Why Dowries?

By Maristella Botticini and Aloysius Siow*

Parents transfer wealth to their children in many ways. The dowry is distinctive because it is a large transfer made to a daughter at the time of her marriage. Dotal (dowry giving) marriages were common in the Near East, Europe, East Asia, South Asia, and pockets of the Americas. Although the custom has largely disappeared in the western world, it remains popular in South Asia.

The standard economic model of dowries, implicit in the seminal work of Gary S. Becker (1981), assumes that dowries (and brideprices) are used as pecuniary transfers to clear the marriage market.[1] The model has two predictions. When grooms are relatively scarce, brides pay dowries to grooms; when brides are relatively scarce, grooms pay brideprices to brides. Moreover, a dowry is a component of bridal wealth. As other components of bridal wealth grow, dowries will disappear and may be replaced by brideprices.

The standard economic model of dowries faces two potential objections. First, if the main purpose of dowries is to clear the marriage market, how do marriage markets clear in societies without dowry or brideprice? In most modern societies that previously had dowries, brideprices did not emerge when dowries disappeared. Second, the standard model of dowries cannot account for why in many dotal societies the timing of intergenerational transfers is gender specific, with parents assigning dowries to their daughters and leaving bequests to their sons. This feature of dotal societies has been first noticed by the anthropologist Jack Goody (1973) and his observation has been confirmed in different dotal societies (see the historical survey in BS).

We provide a theory of dowries that is consistent with the standard model without being open to the two objections discussed above. At the market level, our model of marriage market clearing follows the standard economic model. We assume that the marriage market, with or without dowries, clears by wealth matching between brides and grooms.[2] At the individual level, we also conform to the standard model by

focusing on the substitution between different components of bridal wealth. However, the standard model of dowries implicitly postulates that pecuniary transfers at the time of marriage are part of the least costly mix of providing bridal wealth. This assumption precludes a discussion of the circumstances in which dowries are or are not part of the least costly mix of providing bridal wealth. Such a discussion, though, is relevant for understanding the modern disappearance of the dowry. The novelty of our theory of dowries is the assertion that *the modern disappearance of dowries is due to a change in the environment for producing bridal wealth and not to a change in the relative values of brides versus grooms. Thus, brideprices do not have to appear when dowries disappear.* Also, the general absence of pecuniary transfers at the time of marriage in modern industrial societies suggests that these transfers are an inefficient way to redistribute resources between husbands and wives, and not that there is no redistribution between spouses.[3]

We present a specific environment in which dowries are optimal and also discuss when they are not optimal. Following Becker (1981) and B. Douglas Bernheim et al. (1985), we study an intrafamily incentive problem. Our model begins with the observation that dowries occur primarily in monogamous *virilocal* societies, where married daughters leave their parental home and married sons do not. We argue that in these societies altruistic parents use dowries and bequests to mitigate a free-riding problem between siblings. Since married sons live with their parents, they have a comparative advantage in working with the family assets relative to their married sisters. Absent any incentive problem, parents should not assign any dowry but rather give the daughters their full share of the estate through bequests. However, if married daughters fully share in the parents' bequests, their brothers will not obtain the full benefits of their efforts in extending the family wealth and, therefore, will supply too little effort. While bequests are more efficient for distributing wealth to daughters, they have poor incentive effects for sons. Thus, in order to

mitigate the disincentive for their sons, parents will want to assign large dowries and consequently small bequests to their daughters.[4]

Our theory suggests that dowry contracts, which may be complicated, should not contain claims on shares of income generated with the bride's family assets. In other words, a married daughter may not be only discriminated against in her parents' bequests as observed by Goody (1973). She may also be excluded from inter vivos claims on income generated from her natal family's assets. However, we will show with data from a premodern economy (early Renaissance Tuscany) that the provision of dowries and the exclusion of daughters from bequests do not necessarily indicate that parents value their sons' welfare more than their daughters'.

The nexus between virilocality and dowries helps us explain the disappearance of dowries in previously dotal societies. Virilocal societies are primarily agricultural economies and/or economies where the gains for children to remain in the family business is substantial. As the labor market in a dotal society becomes more developed, and as the demand for different types of occupations grows, children are less likely to both hold their parents' occupations and to work for their families. The return to investing in general rather than family-specific human capital also increases. The use of bequests to align work incentives within the family becomes less important. Since it is costly to provide a dowry, the demand for dowry (within the family) will fall as the need to use bequests to align the work incentives of sons falls. Instead of the dowry, parents will transfer wealth to both their daughters and sons as human capital investments and bequests. Therefore, the development of labor markets will be important in reducing the role of dowries. When dowries become an inefficient source of bridal wealth, they will wither. Unlike the standard economic model, we argue that there is no connection between the disappearance of dowries and the appearance of brideprices.

We compare the predictions of our theory vis-à-vis the historical development of dowries,

---

[3] Shelly Lundberg et al. (1997), Pierre-Andrè Chiappori et al. (2002), and the references therein provide empirical evidence of such redistribution.

[4] Our model is in the spirit of Junsen Zhang and William Chan (1999). They argue that daughters in virilocal societies may prefer dowries because they will have difficulties in getting their share of the natal families' wealth otherwise.

bequests, brideprices, and marriage gifts in various civilizations of the past. Our theory of dowries is consistent with narrative evidence from ancient Near Eastern civilizations, ancient Greece, the Roman Empire, thirteenth-century Byzantium, western Europe from about the sixth to the fifteenth century, the Jews from antiquity to about 1300, Arab Islam from the seventh century to modern times, China, Japan, early-modern England, modern Brazil, contemporary Greece, and North America. Some of the predictions of the model are also consistent with quantitative evidence from a unique data set of four thousand marriage contracts and many legacies from medieval and early Renaissance Tuscany which we collected and coded. We also discuss the absence of dowries and the prevalence of brideprices in contemporary African societies. Lastly, we compare our theory with the recent developments of the dowry system in India, where dowries instead of withering seem to become more important.

Some remarks are in order to clarify the limit of our contribution. First, we take virilocality as given and proceed in analyzing dowries and bequests under that assumption. Mark R. Rosenzweig and Kenneth I. Wolpin (1985) and Nezih Guner (1998) provide rationales of why agricultural societies are primarily virilocal.

