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Dowry 'Inflation' in Rural India: A Statistical Investigation*

VIJAYENDRA RAO†

I. INTRODUCTION

Over the last 40 years, the real value of transfers from brides and their families to grooms and their families has increased widely in South Asia.¹ For the purposes of this paper I shall define such transfers as *dowries*, though they should more accurately be termed 'groomprices'; the reverse transaction I shall call *brideprices*. Not only have dowries increased, but in communities in which traditionally brideprices have been paid, there has been a switch to paying dowries. To-day, families which seek suitable husbands for their marriageable daughters frequently face crippling expenses with dowries amounting to very large proportions of their household assets. Consequently, some of these households are reduced to the brink of survival to get their daughters married. This is, of course, true of those households with more daughters than sons. In fact, it is possible that parents who bear more sons than daughters may be better off as dowries rise.²

Despite the widely acknowledged importance of the problem, dowry 'inflation' has rarely been systematically studied. Social anthropologists have often talked about it in ethnographies focused primarily on other subjects, but their reasoning has usually been limited to explaining it away as a consequence of 'Sanskritization'.³ This is a term used by Srinivas to explain the adoption of upper-caste patterns of behaviour by members of lower castes as a means of acquiring higher social status. Since dowries have traditionally been the common marriage transaction of the highest (Brahmin) caste, Sanskritization explains the observed shift in regime from brideprice to dowry in all the other castes as upwardly mobile imitative behaviour. This explanation is weak on two counts. First, it seems hard to believe that the benefit gained by lower castes in behaving like Brahmins is greater than the immense destitution they often face by paying dowries.

* Rukmini Banerji, Jere Behrman, Michael Billig, Anil Deolalikar, Andrew Foster, Margaret Greene, Jane Menken, Robert Pollak, Frank Zimmermann, and seminar participants at the Universities of Pennsylvania and Chicago provided valuable suggestions and comments. Mark Rosenzweig generously shared some data. I gratefully acknowledge their help while retaining full responsibility for any errors. Some results from this paper are reported in another essay (V. Rao, 'The rising price of husbands. A hedonic analysis of dowry increases in Rural India'. Discussion Paper 91–7, Economic Demography Group, Population Research Center, University of Chicago, 1991) and were presented at the annual meeting of the Population Association of America in Toronto in May 1990, and the Development Economics Conference at Yale University in June 1990. The research was supported by the Compton and Hewlett Foundations.

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¹ T. Scarlett Epstein, *South India: Yesterday Today and Tomorrow* (London, Basingstoke: Macmillan Press, 1973); M. Billig, 'The marriage squeeze and rise of groomprice in India's Kerala State' (Mimeo, Department of Anthropology, Franklin and Marshall College, 1990); Shirley Lindenbaum, 'Implications for women of changing marriage transactions in Bangladesh', *Studies in Family Planning*, 12 (11) (1981), pp. 394–400.

² The data examined in this study come from rural households and do not contain direct information on dowries paid by daughters. However, the figures in Table 1 show that the average dowry received by a son amounted to 68 per cent of his household's assets. High dowries affect urban households as well. One estimate has shown that up to one-quarter of the deaths of women between the ages of 15 and 30 in Bombay can be attributed to dowry-related murders. Cf. M. Karkal, 'Health of mother and child survival', in S. Mukerji (ed.), *Dynamics of Population and Family Welfare* (Bombay: Himalaya Publishing House, 1985), pp. 353–374.

³ Epstein, *op. cit.* in fn. 1; M. N. Srinivas, *Some Reflections on Dowry* (Delhi, Oxford: Oxford University Press, 1982).

Secondly, real dowry payments have gone up even in castes in which historically dowries have been paid: the problem is not just of a switch from brideprice to dowry, but the more general one of an upward shift in the relative price of husbands.

