Comments

The Marriage Squeeze Interpretation of Dowry Inflation: A Comment

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I. Introduction

In a recent paper, Rao (1993) advanced a marriage squeeze explanation to the secular rise in real dowries, so-called dowry inflation, witnessed in India. Arguing that the relevant ages with respect to marriage are 10–19 for women and 20–29 for men, Rao found that the ratio of women to men in those age groups had increased over time. Moreover, this sex ratio was found to have a positive and significant impact on dowry when one controls for differences in traits of brides and grooms.

The empirical results presented here suggest that Rao's findings are not robust. Using the same data, I fail to replicate his main result, that is, that the sex ratio (women 10–19/men 20–29) has a positive impact on dowries. Moreover, Rao's specification—regressing dowries on differences in spouses' traits (bride's minus groom's)—imposes the restriction that attributes influence dowries in a symmetrical fashion, ignoring compelling evidence against that assumption. I find that regressing dowry on individual traits instead of differences improves the model fit considerably.

II. Data and Results

Data

The data on couples are taken from a retrospective survey on marriages conducted in 1983 by the International Crops Research Institute for the

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TABLE 1
RATIO OF WOMEN AGED 10–19 TO MEN AGED 20–29, BY DISTRICT AND CENSUS YEAR

YEAR	DISTRICT					
	Mahbubnagar		Sholapur		Akola	
1921	1.09	(1.09)	1.05	(1.05)	1.15[a]	(1.10)
1931	1.00[a]	(1.10)	1.14	(1.14)	1.14	(1.14)
1941	1.08[a]	(.99)	1.04	(1.04)	1.12	(1.12)[b]
1951	1.15[a]	(1.26)[c]	1.11[a]	(1.25)	1.07[a]	(1.22)
1961	1.25	(1.25)	1.20	(1.20)	1.04	(1.04)
1971	1.38	(1.38)	1.35	(1.35)	1.47	(1.47)
1981	1.35	(1.35)	1.31	(1.31)	1.46	(1.46)

SOURCE.—Figures not in parentheses are taken from Rao (1993, table 2); figures in parentheses are taken from the Indian censuses of the respective year.
[a] Years for which there is a discrepancy.
[b] Imputed value, calculated as an average of the values for Mahbubnagar and Sholapur districts in relation to their 1931 and 1951 values.
[c] Figure for the South Hyderabad division, which Mahbubnagar district sorted under.

Semi-arid Tropics. The sample consists of 127 complete observations.[1] The reader is referred to Rao (1993) for further information.

The district sex ratio and the labor force sex ratio are taken from the Indian censuses of the respective years, unless otherwise indicated. The sex ratios reported in Rao's table 2 do not always coincide with those of the censuses of the respective years, and the source of this discrepancy is unclear. Since the results are similar, I report only those pertaining to census data. Observations with marriages in the period 1917–26 were given the 1921 district sex ratio, and so on for the entire sample.[2] The district sex ratios are reported in table 1.

As for the labor force sex ratio, in view of the average of 0.61 reported in Rao's table 2, I used a measure as inclusive as possible. Further details are in the note to table 2.

Summary statistics of the variables are in table 3. Note that the means and standard deviations are similar to those reported in Rao's table 2, except for the district sex ratio variable. Whereas Rao reported a sample mean of 1.22, I obtain a mean of 1.14 using the values given in Rao's table 2 or 1.17 using census data.

[1] Rao reported 141 observations. Although estimating the dowry function proposed by Rao does return 141 observations, on closer inspection, 14 of them are duplicate entries, which leaves 127 observations. When descriptive statistics are compared, the 141-observation sample resembles more closely that used by Rao (his table 2). The regression results are very similar for the two samples; therefore, I report results only from the subsample purged of duplicates.

[2] The cutoff points were chosen after consultations with Rao. I also experimented with interpolating sex ratios for years between censuses, only to find the thus-constructed sex ratio variable to perform worse.