Second, our theory has nothing new to say about the equilibrium determination of bridal wealth, a focus of much of the existing literature. It is also silent on the substitution between dowry and the bride's human capital or labor supply. We focus on the internal organization of the family whereas most of the existing literature on dowries focuses on how families respond to external shadow prices. Thus, our model has nothing to say about the efficacy of that research.

Third, our model provides a particular environment in which dowries emerge endogenously. To the extent that virilocality and the associated free-riding concern apply, we expect to see dowries in that society. However, ours is not necessarily the only environment to support dowries.[5] There are likely to be other roles for

dowries related to the organization of intra- and interfamilies transactions.[6]

I. A Model of Dowries

Consider a family with two children, a son and a daughter, in a virilocal society. After marriage, the son continues to live and work with his parents. After marriage, the daughter leaves her natal household and moves into her parent-in-laws' household.

The parents have one unit of initial capital to allocate between their two children. Let x be the share of capital allocated to the son. This allocation to the son is unobservable by outsiders because the son lives with his parents and thus his capital is intermingled with his parents' assets. $1 - x$ is the share of initial capital that is allocated to the daughter in the form of a dowry. Given their initial capital allocations, each child can choose to either work, $e = 1$, or shirk, $e = 0$. If a child with initial capital z chooses effort e, then his or her gross wealth is $(1 + e)z$. The cost of effort is $(1 + e)z$ for the son and $\beta(1 + e)z$ for the daughter. We assume $\beta \geq 1$ because the son, living with his parents, has family-specific skills in working with family assets and his parents can also help him in his work.[7] It also represents liquidation cost if the family has to sell assets to transfer wealth to the daughter. The cost of effort is proportional to the amount of capital allocated because the child can do other things with his or her time.

Since the son is living with his parents, the gross wealth that he produces cannot be separated from his parents' wealth. The parents may give to their daughter some of the gross wealth created by the son in the form of a parental bequest. In contrast, because the married daughter

[5] Noneconomists suggest other theories of dowry (e.g., Diane Owen Hughes, 1978; Christiane Klapisch-Zuber, 1985; Goody, 1990). See Stevan Harrell and Sara A. Dickey (1985) for an excellent survey.

[6] E.g., one may argue that virilocality also means that married sons affect their parents' welfare more than married daughters. Parents may use bequests as a reward to affect their sons' behavior. This reward scheme is not needed for married daughters and so they may get dowries. We thank a referee for this suggestion.

[7] This assumption is in the spirit of Rosenzweig and Wolpin's (1985) model, which explains the comparative advantage of sons who live with their parents in working the family farms as a consequence of land-specific returns to experience associated with weather variability. Outsiders, such as a married daughter and her husband, do not have the same family-specific skills. The same argument can apply to crafts and trade activities whenever family-specific skills are important in a given business.

has left home, her parents cannot expropriate and give to the son any of her gross wealth. Thus there is a fundamental asymmetry in terms of parental control over the children's gross wealth.

Given the son's initial capital x and effort e_s, $y_s = (1 + e_s)x$ is the *gross* wealth that he produces. Since he is living with his parents, we interpret y_s also as his parents' estate. If he does not receive the entire estate upon the death of his parents, his parents have bequeathed some of his wealth to his sister. Let b be the share of gross wealth that is retained by him as his inheritance from his parents. Then his *net* wealth is

$$w_s = b(1 + e_s)x.$$

In addition to influencing his consumption, his net wealth w_s also affects whom he is likely to marry and his utility from that marriage. In this paper, we assume that there is assortative matching by wealth in the marriage market.[8] Let $h(w_s)$ denote the wealth of the woman whom he is able to attract. When there is positive assortative matching in marriage market equilibrium, $h'(\cdot) > 0$. His utility from marriage will depend on his own wealth, w_s, and the wealth of his spouse, $h(w_s)$. Since his spouse's wealth depends on his wealth, the son values his net wealth using the indirect utility function $U(w_s)$ where $U(\cdot)$ is increasing and concave. Thus his utility is:

$$V(b, x, e_s) = U(b(1 + e_s)x) - x(1 + e_s).$$

His sister will get a bequest of $(1 - b)(1 + e_s)x$ from her parents. With her dowry, $1 - x$ and effort e_d, her *gross* wealth is $y_d = (1 + e_d)(1 - x)$. Her *net* wealth is

$$w_d = (1 - b)(1 + e_s)x + (1 + e_d)(1 - x).$$

The wealthiest spouse that she can attract is $h^{-1}(w_d)$. Her utility from marriage will depend on her own wealth, w_d, and the wealth of her spouse, $h^{-1}(w_d)$. For analytic convenience, let

her also value her net wealth, w_d, with the same indirect utility function $U(\cdot)$. Her utility is:

$$v(b, x, e_d) = U((1 - b)(1 + e_s)x$$
$$+ (1 + e_d)(1 - x))$$
$$- \beta(1 - x)(1 + e_d).$$

Assuming that parents value the welfare of both their children, let parental utility be:

$$(1) \qquad V(b, x, e_s) + v(b, x, e_d).$$

To analyze the potential conflicts between parents and their children, let

ASSUMPTION 1:
 (i) $U' > \beta$

(ii) $\dfrac{U'}{2} < 1$.

In order to analyze the relevance of Assumption 1, consider allocation A where the entire initial capital is allocated to the son, the son exerts effort and the final gross wealth is divided equally between the son and the daughter. Let allocation B be where the entire initial capital is allocated to the son, he exerts no effort and the final gross output is divided equally between the children. Inequality (i) above implies that, for any dowry and fixed bequest, the daughter will prefer to exert effort rather than not. Since the cost of effort is higher for her than her brother, for any initial capital allocation, he will also exert effort if he keeps all his final gross output. With inequality (i), parental utility is higher under allocation A rather than allocation B. That is, the welfare from effort is higher than the welfare from shirking. The parent will prefer the son to work on all the initial capital (because he has a lower cost of effort) and to divide the final gross wealth equally between the children. Equal division of final wealth is efficient because it equates the marginal utility of consumption between the two children. However, the implication of inequality (ii) is that the son will prefer to shirk if he only gets half the gross wealth from his effort. That is, he will not work hard if he has to share equally in the bequest with his sister. Thus the second inequality shows the free-riding problem between brother and sister. The parents

---

[8] Existence of equilibrium in wealth matching marriage models with parental investments is shown in Peters and Siow (2002) and Siow and Xiaodong Zhu (2002).

cannot implement allocation A if the son can choose his own effort.