Caldwell, Reddy and Caldwell have provided an interesting explanation;⁴ in a population with declining mortality younger cohorts are larger than older cohorts. If women tend to marry older men, this implies that there will be a surplus of women over men in the marriage market. Caldwell *et al.* suggest that this phenomenon, known as the marriage squeeze, has led to the escalation of dowries. This explanation is consistent with the observed rise in dowries from the 1950s onward: for the most part, South Asian populations started growing during the 1930s, and members of cohorts born then would be of marriageable age by the 1950s. Since unmarried daughters are a great economic and cultural liability in South Asia, the marriage squeeze helps explain why households with marriageable daughters are willing to endure considerable hardship to find scarce husbands.

One of the first to observe the rise in dowries, Epstein, noted,⁵

Peasants attribute the change from bridewealth to dowry to an unbalanced demographic development. They see it in terms of too many girls chasing too few grooms.

She, however, dismisses the demographic argument and attributes 'dowry inflation' to Sanskritization by pointing out that,

Population statistics do not bear this out. Since 1951, the proportion of females...has remained stable at about half the population.

She is in error, however, by looking at the ratio of *all* women to all men instead of the ratio of women to men of *marriageable ages*, which has increasingly favoured men in most parts of India since 1950.

Some authors have suggested that the dowry switch in South Asia occurred largely because the process of development diminished the economic role of women and their rates of labour-force participation.⁶ However, because of a paucity of data on the subject, there have been no statistical analyses of the causes that affect the increase in dowries.⁷

Deolalikar and Rao used the data examined in this paper to estimate the demand of groom-households for dowries and brides in an economic model of bride-selection and dowry exchange.⁸ They found that grooms and brides are matched not only by individual traits but, consistent with India's arranged marriage system, by household characteristics as well. Furthermore, they found that while the wealth of a groom's parental household brings a higher dowry, his individual characteristics do not make much difference to the level of the dowry. They also noted a significant rise in the real value of dowry transfers over time.

In this paper I look more directly at the causes of the increase and use unique data collected from a small sample of households by the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT). A retrospective survey on marriage

⁴ J. P. Caldwell, P. H. Reddy and Pat Caldwell, 'The causes of marriage change in South India', *Population Studies*, 37 (1983), pp. 343-361.

⁵ Epstein, *op. cit.* in fn. 1.

⁶ Indira Rajaraman, 'Economics of brideprice and dowry', *Economic and Political Weekly*, 18 (8) (1983), pp. 275-278.

⁷ In fact, I have been unable so far to locate any published study which contains tests of a statistical hypothesis on data relating to marriage transactions.

⁸ Anil Deolalikar and V. Rao, 'The Demand for Dowries and Bride Characteristics in Marriage. Empirical Estimates for Rural South-Central India' (Department of Economics, University of Washington, Working Paper Series, 1990).

transactions was conducted in 1984, along with a panel survey of other individual and household characteristics of 240 households in six villages in rural Central-South India between 1974 and 1984. The marriages in the sample date back to 1926, and thus make possible a test of the competing explanations of marriage squeeze on one hand, and declining economic status of women on the other. Indices of the marriage squeeze and relative rates of women's labour-force participation are constructed with district level census data obtained from the censuses of India from 1921 onward. The analysis provides significant support for the marriage-squeeze argument without furnishing much evidence in favour of other possible causes. Notable regional differences and assortative mating are also observed.

Conceptualizing the effect of the marriage squeeze in India⁹

A population with declining mortality (or increasing fertility) will contain larger younger cohorts than older ones. If women tend to marry older men, they will belong to a younger and hence larger cohort, and there will be a surplus of women in the marriage market. This phenomenon is typically called the marriage squeeze. The severity of the squeeze depends upon the rate of population growth, the average age difference between spouses, and differences in sex-specific mortality schedules. Therefore, reductions in the age difference between spouses will tend to equalize the supplies of males and females in the marriage market.

