Dowry and Female Labor Force Participation in Pakistan[†]

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Abstract

Dowry, often criticized as one of the worst gender-discriminatory practices, is prevalent in South Asian countries despite legal bans. Recent theoretical studies suggest that increasing the returns to human capital is the key to effectively abolishing the practice. The objective of the current study is to empirically examine this theoretical implication. The estimation results, based on the unique survey, show a negative association between female labor force participation and dowry amount, whereas no such association is systematically observed between other marriage expenses and female labor force participation. This implies that the negative association is derived from marriage market clearing rather than assortative matching of marriage. Female labor force participation seems positively evaluated in the marriage market and may be effective in discouraging the dowry practice.

Keywords: Dowry, Female labor force participation, Marriage market, Assortative matching

1   Introduction

Dowry, broadly defined as a transfer from the bride's parents at the time of marriage, is prevalent in South Asian countries. It is often blamed as the root cause of the unequal treatment of women, such as sex-selective abortion, female infanticide, and "dowry murder."[1] Dowry may be related to "missing women" (e.g., Sen 1990), the term referring to the unnaturally high male-female ratio in

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[1]"Dowry murder" means the death of a woman caused by her husband and his relatives in connection with any demand for dowry. There is an argument that any domestic homicide tends to be claimed as "dowry murder" by the victim's side with the purpose of the burden of proof; thus, the term "dowry murder" is misleading (e.g., Kishwar 1989; Narayan 1997; Leslie 1998; Oldenburg 2002; Palriwala 2009).

South Asian countries. Pro-gender activists and non-governmental organizations (NGOs) initiated anti-dowry movements in the late 1970s. The stance against dowry also becomes politically important (Palriwala 2009). Given its alleged negative consequences, dowry is prohibited or restricted by laws in South Asian countries.[2] However, the legal ban on dowry is ineffective, the practice is more widespread, and its monetary value seems to be inflating.

Kishwar (1988, 1989) argues, despite her stance against dowry, that simply banning dowry does not benefit women in the context where women have no property rights, as in most South Asian countries. In such a society, dowry can be the only source of protection for women. She concludes that assuring women's property rights is important to discourage dowry. However, it is questionable, both theoretically and empirically, whether providing women with property rights is sufficient to abolish the practice. Anderson and Bidner (2015) theoretically demonstrate that strengthening women's formal property rights does increase the groom-price portion of dowries. Roy (2015) empirically shows that the amendment assuring female siblings' equal inheritance rights as their brothers increased the amount of dowry they received from their parents; however, it did not lead to equal inheritance in reality. According to Anderson and Bidner (2015), the only way to effectively abolish dowry is to increase the returns to women's human capital. Higher educational attainment and associated income-generating opportunities of women are the key to abolishing the practice. The argument is related to the seminal work by Boserup (2007) that indicates that in South Asian countries, where people often regard women as economically burdensome because they generally do not participate in the labor force and depend financially on male household members, the bride's parents compensate the groom's household for their daughter by paying dowry.

The theoretical background of why income-earning women possibly discourage dowry can be traced back to the price model, which regards dowry as clearing the marriage market (see Becker 1991). According to the price model, an undersupply of grooms and/or higher-quality grooms, usually measured by their income-earning ability, may increase the dowry amount. Following the same logic, higher-quality brides decrease the dowry amount. However, whether the income-earning ability of the bride is symmetrically evaluated as having a higher quality is arguable. In South Asian countries where purdah (i.e., the practice of gender segregation and the seclusion of women in public) is prevalent, female labor force participation is often associated with poverty and stigma (see, for example, Kabeer 2000; Salway et al. 2003; Kabeer and Mahmud 2004; Kodoth 2008). The practice of purdah partly explains the U-shaped curve between female labor force participation and household wealth level in India (Pradhan et al. 2015). Female labor force participation because of financial necessity may not be taken favorably in the marriage market. If so, an income-earning

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[2]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.

bride may be assessed as having lower quality or no higher quality at best,[3] thus not necessarily discouraging dowry.

Even though an income-earning woman does not discourage dowry, it is possible to observe a negative association between female labor force participation and the dowry amount because of various potential factors affecting dowry. Because arranged positive assortative matching is the norm in South Asian marriages (Banerjee et al. 2013), a lower-quality bride who is likely to be matched to a lower-quality groom does not need a higher dowry if the quality of grooms determines the dowry amount rather than the relatively homogeneous quality of brides (Anderson 2003, 2007). If women working outside for wages are regarded as shameful, as is alleged, these women who will be matched to lower-quality grooms will not have to pay a higher dowry. In an extreme case, they may not even marry and do not pay dowry at all. A lower dowry for income-earning women is also consistent with the bequest model of dowry, arguing that the bride's parents pay dowry as a pre-mortem bequest by disinheriting their daughters (e.g., Tambiah 1973; Botticini and Siow 2003). According to the bequest model, a worse-off family or a family with many children, especially many girls, offers a lower dowry. Because a bride from a worse-off family is likely to work for wages, such a bride may be associated with a lower dowry. The current study assumes that the price and bequest models are not exclusive, but they can coexist and simultaneously affect the dowry amount. Given these various and tangled factors associated with the dowry amount, whether female labor force participation leads to curbing dowry is an empirical question, which the current paper seeks to answer.

There is no consensus on whether income-earning women curb dowry, and many mixed anecdotes exist. Some report that women's higher education and higher income-generating opportunities have not discouraged dowry in India (e.g., Philips 2003; Srinivasan and Lee 2004; Srinivasan 2005). In Bangladesh, others report that those who earn income do not need to pay dowry because they are not a financial burden on their marital household (Kabeer 2000, pp. 170–171). To the best of our knowledge, there is only one empirical study showing that women's higher income ability decreases the amount of dowry in the South Asian context (Mbiti 2008).

Empirical studies exist that suggest determinants of dowry other than women's income-earning ability (Behrman et al. 1995; Behrman et al. 1999), but clear-cut evidence is also scarce, partly because of the data unavailability and inadequacy. Because dowry is a banned practice in India and Bangladesh, people are usually unwilling to reveal the correct amount of dowry, and especially its recipients. Even though dowry is not legally prohibited in Pakistan, and people do not hesitate in answering questions about dowry, recall errors are very common. It is hard to remember precisely

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[3]During our field visits in Pakistan, some girls told us that no man would like to marry a woman working in a factory.

the amount of dowry at the time of marriage, as dowry usually consists of cash, gold, jewelry, furniture, electronics, kitchen items, and so on. The current paper adds to the limited empirical studies on the determinants of dowry. We conducted a unique survey targeting poor households in rural Pakistan where dowry is not prohibited, and thus people had no hesitation in answering questions about dowry. We asked both the expected amount of dowry for unmarried daughters and the retrospective amount of dowry paid at the time of marriage for those who were married. For the former, recall errors are not relevant. For the latter, to alleviate recall errors, we took careful measures, such as asking the community-based dowry for each household, double-checking the real value, and confirming the values with informants who actually attended the wedding ceremony. Furthermore, our unique survey was designed to disentangle factors affecting the dowry amount, despite the nonexistence of instruments to exogenously determine female labor force participation.