The objective of the parents is to maximize children's welfare represented by equation (1) taking into account the strategic behavior of their children. This game has four stages. In the first stage, the parents allocate capital between the children. In the second stage, the daughter chooses her effort level. She chooses her effort first because (i) daughters receive their dowry upon marriage and they marry earlier than sons, and (ii) the parents may not let the son have full control over his share of capital until the parents retire. In the third stage of the game, the son chooses his effort level.[9] Lastly, the parents choose the bequests. We solve for the subgame perfect Nash equilibrium of this game.

PROPOSITION 1: *Let $\beta > 1$. In the subgame perfect Nash equilibrium, the equilibrium choice of x, x^*, satisfies $\frac{1}{2} < x^* \leq \frac{2}{3}$. Both children exert effort in equilibrium. The equilibrium choice of b, b^*, satisfies $\frac{3}{4} < b^* < 1$.*

PROOF:
See BS.

Proposition 1 states that, anticipating strategic behavior by their children, the parents should allocate some of the initial capital to the daughter as a dowry. The daughter receives more than a third but less than half of the initial capital as a dowry. After the children choose their optimal effort levels, the parents will optimally choose their bequests. The son receives more than three quarters of the estate. In fact, the daughter may receive no bequest. Proposition 1 rationalizes Goody's (1973) observation that daughters receive their inheritance primarily in the form of dowries whereas sons receive theirs primarily in the form of bequests.[10]

The equilibrium allocation of resources by the parents is inefficient. The daughter exerts effort to increase her wealth even though it is less costly for her brother to do so. Allocation A

generates more utility for the parents. However, due to the strategic behavior of both parents and their children, it is not implementable. Instead under the equilibrium allocation, the parents provide the daughter with a sufficiently large dowry such that they will not want to redistribute too much wealth away from their son *after* he exerts effort. Under this circumstance, both the son and the daughter will provide effort.

In some dotal societies, by custom and/or law, parents are restricted from granting bequests to their daughters. Then all parents can do to affect their children's welfare is the initial division of capital.

PROPOSITION 2: *A custom and/or legal restriction disinheriting daughters may increase parental welfare.*

PROOF:
See BS.

The trade-off behind Proposition 2 is as follows. Without disinheriting daughters, parents can equate marginal utility of consumption (wealth) across their children after the children's efforts are chosen. As β increases, the efficiency cost of dowry increases and parents prefer to give smaller dowries. However, there is a minimum dowry size below which the son will shirk. If daughters are disinherited, parents do not worry about a minimum dowry size but have to deal with the inequality of wealth between their children instead.

We may summarize the above discussion as follows. Since bequests are chosen after children choose their effort levels, the children recognize that altruistic parents may use bequests to redistribute wealth among the children. Anticipating this redistribution, the children may free ride on each other's effort. To deter this free-riding, parents will provide dowries to daughters even though daughters are less efficient in using the capital than sons. Bequests to daughters will be smaller than that for sons. Daughters may even be disinherited. However, the size of the bequest to a daughter is not necessarily informative about parental valuation of their daughter and son.

Our theory also explains the timing of the dowry. The transfer is made when the daughter marries and leaves home, that is, when she no longer contributes to increasing her parents' wealth.

---

[9] There is no pure strategy equilibrium in simultaneous effort levels for some allocations of capital. The mixed strategy equilibrium in this context is not plausible given the difference in the ages of marriage between sons and daughters.

[10] When $\beta = 1$, $x^* = \frac{1}{2}$ and $b^* = 1$.

II. Theory and Historical Evidence

Our model generates some predictions, which we compare to the historical evidence (see the extensive comparative-historical survey in Sections 2 and 4 in BS for details).

PREDICTION 1 (Virilocality and Dowries):
 (i) *In virilocal societies with individual property rights, in which parents can transfer wealth to their children, dowries emerge to mitigate a potential free-riding problem among siblings.*

In virilocal societies so far apart from each other both geographically and temporally, such as the ancient Near Eastern civilizations, ancient Greece and Rome, thirteenth-century Byzantium, the Jews from antiquity to about 1300, Arab Islam, Sung China, Hindu India, Japan, and medieval and early-modern Europe, one finds dowries (see BS, Table 1).

There is a negligible number of neolocal societies (the bride and groom set up their own new household) with the custom of dowry. According to the ethnographic data from George P. Murdoch (1967), these are the Cheremis of Finnic descent in the 1890's and the Hutsul (eastern Slavs) around 1900. Nine neolocal cultures have brideprices, and in eight neolocal societies there is no transfer occurring at marriage.

The absence of dowries in the Dravidian kinship region in India may be explained by the features of post-marital residence and marriage patterns there. Unlike in the Hindu marriage pattern, virilocality is not the norm among the Dravidians practicing cross-cousin marriages (Irawati Karve, 1993, pp. 60–62). Moreover, in cross-cousin marriages, gift giving among the groom's and bride's households is often not required (Thomas R. Trautmann, 1993).

Perhaps the most glaring exception to virilocality and dowries occurs in contemporary Sub-Saharan Africa in which virilocality appears associated with brideprices instead of dowries. Data on hundreds of cultures we coded from Murdoch's *Ethnographic Atlas* confirm this pattern (BS, Table 2). Of the 131 African societies with brideprices, 110 are also virilocal. At this stage, we can speculate on the reasons why dowries are not widespread in Africa despite virilocality is common. Unlike the past civili-

zations described above, which were mostly monogamous, most African societies with brideprices are characterized by polygyny (from the data in Murdoch, 79.4 are polygynous societies, 16.8 are characterized by limited or occasional polygyny, whereas only 3.8 percent are monogamous cultures).