Consider an equilibrium in a 'marriage market' in which grooms and brides have been matched so that men marry younger women. Let there now be an exogenous increase in the rate of population growth which results in increasing the numbers of women in the marriage market. Since these surplus women come from a younger cohort, the average age of potential brides decreases. This results in further competition for scarce grooms which induces an upward shift in dowries.

Furthermore, in the Indian marriage market there are strong social and economic pressures for women to be married within an 'acceptable' age range, as an unmarried older daughter can be a severe economic and social liability to her family. This is due both to a lack of job-market opportunities for women, as well as to an extreme drop in social status associated with having (or being) an older unmarried daughter.¹⁰ Thus, households of older potential brides would be willing to outbid the families of younger brides, as the younger brides would, presumably, still be capable of finding mates in a later marriage market.¹¹ One indicator of this is that, despite the pressures of the marriage squeeze, 99 per cent of women in the ICRISAT regions were married by the age of 20 (Census of India, 1981).

Since the marriage squeeze would be relaxed when the age difference between spouses is reduced, the most likely source of this reduction would be an increase in the average age at marriage of women, with the age at marriage of men remaining stable.¹² In fact, the singulate mean age at marriage of women in the ICRISAT region (calculated from

⁹ I have outlined this conceptual model in greater detail. Cf. V. Rao, *loc. cit.* in fn. 8.

¹⁰ R. P. Goyal, *Marriage Age in India* (Delhi: B. R. Publishing Corporation, 1988); M. N. Srinivas, *Marriage and Family in Mysore* (Bombay: New Book Company, 1942).

¹¹ This can also be thought of in terms of a search model, as suggested by Dale T. Mortenson, 'Matching: finding a partner for life or otherwise', *American Journal of Sociology*, 94 (1988). Supplement pp. s125-s240, where there is a large disutility to females who remain single beyond an upper age limit.

¹² Bergstrom and Lam have shown in a simulation model that it takes only very small adjustments in the average age difference between spouses to achieve equal numbers in the marriage market under reasonable assumptions about population growth and average age difference. Cf. T. Bergstrom and D. Lam, 'The Two-Sex Problem and the Marriage Squeeze in an Equilibrium Model of Marriage Markets' (CREST Working Paper 91-7, Department of Economics, University of Michigan, 1991).

the Census of India's age and marital-status tables) has gone up from 15.57 years in 1931 to 19.86 in 1981, while for men it has risen from 23.6 to 25.48 years, resulting in a reduction in the age difference between spouses from 8.03 to 5.62 years.

Other possible avenues for equalizing the number of potential grooms in the marriage market would be to 'recycle' men through more marriages than women, or to raise the proportion of men who have more than one wife. Greene and Rao have found indications of the first phenomenon in Brazil, while Goldman and Pebley have provided evidence for the second in sub-Saharan Africa.¹³ Since only about one per cent of ever-married men and women are divorced in India (Census of India, 1981), the recycling 'solution' to the marriage squeeze is ruled out. However, in one survey it was found that the proportion of polygynous unions in tribal populations has increased in India from 8 to 18 per cent, while remaining stable at about four per cent of all marriages in other groups.¹⁴ Since the data explored in this paper do not include any tribal or polygynous households, it is not possible to examine the impact of the marriage squeeze on polygyny, but I hope to look at this topic in future research.

Thus the marriage squeeze, in combination with the strong preference for early, universal and monogamous marriage that characterizes most of South Asia, results in heightened competition for eligible grooms. Even though the marriage squeeze is 'resolved' through an increase in the average age at marriage of women in the sense that almost all women and men find a mate, the pressures associated with the adjustment in the age difference cause dowries to rise.

II. DATA AND ESTIMATION

The data used in this paper are from a random sample of 40 households, 30 cultivating and 10 labouring, per village, from six villages in three districts of rural South-Central India. The surveys were conducted by ICRISAT, the International Crops Research Institute for the Semi-Arid Tropics.¹⁵ The districts are Akola and Sholapur in Maharashtra state, and Mahbubnagar in Andhra Pradesh. ICRISAT initiated a household and agriculture survey in these villages in 1975, which was taken regularly for a period of five years in three villages, and a period of nine years in another three.