Our empirical analysis shows a negative association between female labor force participation and the dowry amount. The negative association is not systematically and significantly observed with other marriage expenses such as bride price and ceremony expenses, which implies that the negative association between dowry and female labor force participation is unlikely to be derived from the wealth effect or assortative matching at low quality. Moreover, there is no evidence that female labor force participation decreases marriage chances contrary to the stereotypical belief. Being a female teacher, and thus respected in the society, also seems to be negatively associated with dowry, though being insignificant. This is probably because of the assortative matching in the marriage market, i.e., female teachers are more likely to be matched to higher-quality grooms, but the matching effect is not strong enough to eliminate the negative association between female labor force participation and dowry. Marriage market clearing seems to work relatively strongly compared to assortative matching in determining the dowry amount. And thus female labor force participation seems to discourage dowry overall.

The current paper is also related to the literature on the relationship between women's financial independence or obtaining income-earning opportunities through employment and their bargaining in the household (e.g., Duflo 2011). When women become financially independent, they may have more decision-making power in the household (Zohir and Paul-Majumder 1996, p. 125) and receive less abuse from their husbands (Aizer 2010). Other effects may include delayed marriage and declining fertility rates (Jensen 2012; Heath and Mobarak 2015). The favorable future bargaining position of working women vis-a-vis their future husband may affect dowry at the time of marriage, as well as intra-household resource allocation in their future marital life.

The remainder of this paper is constructed as follows. Section 2 introduces the theoretical background, especially the price model of dowry, to structure the empirical analysis. Section 3 describes our household survey and the dataset. Section 4 presents the empirical results. Section

5 concludes the study.

2   Theoretical Background and Estimation Strategy

Preceding the empirical analysis, we extract the theoretical implication of the price model. According to the price model, dowry is paid to clear the marriage market (see Becker 1991). Though there are various theoretical predictions of the model developed by existing studies (Rao 1993; Anderson 2003, 2007; Dalmia 2004; Arunachalam and Logan 2016), the key feature of the model postulates an equilibrium marriage matching as follows:

$$\omega_G = a_B \omega_B + a_\tau \tau + a_S S \tag{1}$$

where ω_B and ω_G are the characteristics of the bride's and groom's family, respectively, τ is the dowry amount, and S is a social, cultural, and demographic shifter of matching function. Note that ω_B, ω_G, and S are all scalars capturing respective characteristics, such as $\omega_B = B(\boldsymbol{w_B})$, $\omega_G = G(\boldsymbol{w_G})$, and $S = F(\boldsymbol{s})$. Solving Equation 1 for the dowry amount yields a hedonic function of dowry. Posit a linear hedonic function for simplicity as follows:

$$\tau = \boldsymbol{w_G'}\boldsymbol{\alpha_G} - \boldsymbol{w_B'}\boldsymbol{\alpha_B} + \boldsymbol{s'}\boldsymbol{\alpha_S} \tag{2}$$

Note that the attributes included in $\boldsymbol{w_B}$ and $\boldsymbol{w_G}$ are not just any traits of the groom, bride, and their respective families, i.e., they are the only traits that are evaluated in the marriage market. Those negatively assessed in the marriage market enter $\boldsymbol{w_B}$ or $\boldsymbol{w_G}$ with a minus sign. In sum, the groom and his family's desirable traits increase the dowry, whereas the bride and her family's desirable traits decrease it. The question for our purposes is whether the bride's income-earning ability is positively evaluated in the marriage market if it enters $\boldsymbol{w_B}$. This question is important in terms of policy implication because the answer may lead to the opposite consequence for female labor force participation and dowry. If the bride's income-earning ability does not enter $\boldsymbol{w_B}$ positively and female labor force participation is disrespected, women would stop working with the increasing affluence of their family. If the bride's income-earning ability enters $\boldsymbol{w_B}$ positively, promoting female labor force participation will eventually discourage dowry.

In the absence of exogenous variables determining female labor force participation, directly estimating the dowry function given by Equation 2 may not enable us to answer our question. Assume that a negative association is observed between female labor force participation and the dowry amount. We cannot immediately reach the conclusion that female labor force participation is positively evaluated in the marriage market and working women do not have to pay a higher

amount of dowry. The negative association between income-earning women and household wealth is likely observed in the South Asian context. Given strong assortative matching in the South Asian marriage, an income-earning bride is likely matched to a groom from a worse-off family, and thus does not have to pay a higher dowry. Likewise, when a positive association is observed between female labor force participation and the dowry amount, it may not necessarily indicate that female labor force participation is disregarded. The positive association may simply reflect the fact that households with income-earning women have more financial resources.

Given the absence of exogenous variables determining female labor force participation, we take the following strategy to reach the conclusion whether female labor force participation is positively evaluated in the marriage market, and in itself reduces the dowry amount. First, to check whether a set of wealth variables included in the estimation is sufficient to extract the association between female labor force participation independent of the household's wealth level and dowry, we examine the association between female labor force participation and marriage expenses other than dowry. The hypothesis behind this is that if a set of wealth variables sufficiently controls the matching of wealth between the bride and groom's households, inclusion of female labor force participation is redundant and has no association with marriage ceremony expenses.

Second, the association between female labor force participation as a teacher and dowry is examined separately from general labor force participation. Though female labor force participation is generally disregarded in Pakistan, female teachers are socially respected, and are likely evaluated as having a good quality in the marriage market. If a negative association is observed between female teachers and dowry, female labor force participation enters w_B, and brides' quality seems positively evaluated as grooms' quality. On the other hand, if a positive association is observed, dowry is determined by positive assortative matching and brides' income-earning ability is less evaluated than grooms'. Unlike general female labor force participation, the sign associating female labor force participation as a teacher and dowry is expected to be the opposite, depending on which is more weighted, the brides' income-earning ability or assortative matching, in determining the amount of dowry.