Moreover, seven percent of the societies with brideprices and virilocality have collective instead of individual property rights. In this context, dowries cannot exist simply because parents cannot transfer wealth to their children, regardless of gender.

As argued by Boserup, the type of agricultural practices in Africa may have favored brideprices over dowries. Boserup distinguishes between plough agricultural systems (such as those in medieval Europe, and past and contemporary Asia) and nonplough agricultural systems, common in African societies. In the former type of agriculture, the role of female labor is limited, whereas women have a more important role in the latter system of agriculture. In Africa, grooms "buy" the labor force of their brides by paying brideprices to the brides' kin.

Our explanation for the absence of dowries in Africa is related to Boserup's argument but is different. As Boserup noted, much of African societies practiced slash and burn to clear land for agriculture. After clearing the land, households planted crops for a few years, exhausted all the nutrients in the land, and then moved to another location thereby obviating the use of the plough. Under this system of agriculture, there was no land to bequeath because without crop rotation, the land was ruined and abandoned in a few years. Hence, there was no trade-off between dowries and bequests (at least as far as land goes).

 (ii) *In virilocal societies, regardless of gender, parents will provide lump-sum transfers (dowries) to those children who marry off and leave the natal household.*

In thirteenth-century Byzantium, regardless of gender, a distinction was made between υπεξουσιοι (children living in their paternal households and working for their parents) and εξοπροικοι (children married off and not living in their natal households). The former were bequeathed the family estates, whereas the latter

received dowries and were excluded from bequests (Angeliki E. Laiou, 1998, pp. 151–60).

The same free-riding concern may explain why in medieval and early-modern England, younger sons who left their natal families to become soldiers or to join the clergy, received cash gifts rather than bequests (Frances Gies and Joseph Gies, 1987, p. 169). In medieval and Renaissance Italy, daughters who became nuns and sons who entered monasteries also received dowries (Botticini, 1999). From the viewpoint of incentives and the free-riding problem, children who joined the monastic life were similar to those who married off and left their natal families; in both cases, their parents gave dowries to those who left and made the children who stayed the heirs.

(iii) *In contrast, in uxorilocal societies where the groom moves into his in-laws' household and contributes to increase their wealth, bride's parents do not provide their daughter with a dowry but make the son-in-law share in the bequests.*

Evidence from ancient Greece, thirteenth-century Byzantium, Sung China, Japan from the Edo period onward, and contemporary India indicates that in uxorilocal marriages the groom, himself, brought a dowry to the bride's family whereas bride's parents did not provide a dowry to their daughter but made the son-in-law share in the bride family's bequests (see BS, Section 2).

PREDICTION 2 (No Income Sharing in Dowry Contracts): *To increase the incentives for sons to work hard with their family assets, dowry contracts should not contain any income-sharing provision.*

When dowries are used to provide incentives for sons to work, it is important that dowry contracts do not unravel the incentive effect. Therefore, a dowry contract should minimize the sharing of profits generated with the family assets after the bride leaves her natal household. We are able to document this feature of dowry contracts in three societies far apart from each other.[11]

TABLE 1—FEATURES OF DOWRY CONTRACTS IN THE ANCIENT AND MEDIEVAL WORLD

Contract characteristics	Athens 6–4th centuries BCE	Jews in the Mediterranean 10–12th centuries CE
Payment (movables)[a]	0	93.44
Payment (cash)[a]	89.50	4.91
Payment (rents from houses)[a]	10.50	0
Payment (houses)[a]	0	29.50
Payment (land holdings)[a]	0	1.63
Profit-sharing clause[a]	0	0
Number of observations	19	61

Sources: For dowry contracts in ancient Athens we use Claudine Leduc (1997, p. 293). For dowry contracts among the Jewish communities we use the marriage contracts in Goitein (1978, pp. 364–93). Goitein reports information on about 300 contracts regarding marriage payments. Only 61 of these documents list in detail the type of goods forming the dowry. We are very grateful to Yossef Rapoport for suggesting that we look into Goitein (1978). See also Rapoport (2002).

[a] Percentage of contracts with the listed characteristic.

In ancient Athens, dowries consisted of cash, rents of houses, and interest payments from mortgages. Among the Jewish communities in the Mediterranean in the high Middle Ages, clothing, bedding, furniture, and houses formed the dowries (Table 1). No dowry contract contained the clause that the dowry should be paid with a share of the profits generated from the bride family's business, although one can interpret the few instances of dowries paid through rents in Athens as having a profit-sharing component.

More systematic evidence on contract characteristics is available from about four thousand dowry contracts we collected at the states archives of Florence (Table 2). Most dowries were paid in cash, or consisted of clothing, bedding, and furniture. In the thirteenth century, a tiny proportion (0.9 percent) of urban dowries consisted of land holdings. The proportion increased to 8.4 in the decades across the Black Death of 1348, and then it declined to 3.5 percent in the early fifteenth century. A negligible percentage of contracts contained income-sharing clauses. The rarity of such clauses was

---

[11] There is no contradiction between our finding of no income sharing in dowry contracts in past societies versus

other forms of risk sharing through marriage (e.g., Rosenzweig and Oded Stark, 1989).

TABLE 2—DOWRY CONTRACTS IN FLORENCE AND ITS COUNTRYSIDE, 1242–1436

| | Time period | | | | | |
| | 1242–1299 | | 1340–1360 | | 1420–1436 | |
Contract characteristics	Urban[d]	Rural[d]	Urban	Rural	Urban	Rural
Payment (movables)[a]	2.8	0.4	15.6	15.4	14.6	19.4
Payment (cash)[a]	96.1	99.2	91.1	94.9	95.7	94.6
Payment (houses)[a]	4.8	1.2	6.7	2.5	4.5	0.9
Payment (land holdings)[a]	0.9	1.2	8.4	6.4	3.5	1.7
Profit-sharing clauses[a]	0.0	0.0	0.2	0.5	0.6	0.1
Median dowry[b]	295.7	151.7	221.0	74.8	820.0	135.0
Average dowry[b]	438.3	197.2	659.3	106.3	1,507.7	167.5
Annual wage of skilled workers[b,c]	182	—	194.5	—	258	—
Number of observations (total = 3,959)	121	365	430	346	1,427	1,270

Source: State Archives of Florence, Diplomatico and Notarile Antecosimiano (425 volumes of notarial contracts).

