision-making power. The significantly negative effects of literacy are unexpected, which might simply capture the fact that lower-caste wives are less oppressed than upper-caste wives and act relatively independently of their husbands in South Asia (Chakraborty and Kim 2010; Bidner and Eswaran 2015). Interestingly, endogamy, both marriage within the same village and marriage between cousins, is significantly associated with the wife having lower decision-making power.²¹

Following Altonji et al. (2005), we check how large the effects of unobservables would need to be in order to completely eliminate the dowry's effects. Without a set of observables, the dowry effect decreases by 0.35 and 0.1 percentage points in terms of

²¹ The estimation results do not support the classical Dyson and Moore (1983) hypothesis that endogamy explains the relatively better treatment of women in the southern part of India rather than in the northern part.

women's decision making and autonomy, respectively.²² These estimates imply that the effects of unobservables should be at least 1.6 times larger than those of observables.

The positive association between dowry and women's status in the marital household is somewhat puzzling if they do not have any control over their dowry. Even if non-cash items are offered to the bride by her parents as her own dowry, gold/jewelry can easily be converted to cash and controlled by the husband and his parents, as is widely alleged to occur in India. To investigate how each dowry item is associated with women's status in the marital household, the estimation procedure is repeated by decomposing the aggregate dowry into its major components, which are in turn categorized by their level of liquidity: cash/gold/jewelry and furniture/electronics/kitchenware, which are included in most dowries in the sample.²³ We do not consider decomposition into livestock, land, and vehicles, which are only included in the dowry of a minority of women in the sample, 17.3, 0.002, and 0.04%, respectively.²⁴ The estimation results concerning the association between major dowry components and women's status in the marital household are reported in Table 3. The OLS coefficient estimates of furniture/electronics/kitchenware are significantly positive, and the magnitude is three to five times larger than that of aggregate dowry. These items are not easily converted to cash, which implies that dowry is a trousseau in rural Punjab, Pakistan and may play a role in empowering women in the marital household. Such positive associations are consistent with the idea that parents voluntarily pay a higher dowry to assure better treatment of their daughter in the marital household. Interestingly, cash/gold/jewelry is significantly negatively associated with women's autonomy, and the negative association is not significantly different by intended recipient, bride or groom. This is consistent with the view that, in a patrilocal society, these items are easily converted to cash and can be controlled by the groom and his parents, even if they are offered to the bride by her parents. Also, the negative association between cash/gold/jewelry and women's status can counter the specific endogeneity concern that women from richer families may be better treated in the marital household irrespective of the dowry amount.

We estimate Eq. (1) by replacing $D_{ij}(B_{ij})$ with three different sets of dowry and bride price paid to others (i.e., $\overline{D}_{i_{br,j}}$ and $\overline{B}_{i_{sis,j}}$, \overline{D}_{-ij} and \overline{B}_{-ij} , or the community-based dowry and bride price), and three sets of reduced-form estimation results are presented in Table 4. Each panel presents estimation results of a reduced-form regression with a different set of dowry and bride price paid to others. To be comparable with Panel A, the OLS estimation results with women who have at least one brother and one sister are presented in Appendix Table 8. The OLS estimates with the subsample are in line with

²² See the univariate regression of wife's status in the marital household on her personal marriage expenses reported in Appendix Table 7.

²³ They can be categorized by intended recipient, either the bride or the groom, as in Chan (2014). The OLS estimates with dowry decomposed into recipient-by-each item show that coefficient estimates are not significantly different by intended recipient. Decomposing dowry into recipient-by-each item increases the number of components without providing any useful information. Therefore, we categorize dowry only by the level of liquidity to make the analysis more informative. The estimation results with dowry categorized by intended recipient are available upon request.

²⁴ Estimation results by decomposing dowry into cash/gold/jewelry, furniture/electronics/kitchenware, cloth, and livestock are not more informative than those presented in Table 3. Only the coefficient estimate of furniture/electronics/kitchenware is significant, and it is slightly larger than that presented in Table 3.