In 1983, ICRISAT investigators conducted a retrospective survey on marriage. Households reported amounts both received and paid in cash and kind at the time of marriage, including transfers of gold and silver, land, livestock and consumer durables as well as details about the year of marriage. The transfers in kind were valued by the investigators according to prices prevailing during the year of marriage and then deflated by 1983 rupee prices of gold for reasons given below. While questions about the accuracy of retrospective data could always be raised, a person's memory of a marriage transaction is likely in India to be more accurate than his or her recollection of most other things. It is somewhat akin to remembering the amount spent on a college education. A marriage is the central event in the life of most women, and the exchange of a dowry usually has a substantial impact on a household's assets.

Anthropometric data on height were collected in 1977 during the course of a nutrition and health study. Data on the occupation of the groom's father and information on the

¹³ Margaret Greene and V. Rao, 'The marriage squeeze and the rise in informal unions in Brazil' (Mimeo, Population Research Center, University of Chicago, 1991); Noreen Goldman and Anne Pebley, 'The demography of polygyny in sub-Saharan Africa' (mimeo., Office of Population Research, Princeton University, 1986).

¹⁴ Census of India, 1971, *Polygamous Marriages in India. A Survey*. Monograph 4. New Delhi.

¹⁵ For a detailed description of the process of data collection and an analysis of various aspects of the ICRISAT sample, see T. S. Walker and J. G. Ryan, *Village and Household Economies in India's Semi-Arid Tropics* (Baltimore: Johns Hopkins University Press, 1990).

land assets of the groom and the bride also came from a retrospective survey conducted at about the same time as the marriage survey. I was able to merge these data, together with other individual-level data on schooling and age from the panel surveys, with the marriage data only for the heads of household and their spouses. Thus, I have complete information for only one side of the market – the groom's household. Furthermore, since the data only relate to the marriage of the household's head the results may not be generalizable to other siblings, since heads are (presumably) particularly desirable mates. After putting all the information from the various sources together and eliminating households with missing data, a sample of 151 marriages is left for the analysis, spread more or less evenly across the three districts. A test in which means of the sub-sample of 151 cases were compared with the full sample, did not detect differences significant enough to reject the hypothesis that they came from the same population.

To give an idea of demographic patterns, information on age distributions and ratios of men's to women's labour-force participation were gathered for each of the three districts from the censuses of India from 1951 to 1981. Before 1950, Mahbubnagar was in the Princely State of Hyderabad; hence the pre-1951 census data for Mahbubnagar were taken from the Census of Hyderabad. Both Akola and Sholapur were in British India, so that data on these districts were available in the Census of British India. All data from the Census of 1951 onward are available in the Census of India. In 1941, because of wartime exigencies, no district-level data were reported in British India and data for this Census had to be interpolated from previous and subsequent censuses for Akola and Sholapur districts.¹⁶

Dowry and brideprice have been treated so far as determined purely by price considerations. However, there is a great deal of ambiguity about what exactly constitutes the 'price' component of a dowry or brideprice.¹⁷ Some part of the dowry may actually be *stridhan*, 'wealth of the bride', and hers to do with as she pleases. Other components of the dowry may be ritual gift exchanges. In fact, in almost all of the marriages, transfers were made in both directions. To correct for this to the extent possible, I look at the net value of the transfer, i.e. transfers received by the groom's household less transfers paid. This net value is free of the ritual, gift-exchange component of the dowry. Although it does not correct for the *stridhan* there is reason to believe that this component of the dowry is rather small in the regions of India that these data come from.¹⁸

Additionally, to obtain the real values of the dowry transactions, all rupee values of goods, precious metals, land and currency transferred were valued at the 1983 rupee value of gold. The gold value, rather than the Consumer Price Index was the deflator chosen, as a larger percentage of the net dowry and brideprice were transfers of gold rather than of currency.