TABLE 2
RATIO OF WOMEN TO MEN IN THE LABOR FORCE, BY CENSUS YEAR AND DISTRICT

CENSUS YEAR	DISTRICT		
	Mahbubnagar	Sholapur	Akola
1921	.73	.42	.64
1931	.55	.40	.57
1941	.59	.42[a]	.59[a]
1951	.70	.48	.63
1961	.79	.53	.64
1971	.56	.26	.49
1981	.75	.51	.61

SOURCE.—Census of India, 1921–81.

NOTE.—A person was counted as being in the labor force if he or she fell under one of the following categories (by census year): 1981, main worker or marginal worker; 1971, 1961, worker; 1951, self-supporting person or earning dependent; 1941, principal occupation or principal and subsidiary occupation or subsidiary occupation or partly dependent on occupation (statistics available only for Mahbubnagar; values for Sholapur and Akola are imputed values; see note a below); 1931, total earners or earning dependents; 1921, actual workers.

[a] Imputed values. With Mahbubnagar taken as the reference, the imputed value for Sholapur was calculated as $0.40 + (0.48 - 0.40)(0.59 - 0.55)/(0.70 - 0.55)$ and that for Akola as $0.57 + (0.63 - 0.57)(0.59 - 0.55)/(0.70 - 0.55)$.

Replication

Table 4 reports the results from replication of Rao's dowry functions. Regressions 1 and 3 replicate Rao's regressions 1 and 2, respectively. Regressions 2 and 4 present the results when the labor force sex ratio variable is excluded.

My coefficients for the district sex ratio (regressions 1 and 3) are about one-half and one-third, respectively, of the size reported in Rao's table 3. Since the standard errors are about the same, my *t*-ratios are substantially lower and not significant at conventional levels. This is also true if I exclude the labor force sex ratio variable (regression 2). An additional difference from Rao's results is that the inclusion of a time trend (year of marriage) reduces the significance of the district sex ratio substantially (regressions 3 and 4). Again, exclusion of the labor force sex ratio variable has little impact on the results (regression 4).

Relaxing Restriction on Traits

This comment argues that dowries should not be regressed on the difference between bride and groom characteristics as done in Rao's paper, but on the individual traits separately. Dowry regressed on traits separately gives a substantially better model fit. The adjusted R^2 of the unrestricted model is roughly .30 (table 5); the corresponding figure for the restricted version is around .12 (table 4). Using an *F*-test, I can reject the hypothesis that the difference restrictions are valid at the .001 level.

TABLE 3
DESCRIPTIVE STATISTICS

VARIABLE (Unit)	MEAN		
	Sample 127 (1)	Sample 141 (2)	Rao Sample (3)
Net dowry transfer (1984 rupees)	5,819.83	4,722.45	4,792.19
	(33,153.87)	(32,942.50)	(32,835.99)
Groom's age at marriage	21.15	21.11	21.07
	(4.50)	(4.47)	(4.78)
Bride's age at marriage	14.66	14.40	14.40
	(4.96)	(4.91)	(4.89)
Groom's schooling	2.80	2.59	2.57
	(3.45)	(3.36)	(3.35)
Bride's schooling	.89	.80	.82
	(2.10)	(2.01)	(2.01)
Groom's height	162.28	162.25	162.24
	(6.17)	(6.23)	(6.21)
Bride's height	149.41	149.42	149.44
	(4.88)	(4.80)	(4.78)
Groom's father's landholdings when groom was 15 (hectares)	14.83	14.11	14.28
	(37.41)	(35.66)	(35.56)
Bride's father's landholdings when bride was 15 (hectares)	15.09	14.01	14.05
	(47.63)	(45.40)	(45.24)
Year of marriage	54.43	54.13	54.15
	(10.32)	(10.40)	(10.36)
Ratio of number of women aged 10–19 to men aged 20–29 in the district	1.14	1.14	1.22
	(.11)	(.11)	(.13)
Ratio of number of female workers to male workers	.57	.58	.61
	(.12)	(.12)	(.39)
Mahbubnagar district	.27	.33	.34
Sholapur district	.41	.37	.37
Akola district	.32	.30	.29
Highest caste rank	.42	.40	.39
Second caste rank	.18	.18	.18
Third caste rank	.23	.23	.23
Lowest caste rank	.17	.19	.20
Observations	127	141	141