Table 3 Association between disaggregated marriage expenses personally paid by wife's and her husband's parents and her status in the marital household (OLS)

	(1) Decision making index	(2) Autonomy index
Cash/gold/jewelry	-0.0095 (0.0082)	-0.0165* (0.0090)
Furniture/electronics/kitchenware	0.0188*** (0.0065)	0.0218*** (0.0067)
Ceremony expenses	0.0059 (0.0047)	-0.0019 (0.0044)
Bride price (= bari + immediate mehr)	-0.0053 (0.0034)	-0.0064 (0.0046)
Mehr (= deferred bride price)	-0.0001 (0.0006)	0.0011*** (0.0004)
Observations	655	655
R-squared	0.291	0.205

The coefficient estimates of interest, i.e., marriage expenses, are only reported. All values are reported in PKR 10,000 in 2013. Cluster(village)-robust standard errors are in parentheses. The included variables other than disaggregated marriage expenses are the same as in Table 2

*10% significant level; **5% significant level; ***1% significant level

Table 4 Association between dowry/bride price (paid by in-laws of siblings, others in the village and community) and wife's status in the marital household (OLS)

	(1) Decision making index	(2) Autonomy index
Panel A. Dowry/bride price = wife's brothers' average dowry/sisters' average bride price paid by their respective in-laws		
Dowry	0.0078** (0.0036)	0.0065 (0.0057)
Bride price (= bari + immediate mehr)	-0.0057 (0.0066)	-0.0123* (0.0066)
Mehr (= deferred bride price)	-0.0001 (0.0005)	0.0007** (0.0003)
Observations	434	434
Panel B. Dowry/bride price = village average (- i) dowry/bride price		
Dowry	0.0236** (0.0100)	0.0182* (0.0103)
Bride price (= bari + immediate mehr)	-0.0111 (0.0182)	-0.0257 (0.0231)
Mehr (= deferred bride price)	0.0026 (0.0048)	0.0035 (0.0043)
Observations	656	656
Panel C. Dowry/bride price = community-based dowry/bride price		
Dowry	0.0007 (0.0014)	0.0021 (0.0024)
Bride price (= bari + immediate mehr)	0.0008 (0.0035)	-0.0048 (0.0047)
Mehr (= deferred bride price)	0.0046** (0.0017)	0.0030 (0.0025)
Observations	658	658

The coefficient estimates of interest, i.e., dowry and bride price, are only reported. All values are reported in PKR 10,000 in 2013. Cluster(village)-robust standard errors are in parentheses. Each panel represents a separate regression. The village fixed effects are controlled in Panels A and C. Village wealth index included in Panel B is calculated by principal component analysis using village-level housing condition, i.e., roof, wall, and floor. Other included variables are the same as in Table 2

*10% significant level; **5% significant level; ***1% significant level

the full sample estimates presented in Table 2. The reduced-form estimation results support the main OLS estimation results shown in Table 2. That is, women enjoy higher status in the marital household when they come from a family that tends to exchange higher dowries and when they come from a higher-dowry village, whereas a larger bride price is negatively associated with these same traits. Here, the amount of bride price paid to the wife's sisters by their in-laws is significantly negatively associated with the wife's autonomy. The third set, i.e., the community-based dowry and bride price, does not show any significant association with women's status. This is likely because relatively weaker association between the community-based dowry (bride price) and the personal dowry (bride price) that the bride receives from her parents (in-laws) than other two sets. The estimates for other coefficients are not inconsistent with those shown in Table 2 and are available upon request.

4.3 Discussion and robustness checks

In determining the women's status in the marital household, the effect of the net dowry (dowry minus bride price) may matter. The estimation procedure is repeated by replacing dowry and bride price with net dowry (Appendix Table 9, Panel A). Note that the amount of deferred *mehr* is included separately from the net dowry because the former is never paid unless divorce occurs and cannot be considered assets brought into marriage. The results suggest that the assets brought into the marriage (i.e., bride's net dowry amount) enhance her decision-making power and autonomy. These positive associations are not surprising given that the associations of bride price paid at the time of marriage run counter to those of dowry in the main estimations.

Possibly, a greater age or education difference might weaken the wife's status in the marital household. Including age difference as well as education difference (replacing the husband's age and education) does not affect the main outcomes, and the coefficients of these variables are not significant (Appendix Table 9, Panel B).