3 Household Survey

3.1 Survey Design

We conducted the survey in Punjab, Pakistan, to explore whether income-earning women lead to discouraging dowry. Our survey questionnaire was uniquely designed for this purpose. The estimation equation is inspired by Equation 2, the price model of dowry, but assuming that the

groom's quality is absorbed by the matching of wealth between the bride and groom's households, on average. This assumption is plausible because we explore the association between female labor force participation and the expected amount of dowry when the future groom is unknown.[4] The estimation equation is given by:

$$D_{ijk} = \beta_0 + \beta_1 FLP_{ijk} + \beta_2 Teacher_{ijk} + \boldsymbol{R_{ijk}\beta_R} + \boldsymbol{X_{jk}\beta_X} + \boldsymbol{V_k\beta_V} + \varepsilon_{ijk} \tag{3}$$

where D_{ijk} is the expected amount of dowry in 2014 Pakistan Rupees (PKR) answered by the household head for the daughter i in the household j in the village k. FLP_{ijk} takes the value one if the unmarried daughter i aged 15–30 works outside for wages as a non-teacher, and $Teacher_{ijk}$ takes the value one if she works as a teacher. R_{ijk} is a vector of the daughter's characteristics, namely, her age, enrollment status, and education level. X_{jk} is a vector of household characteristics, namely, the head and wife's age, education level, and literacy as well as the number of sons/daughters alive, religion, caste, and level of wealth. The household's wealth is measured by four variables that are less related to the current decision of the daughter's labor force participation. The four variables are listed as follows: the size of agricultural land, the value of residential land and house, the value of dowry paid by the wife's natal family, and the wealth index.[5] V_k is a vector of village characteristics, namely, the measure of village wealth, which is measured by the ratio of pucca (solid and permanent) house, and the marriageable male to female ratio in the village.[6]

3.2 Sampling

Because Pakistan does not legally prohibit dowry, people have no hesitation in answering questions about dowry. Of the four provinces of Pakistan, we selected the Punjab province, which accounts for more than 50 percent of the Pakistani population. The Sindh province also observes dowry;

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[4]The association between female labor force participation and the expected amount of dowry when the daughter is engaged, and thus the future groom is known, is separately examined. And the estimation results show that there is no association in this case (see Table 7).

[5]The wealth index is constructed by principal component analysis allowing for correlations across factors. The index variable equals the only factor having an eigenvalue greater than one. The variables used in constructing the index are shown in Appendix Table A.1.

[6]The marriageable male-female ratio is the measure of marriage market competitiveness in the village, following the literature testing the price and bequest models of dowry (Rao 1993; Arunachalam and Logan 2016). Taking marriageable ages in the current Pakistani context into account, we apply but adjust Rao's (1993) methodology calculating the sex ratio so that the ratio is given by the number of unmarried males aged 20–34 divided by the number of unmarried females aged 15–29. It should be noted, however, that village endogamy is not common compared with cousin marriage. Among wives in our sample, the weighted probability of marrying within the same village is 23 percent while the weighted probability of marrying their first cousin is 41 percent. Given a higher frequency of cousin marriage, it may be more appropriate to use the number of cousins as a measure of marriage market competitiveness rather than the village male-female ratio used traditionally in testing the price model. However, the number of cousins does not have any significant relationship with the dowry amount, and thus we do not control it in our empirical analysis.

however, because of the deteriorating law and order situation in Sindh, our study focuses on the Punjab province. Working opportunities for women, especially in factories, are generally limited in Pakistan. We purposely selected the districts of Faisalabad, Hafizabad, Nankana Sahib, and Sialkot (see Figure 1), where women's working opportunities are relatively abundant as export-oriented garment sectors have started to hire female workers there.

First, we identified the rural area that is within commuting distance of export-oriented garment factories. Using the district census, we randomly selected 57 villages in the commutable rural area. Second, in each village, we made a profile of all households. Eligible households were defined as either landless or with no more than 5 acres of land and with at least one unmarried daughter aged 15–30. The eligible households were classified into three strata based on the daughters' working status: (i) working for payment outside the home as a non-teacher; (ii) working as a teacher; and (iii) not working outside the home. If there was more than one such daughter in the stratified household, the randomly selected daughter became the respondent of the third part of the questionnaire.

We took the following stratified random sampling methodology. Among eligible households, we selected six from strata (i) and (ii) (i.e., households with unmarried female workers) and ten from stratum (iii) (i.e., households without unmarried female workers). When there were more than five households in stratum (ii) within the village, we randomly selected four households from stratum (i) and two from stratum (ii). Otherwise, we randomly selected five from stratum (i) and one from stratum (ii). If there was no unmarried female teacher in the village, we randomly selected six households from stratum (i).

4 Data

Panel A of Table 1 presents summary statistics of household characteristics, and Panel B presents the characteristics of daughters. Column (1) of Table 1 presents the raw mean, and column (3) presents the weighted mean, by the inverse of the probability of being sampled in each stratum. Remember that the population of our survey is the households with no more than 5 acres of land and with at least one unmarried daughter aged 15–30. Also, our stratified random sampling methodology oversamples households with at least one unmarried female worker. Though households with female workers are allegedly worse-off in the Pakistani context, it does not seem that the survey oversamples relatively worse-off households. For example, the raw share of kammees,[7]

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[7]In the traditional rural Punjabi economy, one's occupation was determined by birth (Eglar 1960). Those who provide various services to landowning households (zamindars) have been collectively called kammees. Although Islam denies the caste system and those born in kammee households have rarely engaged in traditional services recently, the social stratification by birth stubbornly exists. For descriptive purposes in the current study, we refer

or functionally lower castes, makes up 43 percent of the sample, whereas the weighted share is actually higher (45 percent), which means that the survey does not oversample lower castes. The means of agricultural land owned are the same between the two. Though the raw mean of residential home and land's value (676,559 in 2014 PKR) is slightly lower than the weighted mean (690,340 in 2014 PKR), the raw mean of the wife's dowry amount (72,330 in 2014 PKR) is higher than the weighted mean (70,752 in 2014 PKR). In sum, there is little evidence that the survey systematically oversamples relatively worse-off households. This is likely due to the fact that the survey focuses only on relatively worse-off households with at most marginal agricultural land (less than 5 acres of land).

Household characteristics are not substantially different between the raw and weighted means except for the daughter's working status, and the following discussion focuses on the weighted means. Pursuant to the definition of the head of household in our survey, 91 percent are male-headed households. Two thirds of the household heads have completed primary education, but only half of the wives have enrolled in primary school. Consequently, 43 percent of the heads are literate and only 23 percent of the wives are literate. Note that the population of our survey is functionally landless households, and the heads are relatively old because of the survey structure, i.e., the heads of households are restricted to those who have at least one unmarried daughter aged 15–30. Thus, the sample's average literacy rates are much lower than the Punjabi average reported in the Pakistan Social and Living Standard Measurement Survey (PSLM) 2012–2013, i.e., 69 percent and 50 percent for males and females, respectively. Note also that the number of daughters is greater by 1.3 times than the number of sons, which is exactly derived from our survey population, i.e., the households with at least one unmarried daughter aged 15–30.

Reflecting our stratified sampling strategy, i.e., oversampling households with at least one unmarried female worker, the raw share of working women is 28 percent, substantially higher than the weighted share (23 percent). The raw probability of being enrolled is 31 percent, and the weighted probability is higher (34 percent), which is also expected given that working women usually do not go to school. The relatively narrow difference may reflect the fact that daughters in worse-off households do not pursue higher education irrespective of their working status. The raw mean of the expected amount of dowry (169,729 in 2014 PKR) is slightly higher than the weighted mean (169,253 in 2014 PKR), which suggests that, by looking at descriptive statistics, the negative association between women's working status and the dowry amount as well as household wealth is not obvious.