[a] Percentages of contracts with the listed characteristic.

[b] All figures are in constant (1420–1435) lire (the money of account). We converted the values of dowries in gold florins into the corresponding values in lire by using the conversion rates provided by Richard A. Goldthwaite and Giulio Mandich (1994, pp. 85–100).

[c] The figures indicate annual average wages. Paolo Malanima kindly provided us with data on Florentine wages. See also Malanima (1999).

[d] "Urban" refers to marriages in which either the bride or the groom (or both) resided in the city of Florence. "Rural" refers to marriages in which both the bride and the groom lived in the villages in the countryside of Florence.

not due to the lack of knowledge of income sharing since in both trade and agriculture, share contracts were well known in medieval and early Renaissance Tuscany (Daniel A. Ackerberg and Botticini, 2002). However, when it came to dowry contracts, income-sharing agreements were rare.

Of course, dowry contracts helped solve other problems. Many contracts had clauses entailing deferred payments. A typical specification was the bride's household promising to pay one-third of the dowry after the first year of the marriage, one-third after two years, and the remaining one-third after three years. Deferred payments offered three advantages. The bride's parents may be liquidity constrained. Also, consistent with Zhang and Chan (1999), deferred payments provided incentives for the groom's family not to mistreat their daughter-in-law. Lastly, the bride's family could avoid paying the dowry if she died during childbirth.

PREDICTION 3 (Exclusion of Daughters from Bequests): *In virilocal societies, daughters will receive most of the wealth transfers from their parents through dowries and not* *through bequests. Daughters are more likely to receive bequests when there are no brothers. In this case, the free-riding problem does not exist and parents make their daughters inherit their estates.*

Two types of evidence support this prediction. First, narrative evidence indicates that in various societies daughters obtained no dowries but were left bequests when there were no brothers. In ancient Near Eastern civilizations, ancient Greece, thirteenth-century Byzantium, medieval western Europe, Arab Islam, Japan from the Edo period, among the Germanic tribes in the high Middle Ages, and among the Jews daughters could not receive bequests unless there were no surviving brothers in their natal households (BS, Section 2). In contrast, in the Roman Republic and Empire and in Sung China daughters *could* in principle receive bequests even if they had surviving male siblings, although no evidence is available to document whether they *did* receive bequests.

Second, micro data we collected from a sample of wills written in medieval and early Renaissance Florence supply systematic evidence that parents rarely transmitted their wealth to

TABLE 3—DOWRIES AND BEQUESTS IN MEDIEVAL AND RENAISSANCE TUSCANY

Time period	Bequest behavior in Florentine households with both sons and daughters		
	Percent of testators leaving bequests to daughters	Percent of testators not leaving bequests to daughters	Number of observations[a]
1260–1299	25	75	20
1420–1435	21	79	85

Tuscan town		Dowries to brides and bequests to their siblings, 1420–1435		
		Dowry to bride[b]	Expected bequest to her siblings[b]	Number of observations[c]
Cortona	Median	70	68	222
	Mean	125	232	
Florence	Median	450	434	296
	Mean	518	643	

Notes: The "expected" bequest to the bride's siblings has been calculated as follows. We matched the bride's household in the dowry contract with the corresponding household in the Florentine catasto of 1427. From there we obtained information regarding the bride household's wealth and the number of siblings. We then divided the wealth by the number of siblings: this is an estimate of the bequest to each of the bride's siblings. We ignored gender composition of siblings and discounting. The sample is slightly biased toward wealthy households since due to the matching between the notarial records and the catasto, we lost observations mainly for poor household heads whose names we could not trace in the census. *Sources:* State Archives of Florence, Catasto, and Notarile Antecosimiano.

[a] We coded 59 wills for the years 1260–1299 (20 testators had both sons and daughters), and 325 wills for the period 1420–1435 (85 testators had both sons and daughters).

[b] All values are in gold florins instead of lire as the data on wealth were given in gold florins in the Florentine catasto (census) of 1427.

[c] The number of observations refers to the number of dowry contracts.

daughters via bequests (Table 3).[12] In the thirteenth century, 25 percent of the Florentine testators having sons and daughters left bequests to both. Two centuries later, the percentage was 21 percent. In those instances in which parents left bequests to daughters, the size of the bequest to a daughter was small with respect to the dowry she got at the time of her marriage. Thus, the timing of intergenerational transfers in medieval and early Renaissance Tuscany provides support to our model: daughters most often obtained their shares of their natal families' wealth through dowries and not through bequests.

[12] In the Florentine statutes of 1322–1325, in case of intestacy male descendants (sons, and in their absence, grandsons, brothers, and nephews) had priority in receiving the family estate with respect to daughters and other female descendants. However, the statutes granted testamentary freedom: a testator could leave the estate to both sons and daughters if he/she wished (Manlio Bellomo, 1961).

PREDICTION 4 (Parental Valuation of Daughters and Sons): *While daughters can be excluded from parental bequests when receiving dowries, they are not necessarily discriminated against their brothers if the size of dowries is similar to what the brothers receive as bequests.*

It is often claimed that since dowries disinherit women, they bring an unequal distribution of family wealth among female and male siblings. However, systematic evidence to substantiate such a claim is thin. Fifteenth-century Tuscany is a fortunate case since dowry contracts in notarial records and the *catasto* of 1427 (a census and property survey of 60,000 Tuscan households) enable one to match brides, grooms, and their families in such a way that it is possible to draw a comparison between the size of dowries assigned to daughters and the expected bequests to their brothers. We find that the existence of dowries, by itself, did not

prevent daughters from receiving roughly an equal, or higher, share of their parental wealth (Table 3). Even if parents did not leave any bequests to their daughters in Florence and Cortona (the sixth largest town in Tuscany at that time), these data suggest that sons did not receive disproportionately larger shares of parental wealth.