One might argue that the number of years since marriage is important because the effect of dowry (or bride price) might be greater soon after marriage. Including years since marriage and its interaction term with the amount of dowry (replacing woman's age at marriage) magnifies the base effect of dowry in women's autonomy but decreases its magnitude and the significance level in women's decision making (Appendix Table 9, Panel C). This implies that a larger dowry increases the wife's autonomy in the marital household immediately after marriage; however, the association is not significantly affected by the passage of years since marriage.

No measure of gender ideology is included in the main estimation because of endogeneity concerns. One might argue that inclusion of such measures may undermine the association between dowry and women's status in the marital household. Although we cannot deny the possibility that preferences and ideological beliefs concerning gender relations are not intrinsic and change over the marital life, the estimation procedure is repeated by including two measures for son preference: the first variable equals one when the wife's ideal number of sons is greater than that of daughters and the second equals one when the wife would like to provide higher education to sons rather than to daughters. Controlling for gender ideology does not substantially affect the main estimation results

(Appendix Table 9, Panel D). Interestingly, women's decision making is positively associated with son preference. However, it is negatively associated with the preference for providing higher education to sons as compared with daughters. A possible interpretation is that highly educated women may be against gender inequality in education and be more empowered in the marital household but prefer having more sons than daughters. This seems consistent with some existing studies indicating that son preference is more prevalent among highly educated women rather than uneducated women in South Asia (Das Gupta 1987; Muhuri and Preston 1991).

5 Conclusion

Dowry has been increasingly demonized as the root cause of women's unfavorable treatment in South Asian countries and is universally banned or restricted there, despite scant empirical evidence of its harm. Neither can anecdotal evidence be used to blame dowry alone as the cause of all domestic homicides in South Asia. If dowry has such a negative or even detrimental effect on women's welfare, why would people not abandon the custom of dowry, given that most parents have daughters? People may recognize positive aspects of dowry and, thus, maintain its practice in a given context where women do not have property rights in reality and/or households may be in coordination failure to abandon the practice.

The estimation results consistently show that a higher amount of dowry, especially consisting of furniture, electronics, and kitchenware, is positively associated with women's status in the marital household in rural Punjab, Pakistan. The association seems to be robust with respect to measures of women's status, both decision making and autonomy, and different specifications. In the context of rural Punjab, Pakistan, dowry seems to be a trousseau that parents offer to their daughter, expecting that she will then have a better life in the marital household. This supports the implication of the Nash bargaining model, i.e., the assets brought into marriage increase one's welfare, being in line with Zhang and Chan (1999), Brown (2009), and Chan (2014).

Given this empirical evidence, should the practice of dowry be maintained without reservation? Not necessarily. On one hand, it is plausible that banning or restricting dowry might work against women's interests, given that in actual practice women do not have property rights. On the other hand, if women are given property rights equal to those of their brothers, dowry might not only be useless but also harmful to women—as is now widely claimed. Phenomena concerning dowry practice can be a manifestation of a coordination failure in the society as a whole, as in the case of exchange marriage suggested by Jacoby and Mansuri (2010). Because most families are bride givers as well as bride recipients, if there is an effective way to commit to neither giving nor receiving dowry, all families might be better off.

In addition, the association between dowry and women's status might vary across South Asian regions. The evidence in this study does not necessarily imply a positive association in urban areas or more modernized societies in South Asia. Furthermore, we cannot deny the possibility that the association between dowry and women's status

might, in the near future, become negative in rural Pakistan. The empirical evidence in this study cautions against simply claiming dowry as a harmful practice and ignoring the environment in which women currently live. In other words, an outright ban on dowry is not necessarily a good policy.

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Compliance with ethical standards

Conflict of interest The author declares that she has no conflict of interest.