The yearly average earnings by the unmarried daughter's occupation is demonstrated in Figure 2. Interestingly, and perhaps surprisingly, earnings of private teachers are far lower than those of

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to the zamindar-kammee distinction as the caste system.

factory workers. Public sector workers including teachers earn the highest among all, but there are only two public school teachers out of a total of 67 teachers in our sample. Because public sector jobs are very competitive to get, when people say "unmarried female teachers," they usually mean those working in private schools. In sum, teachers' wages are lower than those of factory workers on average. For the purpose of our study, it is important to understand the cultural context in which a female teacher earns less than a factory worker although the former is respected and the latter is not.

5 Estimation Results

5.1 Main Results

Taking the stratified random sampling into account, the linear equation model is regressed on the basis of the sample weighted by the inverse of the probability of being included in the sample.[8] Equation 3 is first estimated without control variables and then is gradually estimated with them to see how female labor force participation and household wealth are related. The estimation results are presented in Table 2. Column (1) shows that when the daughter works for payment outside as a non-teacher, the dowry amount decreases by PKR 53,160 on average. We cannot interpret this as a causal effect. In particular, women's labor force participation is negatively associated with household wealth in the South Asian context. The coefficient estimates of a daughter working outside the home may simply capture the wealth effect. Columns (2), (3), and (4) add the daughter's attributes, household characteristics, and village characteristics, respectively. As expected, the wealthier households offer a higher amount of dowry, as shown by significantly positive coefficient estimates of the size of agricultural land, the wealth index, the value of residence, and the wife's own dowry paid at the time of her marriage. Lower-caste households pay a lower amount of dowry. As with the household wealth level, the village wealth level is significantly positively associated with the dowry amount.[9] By including the household and village wealth levels, the magnitude of the coefficient estimate of the daughter working outside as a non-teacher decreases from -5.316 to -0.750. The coefficient estimate of the daughter working as a teacher is also negative, though being insignificant. Interestingly, the daughter's enrollment status shows a significantly positive

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[8]The estimates of the ordinary least squares (OLS) without weighting are presented in Appendix Table A.2. The OLS estimates are consistent with the main estimates.

[9]A significantly positive sign on the marriageable male-female ratio in the village seems to be counter-intuitive, as a higher ratio, i.e., surplus of grooms, indicates a relatively favorable marriage market condition for brides. Given that the village endogamy is not common in rural Punjab, Pakistan (see Footnote 6), however, the ratio is not necessarily related with the marriage market competitiveness. Possibly it may reflect the level of village wealth as more working opportunities attract male workers into the village, or the level of son preference that can be associated with a higher dowry.

association with the dowry amount (remember that the reference group is those being enrolled). One possible interpretation of this result is that female labor force participation leads to a decrease in dowry, but increasing women's education level itself does not, because women's education and labor force participation are not strongly related in the South Asian context. The positive association between the enrollment status and the dowry amount possibly implies that enhancing women's education, without their working opportunity, may lead to a higher dowry, reflecting the assortative matching at the individual level. In the long run, however, increasing women's education level itself may still be effective in discouraging the dowry practice. The wife's modest education has a negative association with the dowry amount, though being insignificant, which may imply that when mothers are relatively empowered, they tend to decrease their daughter's dowry. Note also that when the daughter has one more sister, the amount of dowry significantly decreases, by around PKR 3,670 on average, which is consistent with the bequest model.

Equation 3 is repeatedly estimated by assigning other marriage expense measures for D_{ijk} to address two issues. One is to address the concern that the daughter's working status captures the unobserved wealth effect, which is negatively associated with the dowry amount, even after controlling for household and village wealth observables. Another is to explore which possibility is more likely, either that income-earning brides are evaluated in the marriage market or working women are dishonored and matched to a lower-quality groom. Other marriage expense measures are the expected amount of bari (customary bride price) paid by the groom's family at the time of a daughter's marriage, the expected marriage ceremony expenses for both the bride's and groom's families, and the expected net dowry, defined as dowry minus bride price. If the included wealth measures were not exhaustive, the coefficient estimate of the daughter's working status should have been significantly negative by capturing the wealth effect on bride price and ceremony expenses. This is because the working bride is more likely to be from a worse-off family, and thus, because of the assortative matching, her groom is more likely to be from a worse-off family that cannot afford to pay a higher bride price and marriage ceremony expense. Similarly, the working bride's family cannot afford to hold a lavish marriage ceremony. Note that dowry paid by the bride's family is the largest expense in the Pakistani marriage, but the expenses incurred by the groom's families are not negligible (Figure 3). The linear equation model is regressed by controlling for the same household and village characteristics as in column (4) of Table 2, and the estimation results are presented in Table 3. The results showing the insignificant association of the daughter's working status with the bride price and ceremony expenses (columns (1), (2), and (3) of Table 3) and remaining significant association with net dowry (column (4) of Table 3) can be supportive evidence that included wealth measures sufficiently control the wealth level of households.[10] The

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[10]We also check whether those measures sufficiently control for household and village wealth levels by including

insignificant association between the daughter working as a teacher and ceremony expenses can also complement it given that female teachers are more likely from a relatively better-off family that can afford to invest in girls' higher education. We cannot completely rule out the possibility that the coefficient of the daughter's working status still captures unobserved effects, but it seems likely that the negative association of female labor force participation with the dowry amount is still observed after completely controlling for the wealth effect.

Even if included wealth measures sufficiently capture the wealth effect, two opposite interpretations are still possible. Either working brides are evaluated in the marriage market or they are dishonored and matched to a lower-quality groom. If working women are dishonored, as is alleged in the South Asian context, because of the assortative matching, such women are more likely to marry a lower-quality groom, and thus less likely to need a higher dowry. If so, the negative association (column (4) of Table 2) reflects the assortative matching of marriage rather than the marriage market evaluating the income-earning ability of the bride. However, the above estimation replacing dowry with bride price (column (1) of Table 3) hints at the least possibility that the negative association is derived from matching, because if so, working women's bride price should be significantly lower, reflecting lower-quality matching.[11] Collateral evidence is that the coefficient estimate of the daughter working as a teacher remains negative with respect to dowry even after controlling for the wealth effect (column (4) of Table 2) and is significantly negative with respect to net dowry (column (4) of Table 3). The significantly negative sign is likely to reflect the bride price positively associated with being a teacher given the fact that female teachers are respected in the society, and thus evaluated in the marriage market. They are more likely to be matched with higher-quality grooms, leading to a higher dowry, but the matching effect is not strong enough to turn a negative association between dowry and female labor force participation to a positive one. In sum, the negative association is more likely generated by a bride's income-earing ability rather than by assortative matching at low quality.