III. Wither Dowries?

The nexus between virilocality and dowries helps us explain the disappearance of dowries. Virilocal societies are primarily agricultural economies and/or economies where the gains for children to remain in the family business is substantial. As the labor market becomes more developed and the demand for different types of occupations grows, children are less likely to work in the same occupations as their parents and the gains from living in an extended family become smaller. Instead of virilocal households, sons are more likely to set up their own, neolocal, households when they marry. Moreover, as the labor market develops, the value of human capital investments also rises. Since it is costly to provide a dowry, the demand for dowry within the bride's family will fall as the need to use bequests and align the work incentives of sons falls. Instead of assigning dowries, parents will transfer wealth to both their daughters and sons as human capital investments and bequests. When dowries become an inefficient source of brides' wealth, they will disappear. Unlike the standard economic model of dowries, we argue that there is no connection between the disappearance of dowries and the appearance of brideprices.

We present evidence from North America, modern Brazil, and twentieth-century Greece to support our theory regarding the disappearance of the dowry. We also discuss the case of India, where dowries have not disappeared despite modernization.

The North American Experience.—While dotal marriages occurred in isolated communities in colonial North America, it was not a widespread practice (Gillian Hamilton, 1999; Carole Shammas, 2002). For example, in Connecticut in the late eighteenth century, between 46 and 67 percent of married daughters were assigned

inter vivos transfers, likely at the time of their marriage, from their natal families. In the 1820's, only 40 percent received such transfers, often consisting of bedding and cooking tools, and far less than the daughters' shares in their natal families' estates (Toby L. Ditz, 1986). British American fathers left their estates to their children, but they commonly did so in their wills or according to the intestacy provisions of their colony instead of through inter vivos transfers (Shammas et al., 1987).

The contrast between the European pattern of dotal marriages and the North American experience can be explained in light of our theory. North America during colonial times was an immigrant society. By definition, first-generation immigrants were not working with their parents' assets in the home country and the free-riding problem does not apply. In later times, the colonies and early United States enjoyed the highest level of internal migration between the late 1760's and the 1830's (Shammas, 2002, Ch. 4). The settlement of North America meant that many individuals left their parental homes to settle in new territory, again violating the virilocal assumption needed for a dotal society. Also, with the emergence of corporate capitalism in the nineteenth century, which led to the separation between ownership and control, sons were less likely to work in the family business and parents were less concerned about transmitting intact the family farm or firm to their children (Shammas et al., 1987).

Brazil.—The insightful study by Muriel Nazzari (1991), who analyzes probate records of wealthy, propertied, testators and studies the evolution of dowries in São Paulo, a coastal community in Brazil, from 1600 to 1900, provides additional evidence supporting our theory. In the seventeenth century, wealthy Paulistas derived most of their wealth from agriculture. Most married sons lived with, and worked for, their parents. At this time, most daughters of property owners received dowries at marriage. Gold was discovered in the interior of Brazil in the eighteenth century and many young men moved and settled there, no longer living with their parents nor working on their family farms. In that period, nine percent of property owners allowed their daughters to marry without a dowry but left them bequests. In the nineteenth

century, São Paulo grew, the urban labor market became more diverse and sons became more independent of their fathers. The trend away from dowries and toward bequests for daughters became stronger: Dowry values fell and three-quarters of property owners allowed their daughters to marry without a dowry and left them bequests.

Contemporary Greece.—In twentieth-century Greece, dowries are still common among rural and working-class families, whereas the custom of the dowry is gradually disappearing among the urban and more educated households (Jane Lambiri-Dimaki, 1985, p. 168). Instead of the dowry, urban parents in the middle- and upper-classes prefer to invest in their daughters' education and human capital. This is consistent with our story that the expansion of the labor market, the growing importance of general human capital acquisition, and modernization will erode the institution of the dowry.

India.—Dowries are still widely popular in South Asia. In the past fifty years, the custom of the dowry has spread to social and economic groups that did not have it in earlier times; at the same time, dowry values have undergone a sharp increase.[13]

John C. Caldwell et al. (1983) have put forward two explanations for dowry inflation in India: (i) the marriage squeeze hypothesis, and (ii) hypergamy (increased demand for socioeconomically more successful husbands). The marriage squeeze hypothesis maintains that due to population growth and the gender age gap at marriage, marriageable men are scarce relative to marriageable women. The econometric evidence for India on this hypothesis is not con-

clusive (Rao, 1993, 2000; Edlund, 2000; Sonia Dalmia, forthcoming).

Our interpretation of the Indian case is closer to the hypergamy hypothesis. Our theory predicts that urbanization and modernization in India will eventually eliminate the use of dowries. However, urbanization (and the consequent modernization) is proceeding slowly in India. In 1901, 89 per cent of the population lived in rural communities. In 1981, 76.3 per cent of the population still lived in rural communities, and the net rural to urban migration contributed less than 19 percent to the total growth of the Indian urban population between 1971 and 1981. India was and still is primarily a rural and virilocal society. While urbanization and modernization are slow, there is a substantial difference in living standards between rural and urban regions. The urban-rural ratio of per capita domestic product increased from 1.83 in 1950 to 2.56 in 1970 (Rakesh Mohan, 1985). Given the slow pace of urbanization, there is a large return for a rural bride to be able to marry an urban groom. As Caldwell et al. (1983, p. 347) emphasize,

> Parents desire their daughters to marry educated men with urban jobs, because such men have higher and more certain incomes, which are not subject to climatic cycles and which are paid monthly, and because the wives of such men will be freed from the drudgery of rural work and will usually live apart from their parents-in-law. In a sellers' market, created by relative scarcity, there was no alternative but to offer a dowry with one's daughter.

Consistent with this explanation, one finds that in South India, especially in Madras, in the 1930's the practice of dowry spread firstly among the Brahman community where men gained early access to European education and salaried employment in the public sector (Roland Lardinois, 1996, p. 295). Moreover, all over India, new opportunities to earn cash wages in factories, government jobs, and white collar occupations have been secured more by men than women (Ursula Sharma, 1993, p. 349). Therefore, even in the urban context, brides' potential contribution to family income has become relatively smaller when compared to prospective grooms. The hypergamy theory

---

[13] The term "dowry" in contemporary India refers to the goods that the groom and his family receive from the bride's family at the time of the marriage, over which the bride retains no ownership. In contrast, the *stridhanam* includes the goods (clothes, jewelry, etc.) that the bride's family gives to the bride and over which she has property rights. This distinction is very important because it clearly separates India from the past civilizations we surveyed; in these past societies, the dowry referred to the real property, movables, and cash that the bride's family transferred to the bride and over which she retained ownership (see Stanley J. Tambiah, 1973, for details on dowry and *stridhanam* in India).

may explain the expansion and intensification of the practice of dowry occurring in recent decades in India.