Appendix 1

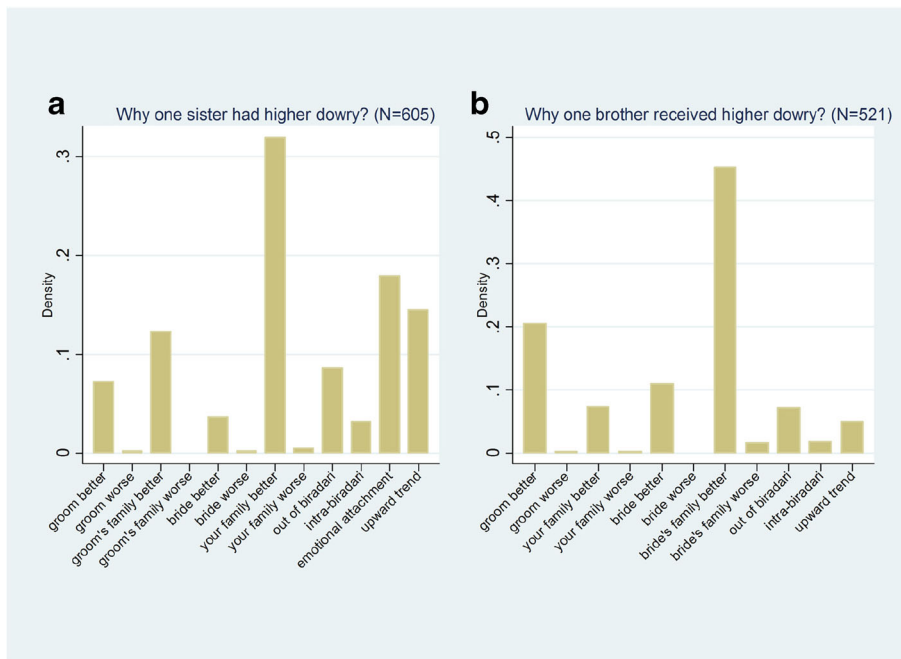


Fig. 5 Reasons real dowry amounts differ across siblings. Multiple answers are allowed. The number of observations is the total number of reasons given by the respondents. **a** The answers when the respondent's parents were on the side of payment. **b** The answers when her in-laws were on the side of payment

Table 5 Association between wife's personal dowry (bride price) paid by her parents (her husband's parents) and her decision making (OLS)

	(1) What to cook	(2) Purchase of expensive items	(3) Number of children	(4) Treatment of sick child	(5) Children's marriage
Dowry	-0.0006 (0.0016)	0.0019 (0.0017)	0.0021** (0.0010)	0.0021 (0.0018)	0.0039** (0.0015)
Bride price (= bari + immediate mehr)	0.0016 (0.0025)	-0.0022 (0.0024)	-0.0023 (0.0024)	-0.0051** (0.0023)	-0.0018 (0.0014)
Mehr (= deferred bride price)	-0.0004 (0.0007)	-0.0001 (0.0002)	0.0000 (0.0004)	0.0011** (0.0004)	-0.0001 (0.0004)
Observations	656	656	656	656	656
R-squared	0.160	0.157	0.259	0.242	0.246

The coefficient estimates of interest, i.e., dowry and bride price, are only reported. All values are reported in PKR 10,000 in 2013. Cluster(village)-robust standard errors are in parentheses. Dependent variables are all indicator variables taking one when the wife has the most say on each decision-making matter. The included variables are the same as in Table 2

*10% significant level; **5% significant level; ***1% significant level

Table 6 Association between wife's personal dowry (bride price) paid by her parents (her husband's parents) and her autonomy (OLS)

	(1) Local clinic	(2) Friends/relatives in the village	(3) Local shop
Dowry	0.0026** (0.0012)	0.0017 (0.0011)	0.0017 (0.0011)
Bride price (= bari + immediate mehr)	-0.0049** (0.0021)	-0.0020 (0.0026)	0.0020 (0.0026)
Mehr (= deferred bride price)	0.0006*** (0.0002)	0.0005** (0.0002)	0.0005** (0.0002)
Observations	656	656	656
R-squared	0.186	0.186	0.186

The coefficient estimates of interest, i.e., dowry and bride price, are only reported. All values are reported in PKR 10,000 in 2013. Cluster(village)-robust standard errors are in parentheses. Dependent variables are all indicator variables taking one when the wife does not have to ask her husband's permission to go to each place. The included variables are the same as in Table 2