A quadratic specification of dowry determinants is estimated:¹⁹

$$D = A + B_{1i}(W_i + \mu_{W_i} + \mu_i - H_i - \mu_{H_i} - \mu_i) + B_{2i}(W_i + \mu_{W_i} + \mu_i - H_i - \mu_{H_i} - \mu_i)^2 \\ + B_3R + B_4S + (\delta_{W_i} + \delta_i - \delta_{H_i} - \delta_i) + \varepsilon,$$

¹⁶ As Indian marriages are arranged within endogamous groups, the demographic and labour-force indices should, ideally, be specific to each endogamous sub-caste. Since information by caste is not reported in the Indian Census, district-level data will have to suffice.

¹⁷ See J. Goody and S. J. Tambiah, *Bridewealth and Dowry* (Cambridge; Cambridge University Press, 1973).

¹⁸ Barbara D. Miller, *The Endangered Sex* (Ithaca, N.Y.: Cornell University Press, 1981).

¹⁹ A quadratic specification gives a better fit of the model than a linear one. However, the results are substantially the same.

where i indexes a particular trait, the μ terms represent measurement errors, and the δ -terms unobserved individual traits that affect the dowry, \mathbf{R} represents a vector of exogenous shifters of the dowry, S is the marriage squeeze index and ε the exogenous random error term. Since this specification differences the traits of grooms and brides, all the sources of error common to both husbands and wives: μ_i , and δ_i , are eliminated. Thus, if there is common measurement error in surveying husbands and wives it is eliminated. The identical components in the unobserved traits are also eliminated; for instance if grooms are just as handsome as their brides are beautiful, unobserved beauty is differenced out. For all of the traits the differences are specified as (Female—Male), however the age difference has been specified as (Male—Female) to enable it to be interpreted as a 'youth' difference which is assumed to be a valued trait.

Assortative mating is very high between traits, but there is not much correlation between differenced observed traits (see Tables 2*a* and *b*). Thus it seems safe to assume that the differences in observed traits are not correlated with the differences in unobserved traits. Under these conditions, the coefficients of the observed traits would be relatively unaffected by omitted variable bias.

The choice of the marriage-squeeze indicator also requires some care, since it has to indicate the relative numbers of men and women who reach marriageable age in a particular cohort. I use the ratio of women aged 15–20, to men aged 20–25 in each of these districts during the census year closest to their year of marriage, thus getting both temporal and spatial variation. These age groups are chosen because they correspond with the ages when the largest proportion of women and men, respectively, marry. The ratio of female to male labour-force participants is also used as a shifter of the dowry function, to get at the question of the relative reduction in women's economic status over time. The labour-force participation levels of males and females were defined as a ratio to focus on the effect of their relative change.

III. RESULTS

In Table 1 the standard deviations and means of the variables used are shown. There is substantial variation in the net dowry transfer, thus one would expect to see not just temporal variation but also significant differences between regions in its determinants. It is also interesting to note that while grooms are older, taller and better educated than their brides, the parents of the brides owned on average, 0.89 hectares more land, than the parents of the grooms. This indicates a fair degree of male hypergamy in the sample. The mean marriage squeeze ratio of 1.27 demonstrates that men are rather scarce in the marriage market. It is important to note that this is also an area where mortality of females at younger ages exceeds that of males,²⁰ and where there have been more men than women in the *total* population almost since the turn of the century. Thus, the excess of men over women at marriageable ages indicates population growth fast enough to outweigh the fact there are more women than men in the *same* age cohort.

Table 2*a* provides evidence for very strong assortative mating on the same traits (looking at the diagonal elements of the correlation matrix), and a fair amount of assortative mating across different traits (looking at the off-diagonal elements of the matrix). In particular, while it seems that children of rich parents have taller and better educated spouses, the ages of the groom and bride are not significantly correlated with the other traits of their respective spouses. This might indicate that age is not traded off against other traits in the marriage market, and thus places most of the burden on

²⁰ Cf. Miller, *op. cit.* in fn. 18.