According to our theory, dowry inflation is likely to be transitory and driven by the slow pace of urbanization in India and the income differences between the two sectors. As urbanization proceeds and modernization takes place, the relative supply of educated grooms should increase and the urban-rural income differences should fall. Dowries should eventually disappear. The Indian experience suggests that in a transitional society, from virilocal/rural to neolocal/urban, the relative values of some grooms may rise and the use of dowries may expand before withering away.

Our explanation for dowry inflation in India does not concern castes directly. The caste system may reinforce the custom of dowry in two ways. First, to the extent that higher castes urbanize earlier and lower castes do so later, dowry inflation will evolve from higher to lower castes. Second, as castes are often defined by occupations, individuals from a given caste find it difficult to leave their occupation because they cannot leave their caste; sons are more likely to follow their fathers' occupations. Thus, the existence of the caste system in India can make the transition from virilocal to neolocal society (and the consequent disappearance of dowries) slower with respect to other developing economies. Although the Indian experience does not contradict our model, we are agnostic as to what the correct model is. Anderson (2003) has an insightful alternative hypergamy model where modernization and caste inheritance rules interact to generate an increase in the relative values of high caste grooms and dowry inflation in India.

IV. Concluding Remarks

We presented a particular environment— virilocality and the associated free-riding problem—in which dowries emerge endogenously. There is support for the model in historical and contemporary societies. However, there is no reason to believe that our environment is the only rationale for dowries. Instead, the spirit of our paper is to break the straightjacket of the standard economic model to consider other rationales for dowries and brideprices.

REFERENCES

Ackerberg, Daniel A. and Botticini, Maristella. "Endogenous Matching and the Empirical Determinants of Contract Form." *Journal of Political Economy*, June 2002, *110*(3), pp. 564–92.

Anderson, Siwan. "Why Dowry Payments Declined with Modernization in Europe but Are Rising in India." *Journal of Political Economy*, April 2003, *111*(2), pp. 269–310.

Becker, Gary S. *A treatise on the family*. Cambridge, MA: Harvard University Press, 1981.

Bellomo, Manlio. *Ricerche sui rapporti patrimoniali tra coniugi*. Milan: Giuffrè, 1961.

Bernheim, B. Douglas; Shleifer, Andrei and Summers, Lawrence H. "The Strategic Bequest Motive." *Journal of Political Economy*, December 1985, *93*(6), pp. 1045–76.

Boserup, Ester. *Woman's role in economic development*. London: Allen and Unwin, 1970.

Botticini, Maristella. "A Loveless Economy? Intergenerational Altruism and the Marriage Market in a Tuscan Town." *Journal of Economic History*, March 1999, *59*(1), pp. 104–21.

Botticini, Maristella and Siow, Aloysius. "Why Dowries?" Working paper, Boston University and University of Toronto, 2002 (available online at http://www.aeaweb.org/aer/contents/).

Caldwell, John C.; Reddy, Palli Hanumantha and Caldwell, Pat. "The Causes of Marriage Change in South India." *Population Studies*, November 1983, *37*(3), pp. 343–61.

Chiappori, Pierre-Andrè; Fortin, Bernard and Lacroix, Guy. "Marriage Market, Divorce Legislation and Household Labor Supply." *Journal of Political Economy*, February 2002, *110*(1), pp. 37–72.

Dalmia, Sonia. "A Hedonic Analysis of Marriage Transactions in India: Estimating Demand for Dowries and Groom's Characteristics in Marriage." *Research in Economics* (forthcoming).

Das Gupta, Monica and Li, Shuzhuo. "Gender Bias in China, South Korea, and India, 1920–1990: Effects of War, Famine, and Fertility Decline." *Development and Change*, October 1999, *30*(4), pp. 619–52.

Ditz, Toby L. *Property and kinship: Inheritance in early Connecticut, 1750–1820*. Ithaca, NY: Cornell University Press, 1986.

Edlund, Lena. "Dowry Inflation: A Comment." *Journal of Political Economy*, December 2000, *108*(6), pp. 1327–33.

_____. "Dear Son—Expensive Daughter: Why Do Scarce Women Pay to Marry?" Working paper, Columbia University, 2001.

Gies, Frances and Gies, Joseph. *Marriage and the family in the Middle Ages.* New York: Harper & Row, 1987.

Goitein, Schlomo D. *A Mediterranean society. The Jewish communities of the Arab world as portrayed in the documents of the Cairo Geniza, volume III: The family.* Los Angeles, CA: University of California Press, 1978.

Goldthwaite, Richard A. and Mandich, Giulio. *Studi sulla moneta fiorentina.* Florence: Olschki, 1994.

Goody, Jack. "Bridewealth and Dowry in Africa and Eurasia," in Jack Goody and Stanley J. Tambiah, eds., *Bridewealth and dowry.* Cambridge: Cambridge University Press, 1973, pp. 1–58.

_____. *The oriental, the ancient and the primitive: Systems of marriage and the family in the pre-industrial societies of Eurasia.* Cambridge: Cambridge University Press, 1990.

Grossbard-Shectman, Shoshana. *On the economics of marriage: A theory of marriage, labor and divorce.* Boulder, CO: Westview Press, 1993.

Guner, Nezih. "An Economic Analysis of Family Structure: Inheritance Rules and Marriage Systems." Working paper, University of Rochester, 1998.

Hamilton, Gillian. "Property Rights and Transaction Costs in Marriage: Evidence from Prenuptial Contracts." *Journal of Economic History*, March 1999, *59*(1), pp. 68–103.

Harrell, Stevan and Dickey, Sara A. "Dowry Systems in Complex Societies." *Ethnology*, April 1985, *24*(2), pp. 105–20.