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current household income or per capita household income even though they are obviously endogenous to the decision of the daughter's labor force participation. Inclusion of either current income variable does not substantially affect the coefficient estimate of female labor force participation and neither current income measure has any significant effect on the dowry amount. Given these results, we assume that the included measures of household and village wealth are exhaustive and the effect of unobservables (especially the unobserved wealth effect) is not substantial enough to eliminate the main effects.

[11] Although there is no consensus whether the bride's higher quality increases or decreases the dowry amount because of various factors affecting the dowry amount (e.g., assortative matching implies positive association between a higher quality bride and dowry while marriage market clearing implies negative association between a higher quality bride and dowry), the bride's quality seems to be unambiguously positively related with the bride price (Anderson 2007; Ashraf et al. 2015). The insignificant association between bride price and women's working status at least suggests that working women are not assertively disrespected in the marriage market against general belief.

5.2 Robustness Checks

Above estimation is repeated by replacing women's working status with their yearly earnings to further check the robustness that the negative association is generated by a bride's income-earning ability rather than assortative matching at low quality. Although the precision decreases, the negative relationship between the dowry amount and women's earnings remains (Table 4). Being consistent with the previous results, female teacher's earnings are positively associated with other marital expenses, and are significantly negatively associated with net dowry. These results further support the view that women's working status/income-earning ability is not disregarded in the marriage market.

To further examine whether women's working status degrades their value in the marriage market, we examine whether their marriage chances are affected by their working status. Because daughters are all unmarried in the sample, we use their engagement status as a proxy for the probability of marriage controlling for their ages. The estimation procedure is repeated by replacing dowry or other marital expenses with the daughter's engagement status taking the value one if she is engaged, and the results are presented in Table 5. There is no significant association between their working status/income-earning ability and their engagement status, which can be supportive evidence that women's labor force participation does not decrease their marriage chances. This is contrary to the stereotypical belief that working women are considered shameful, and thus lose the opportunity to marry.

Our empirical analysis is not to show any rigorous causality, but to explore mechanisms behind the negative relationship between women's working status/income-earning ability and the dowry amount. In particular, we do not exclude the possibility of reverse causality that the parents who are not willing to pay a higher dowry tend to let their daughters work outside. Also, parental unobserved characteristics such as gender progressiveness may simultaneously enhance their daughter's labor force participation and decrease the dowry amount, but it is not her labor force participation that leads to a lower dowry. Even in these cases, the mechanism connecting female labor force participation and dowry is positive from the perspective of women's empowerment. The estimation with household fixed effects shows insignificant association between female labor force participation and dowry (Table 6). This is not surprising given that the daughters' labor force participation is almost always decided by her father, who does not usually differentiate one daughter from another concerning whether or not they should participate in labor. On the other hand, a significantly positive association is observed between women's working status and bride price even within the household. Given a consensus about positive relationship between the bride's quality and the bride price (see Footnote 11), it supports the view that female labor force

participation is in fact evaluated in the marriage market.

To further investigate whether the negative association changes before and after the matching, the estimation procedure is repeated with respect to each subsample based on the daughter's engagement status. The estimation concerning each subsample shows that the significantly negative association between women's working status and the dowry amount is only observed among those who are not engaged (Table 7). The results may reflect the parents' expectation to decrease the dowry amount in the process of matching when their daughter works. When the daughter's future husband is unknown, parents can still negotiate the dowry amount, and their daughter's income-earning ability may enhance their bargaining power. Once the matching is completed, there is no room for negotiating the dowry amount. Consistently, no significant relationship between women's working status and her customary bride price irrespective of her engagement status further decreases the possibility that the negative relationship is derived from the fact that a working woman is generally disregarded, and is likely to be matched to a lower-quality groom. A significantly positive association between earnings as a female teacher and her bride price and a related negative association between being a teacher and net dowry also consistently support the view that working women are evaluated in the marriage market.

6   Conclusion

The empirical analysis supports the view that women's labor force participation leads to decreases in dowry. It is also consistent with Anderson and Bidner's (2015) recent theoretical model showing that enhancing returns to education is the key to curbing dowry. Educated women without accompanying income-earning opportunities do not seem to be evaluated in the marriage market in a way to decrease the dowry amount. Educated women are likely to be matched to educated men with higher income-earning ability; thus, female education alone may increase the dowry amount and rather encourage dowry, as suggested by Anderson's (2003, 2007) theoretical model.

Our estimation results are also consistent with anecdotes about female sewing operators who are hired by the garment industry in Bangladesh, reporting that they do not need to pay dowry at the time of marriage. In Bangladesh, this relatively new industry provides opportunities for women in poor rural families by paying relatively higher wages compared with the alternatives, such as housekeeping and agricultural labor. The phenomenon is very similar in Pakistani villages within commuting distance of this industry. Although female sewing operators in Pakistan are less common than those in Bangladesh, this is undoubtedly a new income-earning opportunity that pays higher wages than other existing alternatives, including teaching in private schools. According to Makino (2014), these women earn as much as men with the comparable living standard, who

are typically employed as construction workers, drivers, and factory workers. These women are surely not financially burdensome, and following Boserup's (2007) logic, they do not need to pay dowry. Anecdotally, it is said that working women in factories are dishonored and that a strong stigma is attached to their working outside the home. However, our qualitative interviews reveal that working women seem to take working outside for payment positively, and the majority of them think that working outside the home helps find a good marriage match.

If the policy objective is to abolish dowry, generating new income-earning opportunities for women in poor households, such as those in the garment industry, seems more effective than a legal ban on dowry. However, such opportunities alone are not necessarily promising in inhibiting dowry. Although the majority of working women in our sample think favorably of working outside the home, when asked about their intention to continue their jobs after marriage, only half of them answered positively. If they do not earn income after marriage, the perception that women are financially burdensome in the marital household would persist after new income-earning opportunities for women become available. The financial independence of women before and after marriage may be the key to abolishing dowry.