NOTE.—Standard deviations are in parentheses. Col. 3 is taken from Rao (1993, table 2). Col. 2 reports descriptive statistics for the subsample of 141 observations for which the variables used in Rao's analysis were available. However, 10 percent of the observations in this subsample are duplicate observations. Therefore, col. 1 reports the values for the subsample purged of duplicates. Net dowry transfer is the value of assets, in 1984 rupees, transferred to the groom's family from the bride's family net of transfers in the opposite direction, including marriage expenditures. Landholdings is the sum of irrigated and nonirrigated land. In all marriages, brides and grooms belonged to the same caste (Deolalikar and Rao 1990). Cols. 1 and 2 report the sex ratio obtained from Rao (1993, table 2). The corresponding figures for the census data are a mean of .17 and a standard deviation of .13 for both the 141 and 127 samples.

Note that under this specification, the *t*-ratio of the marriage squeeze variable drops farther: from 1.5 to 1.1 if year of marriage is excluded and from 0.8 to 0.3 if it is included. Moreover, regressing dowry on individual traits instead of differences, I cannot reject the hypothesis that the squared terms are redundant.

TABLE 4
REPLICATION OF RAO (1993) ($N = 127$)

	REGRESSION			
	(1)	(2)	(3)	(4)
Intercept	−63,008.89	−67,014.76	−59,795.72	−68,974.14
	(1.3)	(1.9)	(1.6)	(2.0)
Husband's minus wife's age	3,307.94	3,348.60	3,559.07	3,634.19
	(1.3)	(1.3)	(1.4)	(1.4)
Wife's minus husband's height	−1,389.37	−1,410.16	−1,361.71	−1,410.06
	(1.0)	(1.0)	(.8)	(1.0)
Wife's minus husband's land	−310.21	−310.92	−314.70	−315.99
	(2.9)	(3.0)	(3.0)	(3.0)
Wife's minus husband's schooling	−1,375.19	−1,387.05	−1,453.95	−1,475.51
	(.8)	(.8)	(.8)	(.9)
(Age difference)^2	−104.68	−106.64	−114.54	−118.33
	(.8)	(.8)	(.9)	(.9)
(Height difference)^2	−98.24	−98.47	−95.89	−96.55
	(1.8)	(1.8)	(1.7)	(1.7)
(Land difference)^2	.88	.88	.88	.88
	(2.6)	(2.3)	(2.6)	(2.6)
(Schooling difference)^2	−81.77	−82.38	−82.98	−84.25
	(.5)	(.5)	(.5)	(.5)
Sholapur district	6,786.48	7,835.07	4,829.08	7,302.64
	(.6)	(1.0)	(.4)	(.1)
Akola district	18,390.55	18,786.82	15,644.29	16,706.64
	(2.0)	(2.2)	(1.6)	(1.8)
Highest caste rank	14,727.22	14,653.69	13,734.23	13,632.64
	(1.6)	(1.6)	(1.5)	(1.5)
Second caste rank	−1,121.32	−1,159.09	−1,846.40	−1,884.92
	(.1)	(.1)	(.2)	(.2)
Third caste rank	−598.05	−594.49	−1,235.86	−1,187.30
	(.1)	(.1)	(.1)	(.1)
District sex ratio	**34,341.94**	**34,745.23**	**22,000.31**	**23,688.49**
	(1.5)	**(1.6)**	**(.8)**	**(.9)**
District labor force sex ratio	−4,597.76	…	−10,687.30	…
	(.1)		(.8)	
Year of marriage	…	…	288.33	270.00
			(.8)	(.7)
Adjusted R^2	.126	.134	.123	.130
F-statistic (prob $> F$)	2.2	2.4	2.10	2.26
	(.016)	(.006)	(.013)	(.008)

NOTE.—t-ratios are based on robust standard errors in parentheses. Wife's land is wife's father's landholding when she was 15 years old, and likewise for husband's land. The results are taken from census data. The results using data from Rao (1993, table 2) were very similar; therefore, I report only the former.