*10% significant level; **5% significant level; ***1% significant level

Table 7 Univariate regression of wife's status in the marital household on her personal dowry (bride price) paid by her parents (her husband's parents)

	(1)	(2)	(3)	(4)	(5)	(6)
	Decision making index			Autonomy index		
Dowry	0.0092*** (0.0024)			0.0033*** (0.0009)		
Bride price (= bari + immediate mehr)		-0.0015 (0.0044)			-0.0099* (0.0057)	
Mehr (= deferred bride price)			0.0002 (0.0008)			0.0016** (0.0007)
Constant	-0.130** (0.0609)	0.0134 (0.0606)	-0.0012 (0.0580)	-0.0469 (0.0679)	0.0898 (0.0714)	-0.0133 (0.0672)
Observations	659	659	657	659	659	657
R-squared	0.043	0.000	0.000	0.003	0.010	0.003

Cluster(village)-robust standard errors are in parentheses. All values are reported in PKR 10,000 in 2013

*10% significant level; **5% significant level; ***1% significant level

Table 8 Replication of OLS estimation reported in Table 2 only with subsample

	(1) Decision making index	(2) Autonomy index
Dowry	0.0070* (0.0038)	0.0025 (0.0043)
Bride price (= bari + immediate mehr)	-0.0095 (0.0058)	-0.0034 (0.0066)
Mehr (= deferred bride price)	0.0000 (0.0007)	0.0013*** (0.0004)
Observations	437	437
R-squared	0.284	0.178

The coefficient estimates of interest, i.e., dowry and bride price, are only reported. All values are reported in PKR 10,000 in 2013. Cluster(village)-robust standard errors are in parentheses. The sample excludes those who have no brother and no sister. The included variables are the same as in Table 2

*10% significant level; **5% significant level; ***1% significant level

Table 9 Robustness checks

	(1) Decision making index	(2) Autonomy index
Panel A. Association between wife's net dowry and her status in the marital household (OLS)		
Net dowry (= dowry – bride price)	0.0055*** (0.0019)	0.0053** (0.0025)
Mehr (= deferred bride price)	0.0000 (0.0006)	0.0011*** (0.0004)
Panel B. Replication of Table 2 with inclusion of age and education differences		
Dowry	0.0057** (0.0022)	0.0043* (0.0024)
Bride price (= bari + immediate mehr)	-0.0051 (0.0036)	-0.0074 (0.0047)
Mehr (= deferred bride price)	0.0000 (0.0006)	0.0012*** (0.0004)
Age difference (= husband – wife)	-0.0030 (0.0074)	0.0142 (0.0091)
Education difference (= husband – wife)	0.0119 (0.0279)	0.0361 (0.0373)
Panel C. Replication of Table 2 with interaction between marriage expenses and years since marriage		
Dowry	0.0045 (0.0029)	0.0058** (0.0026)
Bride price (= bari + immediate mehr)	-0.0039 (0.0048)	-0.0090 (0.0059)
Dowry × years since marriage	0.0002 (0.0002)	-0.0002 (0.0002)
Bride price × years since marriage	-0.0001 (0.0003)	0.0001 (0.0004)
Mehr (= deferred bride price)	0.0000 (0.0006)	0.0012*** (0.0004)
Years since marriage	0.0048 (0.0115)	0.0236 (0.0146)
Panel D. Replication of Table 2 with inclusion of son preference measures		
Dowry	0.0057** (0.0022)	0.0044* (0.0024)
Bride price (= bari + immediate mehr)	-0.0052 (0.0036)	-0.0077 (0.0047)
Mehr (= deferred bride price)	-0.0001 (0.0006)	0.0011*** (0.0004)
Son preference for child's sex	0.0788* (0.0409)	-0.0429 (0.0795)
Son preference in education	-0.155** (0.0627)	-0.0640 (0.0839)

The coefficient estimates of interest are only reported. All values are reported in PKR 10,000 in 2013. Cluster(village)-robust standard errors are in parentheses. Each panel represents a separate regression. Other included variables are the same as in Table 2

*10% significant level; **5% significant level; ***1% significant level

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