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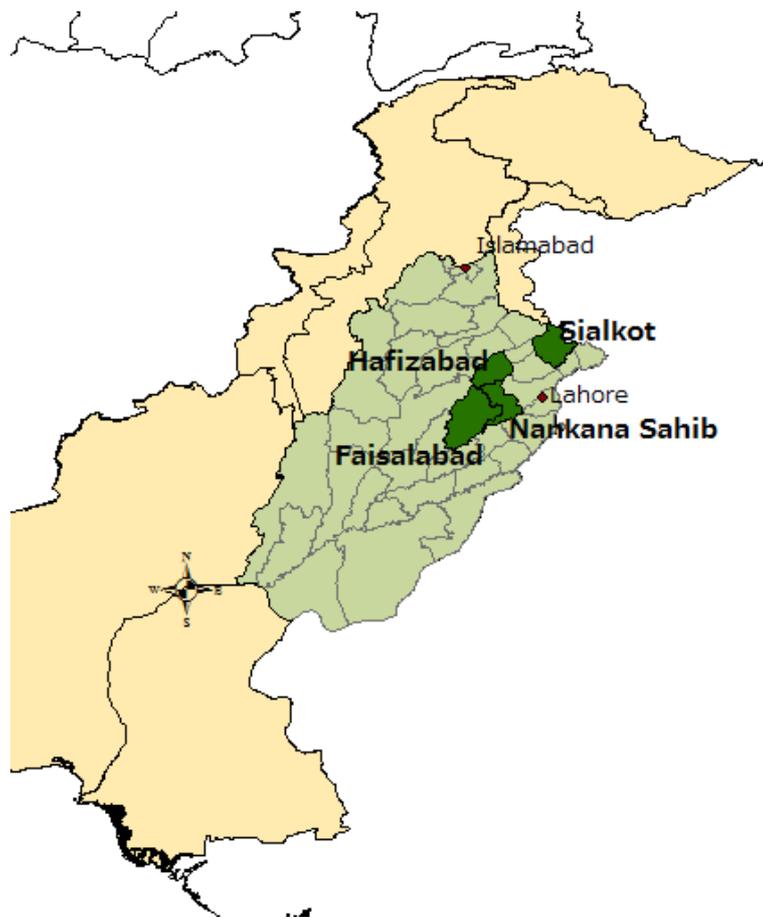
Figure 1: Locations of household survey conducted by the author in 2014–2015
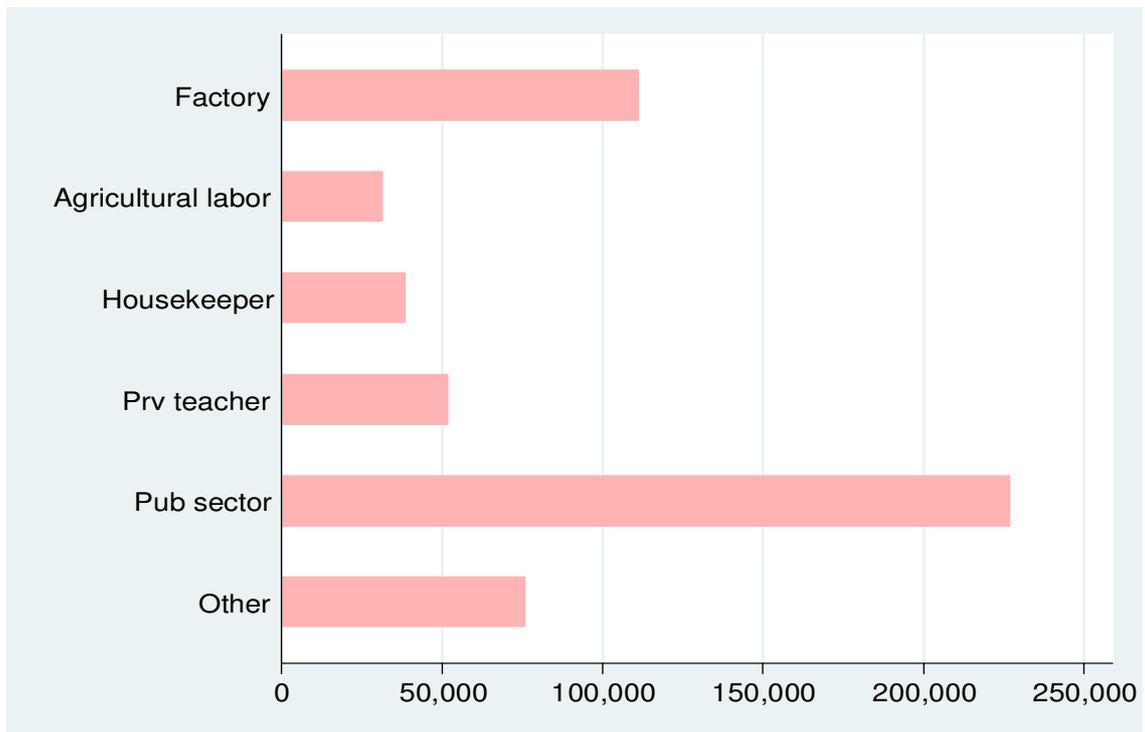
Figure 2: Average yearly earnings by unmarried daughter's occupation (2014 PKR)
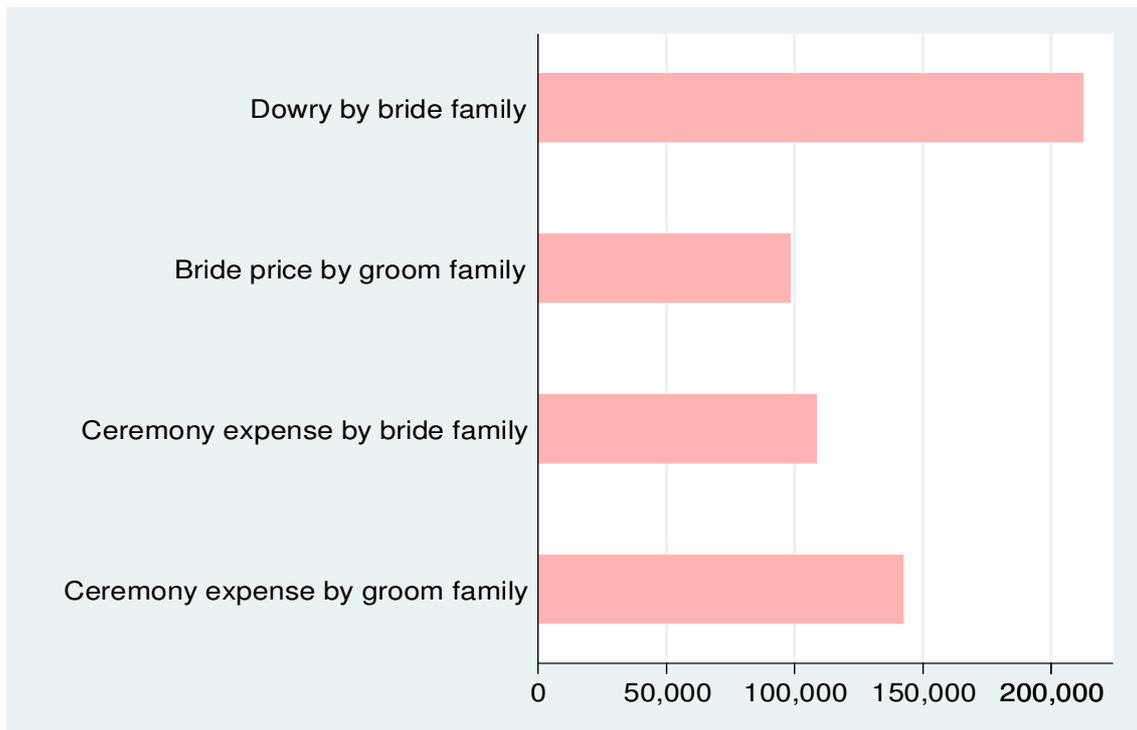
Figure 3: Average expected marriage expense (2014 PKR)