Table 1. *Means and standard deviations of variables*

Variable	Mean	Standard deviation
Net dowry transfer (1984 rupees)	4,668.34	15,498.90
(Percentage) 'dowry' of assets before marriage	67.77	106.61
Groom's age at marriage	20.96	4.55
Bride's age at marriage	14.29	4.89
'Youth' difference $\{(-W) - (-H)\}$	-6.68	3.50
Groom's schooling (years)	2.30	2.99
Bride's schooling (years)	0.83	1.91
Difference in length of schooling	-2.04	2.57
Groom's height (cm)	162.20	6.33
Bride's height (cm)	149.40	4.92
Difference in height (cm)	-12.74	6.50
Groom's father's landholdings when groom was 15 (hectares)	13.34	30.70
Bride's father's landholdings when bride was 15 (hectares)	14.74	39.80
Difference in landholdings (hectares)	0.89	39.44
Year of marriage	54.14	10.83
Ratio of number of women aged 15-20 to men aged 20-25 in the district	1.27	0.09
Ratio of number of female workers to male workers	0.66	0.38
Groom's father cultivator	0.51	
Groom's father agricultural labourer	0.04	
Groom's father casual worker	0.13	
Groom's father other occupation	0.31	
Groom's households assets before marriage (1984 Rupees)	83,514.40	160,038.64
Mahbubnagar District	0.36	
Sholapur District	0.35	
Akola District	0.29	
Highest caste rank	0.39	
Second caste rank	0.17	
Third caste rank	0.25	
Lowest caste rank	0.18	

picking up the slack from the marriage squeeze on changes in marital transfer payments. Table 2c provides evidence of a significant rise in net real dowry transfers over time.

The estimates of the dowry function are reported in Table 3; Column 1 reports estimates including the year of marriage, which is excluded from the estimates in Column 2. We see that the difference in land owned by the parents of each spouse before the marriage significantly reduces net dowries. This may be a consequence of the willingness of poorer grooms to marry brides from landed families by accepting lower dowries. This could happen either for reasons of insurance as highlighted by Rosenzweig and Stark,²¹ since richer in-laws would be more capable of coming to the aid of the groom's family in times of crisis, or for reasons of status. It is interesting to note that none of the individual traits of the bride and groom, such as schooling or height, seem to matter. While this might well be a result of the small sample size it may also indicate that household characteristics matter more in choosing mates in the Indian marriage market. In most cases it is the two sets of parents who choose a spouse for their children and marriages are typically 'arranged'. Deolalikar and Rao have explored this issue in greater detail.²²

The district age ratio which is an index of the extent of the marriage squeeze is significantly associated with increases in net real dowries. This suggests that an increase

²¹ M. R. Rosenzweig and O. Stark, 'Consumption smoothing, migration and marriage. Evidence from rural South India', *Journal of Political Economy*, 97 (4) (1989), pp. 905-926.

²² See *op. cit.* in fn. 8.

Table 2. *Correlation coefficients (Prob. $H_0: \rho = 0$ cannot be rejected, in parentheses)*

(a) Pearson correlation coefficients between groom's and bride's traits				
GROOM	BRIDE			
	Age	Height	Parents land at age 15	Years of school
Age	0.70 (0.00)	-0.02 (0.83)	-0.02 (0.79)	-0.03 (0.69)
Height	-0.08 (0.33)	0.37 (0.00)	0.21 (0.00)	0.09 (0.23)
Parents land at age 15	-0.09 (0.19)	0.31 (0.00)	0.40 (0.00)	0.31 (0.00)
Years of school	-0.06 (0.38)	0.18 (0.02)	0.40 (0.00)	0.42 (0.00)