Hughes, Diane Owen. "From Brideprice to Dowry in Mediterranean Europe." *Journal of Family History*, Fall 1978, *3*(3), pp. 262–96.

Karve, Irawati. "The Kinship Map of India," in Patricia Uberoi, ed., *Family, kinship and marriage in India.* Delhi: Oxford University Press, 1993, pp. 50–73.

Klapisch-Zuber, Christiane. *Women, family, and ritual in Renaissance Italy.* Chicago: University of Chicago Press, 1985.

Laiou, Angeliki E. "Marriage Prohibitions, Marriage Strategies, and the Dowry in Thirteenth-Century Byzantium," in Joëlle Beaucamp and Gilbert Dagron, eds., *La transmission du patrimoine. Byzance et l'aire méditerranéenne.* Travaux et Mémoires du Centre de Recherche d'Histoire et Civilisation de Byzance, Monographies 11. Paris: De Boccard, 1998, pp. 129–60.

Lam, David. "Marriage Markets and Assortative Mating with Household Public Goods: Theoretical Results and Empirical Implications." *Journal of Human Resources*, Fall 1988, *23*(4), pp. 462–87.

Lambiri-Dimaki, Jane. "Dowry in Modern Greece: An Institution at the Crossroads Between Persistence and Decline," in Marion A. Kaplan, ed., *The marriage bargain: Women and dowries in European history.* New York: Haworth Press, 1985, pp. 165–78.

Lardinois, Roland. "India: The Family, the State and Women," in André Burguière, Christiane Klapisch-Zuber, Martine Segalen, and Françoise Zonabend, eds., *A history of the family, volume II. The impact of modernity.* Cambridge, MA: Harvard University Press, 1996, pp. 268–300.

Leduc, Claudine. "Come darla in matrimonio? La sposa nel mondo greco, secoli IX–IV BC," in Pauline Schmitt Pantel, ed., *Storia delle donne. L'antichità.* Roma-Bari: Economica Laterza, 1997, p. 293.

Legros, Patrick and Newman, Andrew F. "Beauty is a Beast, Frog is a Prince: Assortative Matching with Nontransferabilities." Working paper, ECARES, Université Libre de Bruxelles and University College London, February 2003.

Lundberg, Shelly; Pollak, Robert and Wales, Terence. "Do Husbands and Wives Pool Their Resources? Evidence from the U.K. Child Care Benefit." *Journal of Human Resources*, Summer 1997, *32*(3), pp. 463–80.

Malanima, Paolo. "Risorse, popolazioni, redditi: 1300–1861," in Pierluigi Ciocca and Gianni Toniolo, eds., *Storia economica d'Italia*, Vol. 1. Roma-Bari: Editrice Laterza, 1999, pp. 43–124.

Mohan, Rakesh. "Urbanization in India's Future." *Population and Development Review*, December 1985, *11*(4), pp. 619–45.

Murdoch, George P. *Ethnographic atlas.* Pittsburgh, PA: University of Pittsburgh Press, 1967.

Nazzari, Muriel. *Disappearance of the dowry:*

Women, families, and social change in São Paulo, Brazil (1600–1900). Stanford, CA: Stanford University Press, 1991.

Peters, Michael and Siow, Aloysius. "Competing Premarital Investments." *Journal of Political Economy*, June 2002, *110*(3), pp. 592–608.

Rao, Vijayendra. "The Rising Price of Husbands: A Hedonic Analysis of Dowry Increases in Rural India." *Journal of Political Economy*, June 1993, *101*(3), pp. 666–77.

_____. "The Marriage Squeeze Interpretation of Dowry Inflation: Response." *Journal of Political Economy*, December 2000, *108*(6), pp. 1334–35.

Rapoport, Yossef. "Marriage and Divorce in the Muslim Near East, 1250–1517." Ph.D. dissertation, Princeton University, 2002.

Rosenzweig, Mark R. and Stark, Oded. "Consumption Smoothing, Migration, and Marriage: Evidence from Rural India." *Journal of Political Economy*, August 1989, *57*(4), pp. 905–26.

Rosenzweig, Mark R. and Wolpin, Kenneth I. "Specific Experience, Household Structure, and Intergenerational Transfers: Farm Family Land and Labor Arrangements in Developing Countries." *Quarterly Journal of Economics*, 1985, Supp., *100*, pp. 961–87.

Shammas, Carole. *A history of American household government*. Charlottesville, VA: University of Virginia Press, 2002.

Shammas, Carole; Salmon, Marylynn and Dahlin, Michel. *Inheritance in America from colonial times to the present*. New Brunswick, NJ: Rutgers University Press, 1987.

Sharma, Ursula. "Dowry in North India: Its Consequences for Women," in Patricia Uberoi, ed., *Family, kinship and marriage in India*. Delhi: Oxford University Press, 1993, pp. 341–56.

Siow, Aloysius and Zhu, Xiaodong. "Differential Fecundity and Gender-Biased Parental Investments in Health." *Review of Economic Dynamics*, October 2002, *5*(4), pp. 999–1024.

Tambiah, Stanley J. "Dowry and Bridewealth, and the Property Rights of Women in South Asia," in Jack Goody and Stanley J. Tambiah, eds., *Bridewealth and dowry*. Cambridge: Cambridge University Press, 1973, pp. 59–169.

Tertilt, Michèle. "The Economics of Brideprices and Dowries." Working paper, University of Minnesota, 2001.

Trautmann, Thomas R. "Marriage Rules and Patterns of Marriage in the Dravidian Kinship Region," in Patricia Uberoi, ed., *Family, kinship and marriage in India*. Delhi: Oxford University Press, 1993, pp. 273–86.

Weiss, Yoram. "The Formation and Dissolution of Families: Why Marry? Who Marries Whom? And What Happens Upon Divorce," in Mark R. Rosenzweig and Oded Stark, eds., *Handbook of population and family economics*, Vol. 1A. Amsterdam: Elsevier, 1997, pp. 81–124.

Zhang, Junsen and Chan, William. "Dowry and Wife's Welfare: A Theoretical and Empirical Analysis." *Journal of Political Economy*, August 1999, *107*(4), pp. 786–808.