Table 1: Summary statistics

	(1) Raw mean	(2) Standard deviation	(3) Weighted mean
Panel A: Household characteristics (N = 857)			
Head's age	51.05	6.26	50.43
Head's sex	0.91	0.29	0.91
Head's education	2.32	1.62	2.39
Wife's age	46.76	5.91	46.09
Wife's education	1.53	1.11	1.63
Muslim	0.96	0.20	0.96
Kammee (= service caste)	0.43	0.50	0.45
Acres agricultural land	1.31	1.60	1.30
Value of residential home and land (2014 PKR)	676,559	283,724	690,340
Wife's dowry (2014 PKR)	72,330	46,424	70,752
Number of son alive	2.14	1.26	2.16
Number of daughter alive	2.97	1.53	2.88
Panel B: Unmarried daughter aged 15-30 characteristics (N = 1,425)			
Age	19.74	3.18	19.59
Enrollment status	0.31	0.46	0.34
Education (not enrolled only: N = 978)	3.53	1.77	3.47
Working status (work outside for payment)	0.28	0.45	0.23
Working as a teacher	0.05	0.21	0.02
Expected dowry (2014 PKR)	169,729	70,178	169,253

Note: Education is a categorical variable: 1= No education; 2= Below primary (less than 5 yrs); 3= primary completed (5 yrs); 4= Middle completed (8 yrs); 5= Matric completed (10 yrs): 6= Intermediate completed (12yrs); 7= Degree & Post graduate

Table 2: Association between female labor force participation and the dowry amount

LHS: Dowry (PKR 10,000)	(1)	(2)	(3)	(4)
Daughter: Work outside (non-teacher)	-5.316***	-4.470***	-0.630*	-0.750**
	(0.723)	(0.686)	(0.362)	(0.355)
Daughter: Teacher	-1.352	-2.207	-0.585	-0.632
	(1.744)	(1.794)	(0.819)	(0.840)
Daughter: Age		0.358**	-0.026	-0.010
		(0.145)	(0.070)	(0.066)
Daughter: Education1		-4.507***	-0.423	-0.281
		(1.276)	(0.757)	(0.723)
Daughter: Education2		-7.407***	-2.914***	-2.363**
		(1.622)	(1.060)	(1.038)
Daughter: Education3		-3.861***	-0.283	-0.148
		(0.811)	(0.625)	(0.621)
Daughter: Education4		-3.721***	-0.436	-0.413
		(1.089)	(0.560)	(0.530)
Daughter: Education5		-3.183***	-0.405	-0.538
		(0.969)	(0.426)	(0.392)
Daughter: Education6		-1.916	-0.062	-0.197
		(1.298)	(0.815)	(0.806)
Daughter: Education7		-2.356	-1.407*	-1.696**
		(1.576)	(0.806)	(0.830)
Number of sons alive			-0.120	-0.177
			(0.168)	(0.166)
Number of daughters alive			-0.361***	-0.367***
			(0.116)	(0.111)
Head's age			-0.030	-0.055
			(0.051)	(0.049)
Head's sex			0.281	0.710
			(1.191)	(1.144)
Head's education1			-2.560*	-2.357*
			(1.514)	(1.412)
Head's education2			-4.210*	-4.085*
			(2.232)	(2.174)
Head's education3			-1.951	-2.049
			(1.532)	(1.421)
Head's education4			-1.060	-1.085
			(1.503)	(1.420)
Head's education5			-2.282	-2.253
			(1.542)	(1.464)
Head's education6			-2.658	-2.875
			(2.301)	(2.347)
Wife's age			0.084	0.114*

			(0.060)	(0.059)
Wife's education1			1.785	2.153
			(1.304)	(1.327)
Wife's education2			1.464	1.978
			(1.941)	(1.987)
Wife's education3			-0.323	0.053
			(1.263)	(1.308)
Wife's education4			1.477	1.856
			(1.519)	(1.484)
Wife's education5			-0.632	-0.277
			(2.149)	(2.026)
Muslim			0.114	0.294
			(0.758)	(0.750)
Kammee (= service caste)			-2.266***	-2.382***
			(0.532)	(0.534)
Acres agricultural land			1.904***	1.874***
			(0.267)	(0.265)
Wealth index			1.415***	1.255***
			(0.293)	(0.276)
Value of residential home and land (PKR 10,000)			0.013**	0.014**
			(0.006)	(0.006)
Wife's dowry (PKR 10,000)			0.305**	0.305**
			(0.128)	(0.131)
Village: Marriageable male to female ratio				4.741***
				(1.416)
Village: Pucca household ratio				4.300***
				(1.365)
Constant	17.32***	12.56***	10.96***	0.630
	(0.947)	(2.151)	(3.139)	(4.401)
Observations	1,425	1,425	1,425	1,425
R-squared	0.098	0.159	0.613	0.629

Note: Linearized standard errors are in parentheses (*** $p<0.01$, ** $p<0.05$, * $p<0.1$). Education is a categorical variable where education1 corresponds to 1= No education, and so on, as being defined in Table 1. For the daughter's education level, the reference group is those who are currently enrolled. For the husband's and wife's education levels, the reference group is the highest, i.e., degree & post graduate for the husband's level, and above intermediate complete for the wife's level. Survey year fixed effect is controlled.

Table 3: Association between female labor force participation and non-dowry marriage expenses

	(1) Bride price (PKR 10,000)	(2) Ceremony expense by bride's family (PKR 10,000)	(3) Ceremony expense by groom's family (PKR 10,000)	(4) Net dowry (PKR 10,000)
Daughter: Work outside (non-teacher)	-0.116	-0.392	-0.423	-0.634*
	(0.408)	(0.351)	(0.403)	(0.355)
Daughter: Teacher	0.650	0.291	0.679	-1.281**
	(0.824)	(0.808)	(0.886)	(0.523)
Observations	1,425	1,425	1,425	1,425
R-squared	0.477	0.437	0.520	0.478

Note: Linearized standard errors are in parentheses (*** $p<0.01$, ** $p<0.05$, * $p<0.1$). Included control variables (daughter's attributes, household characteristics, village characteristics, and year fixed effect) are the same as in the estimation reported in column (4) of Table 2.