(b) Pearson correlation coefficients between trait differences				
	'Youth' difference	Height difference	Land difference	School difference
'Youth' difference	1.0			
Height difference	-0.02 (0.85)	1.0		
Land difference	-0.11 (0.15)	-0.09 (0.26)	1.0	
School difference	-0.17 (0.02)	0.04 (0.58)	-0.01 (0.88)	1.0

(c) Pearson correlation of coefficient between net dowry and year of marriage	
Net dowry transfer (1984 rupees)	
Year of marriage	0.15 (0.02)

in the number of women in the marriage market relative to the number of men causes dowries to go up. It supports the idea suggested by Caldwell *et al.*²³ that the marriage squeeze has played an important role in the increase in real dowries transfers. The effect of the labour force ratio, however, is not significantly different from zero, which does not support the idea that a reduction in the relative labour-force participation rate is the prime cause of dowry 'inflation'. However, this result may also be a consequence of deficiencies in the collection of labour-market information, especially on women, in the Indian census, as well as the small sample size.

It is also interesting to note the large regional variations in dowry payments. In both Sholapur and Akola districts dowries are on average higher than in Mahbubnagar district, the omitted category. In Mahbubnagar district which is slightly to the south of the other two, the average transfer is negative. In fact, the average transfer in Mahbubnagar is negative. Therefore, on average, marriages in that region transfer brideprices, though with time these too have tended to become less favourable to women²⁴. The dummies for caste rank have been included because of the endogamous

²³ *loc. cit.* in fn. 4.

²⁴ These regional variations also complement Dyson and Moore's contention that women in southern regions tend to enjoy greater 'autonomy'. However, all three districts in this sample are south of the Satpura range of hills, which Dyson and Moore define as the boundary that divides North from South India. T. Dyson and M. Moore, 'Kinship structure, female autonomy, and demographic behavior in India', *Population and Development Review*, 9 (1) (1983), pp. 36-60.

Table 3. *Estimates of the dowry function – OLS (t-ratios in parentheses, N = 141)*

Variable	(1)	(2)
Intercept	– 131,153.00 (2.7)	– 126,981.00 (2.7)
(Wife's age – husband's age)	2,125.38 (0.9)	1,576.84 (0.7)
Wife's height – husband's height (cm)	– 835.82 (0.6)	– 721.11 (0.5)
Wife's parents' land – husband's parents land (hectares)	– 293.88 (2.9)	– 282.36 (2.8)
Wife's schooling – husband's schooling (years)	– 1,173.63 (0.7)	– 895.48 (0.5)
(Age difference) ²	– 51.98 (0.4)	– 30.08 (0.3)
(Height difference) ²	– 63.68 (0.8)	– 60.93 (1.1)
(Parents' land difference) ²	0.79 (2.4)	0.77 (2.4)
(Schooling difference) ²	– 38.2 (0.4)	– 64.62 (0.4)
District age ratio (females 15–20)/(males 20–25)	71,423.00 (2.1)	81,547.00 (2.5)
District labour-force ratio (females/males)	288.81 (0.0)	– 427.13 (0.1)
Year of marriage	281.16 (0.9)	—
Sholapur District	17,676.00 (2.4)	18,756.00 (2.5)
Akola District	22,814.00 (2.8)	24,679.00 (3.1)
Highest caste rank	9,850.00 (1.2)	11,639.00 (1.4)
Second caste rank	– 399.77 (0.0)	1,024.59 (0.1)
Third caste rank	– 629.78 (0.0)	809.06 (0.1)
\bar{R}^2	0.128	0.129
F statistic (Prob > F)	2.3 (0.006)	2.4 (0.004)

nature of the marriage market, matches are only made with mates from the same caste group. None of the caste dummies are significantly different from zero, though the highest-ranked castes have a positive coefficient which indicates that they may pay higher dowries than lowest-ranked castes on average²⁵.