III. Conclusions

I fail to replicate the key result in Rao (1993): that the ratio of women aged 10–19 to men aged 20–29 contributes significantly to increasing dowries. Moreover, Rao regressed dowries on differences in bride and groom traits. I show that data reject the implied parameter restrictions. These findings cast doubt on the marriage squeeze interpretation to dowry inflation in India proposed by Rao.

TABLE 5
DOWRY ON INDIVIDUAL TRAITS ($N = 127$)

	With Year of Marriage (1)	Without Year of Marriage (2)
Intercept	1,474,583.00	1,413,914.00
	(.6)	(.5)
Husband's age	2,554.44	2,694.56
	(.5)	(.6)
Wife's age	−5,766.94	−5,236.83
	(1.8)	(1.7)
Husband's height	−10,375.00	−10,937.97
	(.5)	(.7)
Wife's height	−7,960.17	−3,500.87
	(.3)	(.1)
Husband's landholding	903.05	864.40
	(3.8)	(3.6)
Wife's landholding	229.63	241.95
	(.8)	(.9)
Husband's schooling	1,183.23	750.41
	(.6)	(.4)
Wife's schooling	807.91	1,299.64
	(.2)	(.4)
(Husband's age)^2	−23.08	−18.06
	(.2)	(.1)
(Wife's age)^2	252.71	255.47
	(1.2)	(1.2)
(Husband's height)^2	−43.62	−38.88
	(.7)	(.6)
(Wife's height)^2	−55.79	−77.10
	(.6)	(.8)
(Husband's landholding)^2	−2.56	−2.46
	(1.4)	(1.4)
(Wife's landholding)^2	−.52	−.54
	(.7)	(.7)
(Husband's schooling)^2	−159.55	−131.92
	(.8)	(.7)
(Wife's schooling)^2	193.60	136.94
	(.3)	(.2)
Husband's × wife's age	−128.51	−143.88
	(.5)	(.5)
Husband's × wife's height	155.47	168.72
	(1.2)	(1.3)
Husband's × wife's landholding	−.66	−.71
	(.3)	(.30)
Husband's × wife's schooling	−45.78	−11.59
	(.1)	(.0)
Sholapur district	9,242.53	10,284.80
	(1.3)	(1.4)
Akola district	1,352.67	5,992.31
	(.1)	(.7)
Highest caste rank	201.12	1,119.50
	(.0)	(.1)
Second caste rank	−5,123.13	−4,536.85
	(.5)	(.5)
Third caste rank	−5,248.30	−4,498.5
	(.6)	(.5)
District sex ratio	7,062.73	25,720.32
	(.30)	(1.1)

TABLE 5
(*Continued*)

	With Year of Marriage (1)	Without Year of Marriage (2)
Year of marriage	552.65	…
	(1.50)	
Adjusted R^2	.300	.291
F-statistic[a] (prob > *F*)	1.33	1.25
	(.2154)	(.259)
F-statistic[b] (prob > *F*)	3.23	3.07
	(.0006)	(.0010)

NOTE.—The results when the labor force sex ratio is included are similar and therefore are not reported. Units are the same as in table 3.

[a] Refers to the hypothesis that squared terms are jointly zero.

[b] Refers to the joint hypotheses implied by differing traits.

Why Rising Dowries?

Dowry was calculated as the net difference between bride and groom families' transfers to the couple at the time of marriage. This method is likely to overstate the relative contribution of the bride's family to the new couple, and increasingly so among wealthy families. The practice in India is that daughters do not inherit; they are given dowries. As a consequence, parents transfer wealth earlier to daughters than to sons. The larger the bequest component of a dowry is, the larger the difference between the bride and groom families' transfers at the time of marriage. Hence, if parental bequests increased over the studied period, dowry thus computed would also increase without necessarily indicating a "rising price of husbands." Using the same data set, Edlund (1997) presents suggestive evidence supporting such an interpretation.

References

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