Table 4: Association between female yearly earnings and marriage expenses

	(1) Dowry (PKR 10,000)	(2) Bride price (PKR 10,000)	(3) Ceremony expense by bride's family (PKR 10,000)	(4) Ceremony expense by groom's family (PKR 10,000)	(5) Net dowry (PKR 10,000)
Daughter: Non-teacher yearly earnings (PKR 10,000)	-0.048	-0.022	-0.018	-0.023	-0.026
	(0.031)	(0.034)	(0.032)	(0.035)	(0.029)
Daughter: Teacher yearly earnings (PKR 10,000)	-0.004	0.155	0.152	0.190	-0.159**
	(0.145)	(0.132)	(0.130)	(0.151)	(0.077)
Observations	1,425	1,425	1,425	1,425	1,425
R-squared	0.629	0.478	0.437	0.520	0.476

Note: Linearized standard errors are in parentheses (*** $p<0.01$, ** $p<0.05$, * $p<0.1$). Included control variables (daughter's attributes, household characteristics, village characteristics, and year fixed effect) are the same as in the estimation reported in column (4) of Table 2.

Table 5: Association between female working status/yearly earnings and engagement status

LHS: Engaged (yes = 1)	(1)	(2)
Daughter: Work outside (non-teacher)	-0.0095	
	(0.0388)	
Daughter: Teacher	-0.1270	
	(0.0792)	
Daughter: Non-teacher yearly earnings (PKR 10,000)		-0.0008
		(0.0034)
Daughter: Teacher yearly earnings (PKR 10,000)		-0.0137
		(0.0124)
Observations	1,425	1,425
R-squared	0.184	0.183

Note: Linearized standard errors are in parentheses (*** p<0.01, ** p<0.05, * p<0.1). Included control variables (daughter's attributes, household characteristics, village characteristics, and year fixed effect) are the same as in the estimation reported in column (4) of Table 2.

Table 6: Association between female labor force participation and dowry/bride price with household fixed effects

	(1) Dowry (PKR 10,000)	(2) Bride price (PKR 10,000)	(3) Net dowry (PKR 10,000)
Daughter: Work outside (non-teacher)	0.162	0.736**	-0.573
	(0.181)	(0.335)	(0.356)
Daughter: Teacher	0.373	0.669	-0.296
	(0.341)	(0.630)	(0.669)
Daughter: Age	-0.0194	-0.0781	0.0587
	(0.0289)	(0.0535)	(0.0569)
Daughter: Education1	0.175	-0.512	0.687
	(0.296)	(0.548)	(0.582)
Daughter: Education2	-0.0929	-0.854	0.761
	(0.598)	(1.107)	(1.175)
Daughter: Education3	0.0845	-0.431	0.515
	(0.259)	(0.480)	(0.509)
Daughter: Education4	-0.207	-0.526	0.318
	(0.254)	(0.470)	(0.499)
Daughter: Education5	-0.493**	-0.565	0.0724
	(0.245)	(0.454)	(0.482)
Daughter: Education6	-0.131	-0.362	0.231
	(0.353)	(0.654)	(0.694)
Daughter: Education7	-0.501	-0.684	0.183
	(0.434)	(0.804)	(0.854)
Constant	17.38***	9.496***	7.883***
	(0.510)	(0.944)	(1.003)
Observations	1,425	1,425	1,425
R-squared	0.016	0.017	0.010
Number of households	857	857	857

Note: Linearized standard errors are in parentheses (*** $p<0.01$, ** $p<0.05$, * $p<0.1$).

Table 7: Difference in association between female labor force participation/income-earning ability and marriage expenses with respect to the daughter's engagement status

	(1) Dowry (PKR 10,000)	(2) Dowry (PKR 10,000)	(3) Bride price (PKR 10,000)	(4) Bride price (PKR 10,000)	(5) Net dowry (PKR 10,000)	(6) Net dowry (PKR 10,000)
Panel A: Subsample= not engaged (N = 1,065)						
Daughter: Work outside (non-teacher)	-0.819**		-0.193		-0.626	
	(0.414)		(0.434)		(0.384)	
Daughter: Teacher	-0.873		0.274		-1.147**	
	(0.832)		(0.651)		(0.559)	
Daughter: Non-teacher yearly earnings (PKR 10,000)		-0.046		-0.008		-0.039
		(0.037)		(0.043)		(0.038)
Daughter: Teacher yearly earnings (PKR 10,000)		0.096		0.226**		-0.130
		(0.136)		(0.114)		(0.095)
R-squared	0.627	0.627	0.498	0.499	0.467	0.466
Panel B: Subsample= engaged (N = 360)						
Daughter: Work outside (non-teacher)	-0.520		0.083		-0.603	
	(0.552)		(0.693)		(0.578)	
Daughter: Teacher	0.688		2.460		-1.772	
	(1.386)		(1.974)		(1.286)	
Daughter: Non-teacher yearly earnings (PKR 10,000)		-0.050		-0.062		0.012
		(0.049)		(0.049)		(0.033)
Daughter: Teacher yearly earnings (PKR 10,000)		-0.128		0.097		-0.225*
		(0.202)		(0.232)		(0.123)
R-squared	0.691	0.691	0.499	0.498	0.537	0.535

Note: Linearized standard errors are in parentheses (*** $p<0.01$, ** $p<0.05$, * $p<0.1$). Included control variables (daughter's attributes, household characteristics, village characteristics, and year fixed effect) are the same as in the estimation reported in column (4) of Table 2.

Table A.1: Ownership of goods comprising the household wealth index (N = 857)

	(1) Mean	(2) Standard deviation
Bicycle	0.443	0.497
Motorbike	0.525	0.500
Car	0.006	0.076
Washing machine	0.530	0.499
Sewing machine	0.866	0.341
Generator	0.079	0.270
TV	0.847	0.360
Fan	0.996	0.059
AC	0.007	0.083
Cellphone	0.996	0.059
Fridge	0.425	0.495

Note: The wealth index is constructed by principal component analysis allowing for correlations across factors. The index variable equals the only factor having an eigenvalue greater than one.

Table A.2: Association between female labor force participation and the dowry amount (OLS)

LHS: Dowry (PKR 10,000)	(1)	(2)	(3)	(4)
Daughter: Work outside (non-teacher)	-5.033***	-4.439***	-0.479	-0.611*
	(0.486)	(0.532)	(0.340)	(0.347)
Daughter: Teacher	0.164	-1.622*	-0.047	-0.043
	(0.813)	(0.841)	(0.630)	(0.638)
Daughter characteristics	No	Yes	Yes	Yes
HH characteristics	No	No	Yes	Yes
Village characteristics	No	No	No	Yes
Observations	1,425	1,425	1,425	1,425
R-squared	0.132	0.185	0.595	0.607

Note: Clustered (village level) standard errors are in parentheses (*** $p<0.01$, ** $p<0.05$, * $p<0.1$). Included control variables (daughter's attributes, household characteristics, village characteristics, and year fixed effect) are the same as in the estimation reported in column (4) of Table 2.