The coefficient of the age difference is not significantly different from zero²⁶. The effect of the small sample size is probably made worse in this case by a great deal of measurement error in the variable. Surveys and censuses conducted in India have long been notorious for age misreporting²⁷. Birth dates are rarely recorded and, particularly

²⁵ The caste rank is intended to be generally indicative of the caste's relative socio-economic and ritual rank within the village, and to be comparable between villages. It was developed by an anthropologist, together with other research workers at ICRISAT. See V. S. Doherty, 'A guide to the study of social and economic stratification in ICRISAT's Indian village level studies' (Mimeo., Economics Programme International Crops Research Center for the Semi-Arid Tropics, Patancheru, Andhra Pradesh, 1982).

²⁶ A model in which an interaction between the age difference and the marriage-squeeze index was included was also tried, but was strongly rejected by an *F* test.

²⁷ Kumudini Dandekar, 'Age reporting in the two recent censuses. A case study', *Indian Population Bulletin*, 3 (1966), pp. 41–50.

in rural areas, people tend to report ages in multiples of five. In these data a majority of marriages show an age difference of five or ten years, clearly a result of both spouses reporting their ages in multiples of five. Consequently, it is difficult to detect anything meaningful about age effects²⁸.

To examine whether the marriage squeeze had an impact on the age difference without relying on the ages reported in the survey, I have calculated the singulate mean ages at marriage (SMAMs) from census tables for the three districts from age and marital-status tables grouped in five-year age groups which, to some extent, helps correct for age heaping. Since these are census averages, biases introduced by measurement error are also reduced. In Table 4, the differences between the SMAMs for men and women have

Table 4. *Determinants of the difference (male–female) in singulate mean ages at marriage (SMAM) – OLS (t ratios in parentheses)*

Variable	(1)	(2)
Intercept	7.798 (16.2)	10.813 (25.5)
Age ratio (females 15–20/males 20–25)	–0.781 (2.0)	–3.430 (10.3)
Mahbubnagar District	0.590 (7.3)	0.807 (8.9)
Sholapur District	0.970 (12.6)	0.833 (8.8)
Year of marriage	–0.011 (3.6)	—
\bar{R}^2	0.50	0.41
F statistic	54.55	65.12

been regressed on the marriage-squeeze ratio, controlling for variation by district and year of marriage. The marriage-squeeze ratio is negatively and significantly associated with the age difference which indicates that women do get married at ages closer to those of men in regimes with a greater marriage squeeze.

To summarize, the estimates of the dowry function provide evidence in support of the hypothesis that the rise in real net dowry transfers has been significantly affected by a marriage squeeze brought on by a surplus of women in the marriage market caused by population growth. They also indicate that the wealth of a spouse's parent is a valued trait and important in determining a match. In regions more to the north dowries on average seem to be higher.

IV. CONCLUSION

In this paper I have attempted to investigate the reasons behind the rise in the real value of dowries in rural India. Researchers have suggested that exogenous increases in the number of younger women in the marriage market due to population growth may have caused the increase. A function of dowry determinants is estimated with a small sample of marriages dating back to 1921 for three districts in rural South-Central India. The empirical results support the hypothesis that the marriage squeeze has played a significant part in causing dowry 'inflation'. The size of the dowry transfer also seems

²⁸ In theory, instrumental variable methods could have been used to correct for misreporting of ages, but, in practice, it proved impossible to find an instrument for the age difference that was not correlated with net dowries. An attempt was also made to use maximum likelihood methods (K. Joreskog and D. Sorbom, *LISREL VI: Analysis of Linear Structural Relationships by the Method of Maximum Likelihood* (Moorseville, Scientific Software, 1984) to estimate a model with measurement errors in the age variable, but the results did not differ from those of the OLS estimates.

to be affected by hypergamy, indicated by the difference in the amount of land owned by the parents of the respective spouses before the marriage. Due to the small size of the sample and the respondents' lack of accuracy in reporting their ages at marriage, not much can be said about the impact of age or other potential determinants on the transfer. At the district level, however, the marriage squeeze does seem to matter in reducing differences in the ages at marriage of men and women.