

Econometrics Term Paper

Impact of Attitude towards Dowry on Highest Female Education Attained in Indian Household

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Abstract

This report attempts to study the impact of attitude of households towards dowry on the highest education female attained in them. The study is based on India Human Development Survey (IHDS) 2011, which is a nationally representative, multi-topic survey encompassing 42,152 sample households in 1420 villages and 1042 urban neighbourhoods across India. The study concludes that, after controlling for relevant factors, attitude of households towards dowry has positive impact on the highest female education attained. The study also find results are robust.

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1. INTRODUCTION

The aim of this paper is to study the impact of attitude that households have towards dowry on the highest education female receives in that household. For this study, IHDS-2 dataset has been chosen (as discussed in Section 2). In Section 3, main model has been specified with list of explained and explanatory variables. Section 4 presents summary statistics of the variables chosen for the study. In Section 5 results of the regression has been discussed. In Section 6 we have checked for Robustness, Heterogeneity and Mechanism. Then in Section 7 the study's Limitations and Scope has been illustrated. Section 8 comprises the Conclusion of the study.

2. DATA

For the study, India Human Development Survey (IHDS) 2011 has been used. IHDS is a collaborative project from the National Council of Applied Economic Research (NCAER), Delhi; University of Maryland; Indiana University and University of Michigan. This survey is based on interviews done across 42,152 households in 1,420 villages and 1,042 urban neighbourhoods in India. Two panels of IHDS have been conducted and released till now, IHDS-1 (2005-06) and IHDS-2 (2011-12). Third panel, IHDS-3, is slated for release in 2023

Since subject in question for this study are the households, we have taken second data set of IHDS-2011, i.e., Household dataset (DS002). This dataset contains information on socio-economics indicators of individual households ranging from its composition, source income, gender variables, commodities owned, consumption pattern, marriage preferences etc.

Of all the households sampled under IHDS-2, i.e. 42,152, only those households are considered which has females between the age group 15-20. This is done to filter out those females who are daughters-in-law. After this filtering process and removing households with missing information study and analysis is done on 9298 observations.

3. MODEL

3.1 Explained Variable: HHEDUCF

This is the main Y variable of this study. HHEDUCF represents Highest Female Education attained in the household. Its value ranges from 0 for those who didn't complete even a single year of schooling to 16 for those whose highest education is Above Bachelors. Values taken by this explained variable measures number of academic years successfully completed by the highest educated female.

3.2 Explanatory Variables

3.2.1 Index of Attitude towards Dowry: pca1

This is the main X variable of the study. It is an index derived after performing Principal Component Analysis (PCA) on 22 dowry related variables in the IHDS-2 household dataset. These variables are - Wedding gift in your community: gold (MP6A), Wedding gift in your community: silver (MP6B), Wedding gift in your community: land (MP6C), Wedding gift in your community: car (MP6D), Wedding gift in your community: scooter or motorcycle (MP6E), Wedding gift in your community: TV (MP6F), Wedding gift in your community: Fridge (MP6G), Wedding gift in your community: Mobile phone (MP6H), Wedding gift in your community: Furniture (MP6I), Wedding gift in your community: Pressure cooker (MP6J), Wedding gift in your community: Utensils (MP6K), Wedding gift in your community: Mixer/Grinder (MP6L), Wedding gift in your community: Bedding/Mattress (MP6M), Wedding gift in your community: Watch (MP6N), Wedding gift in your community: Bicycle (MP6O), Wedding gift in your community: Sewing machine (MP6P), Wedding gift in your community: Livestock (cows, buffalo, etc.) (MP6Q), Wedding gift in your community: Washing machine (MP6R), Wedding gift in

your community: LPG (MP6S), Wedding gift in your community: Flat/House (MP6T), Wedding gift in your community: Cash (MP6U) and Wedding gift in your community: Computer/Laptop (MP6V).

In each of the dowry variables, it has 3 values in the dataset, namely 1 (Rarely/Never), 2 (Sometimes) and 3 (Usually). This means more the tendency of dowry giving in the household, more will be the values of dowry variables.

3.2.2 Income of the Household: INCOME

This is one of the control variables chosen in the regression. It is evident that household with lower income will be spending less on education than those households with higher income. Also, income has impact on all of the 22 dowry variables. Income of the household is a continuous variable where values are denominated in terms of rupees.

3.2.3 Religion: ID11

Religion is another control variable chosen for the regression. Each religion has their own set of beliefs and culture. It is imperative to partial out effect of religion on the explained variable. Religion also affects attitude towards dowry too. ID11 is the variable where value 1 mean Hindu household, value 2 mean Muslim, value 3 mean Christian, value 4 mean Sikh, value 5 mean Buddhist, value 6 mean Jain, value 7 mean Tribal and value 8 mean Others. Upon using this variable as a Dummy Hindu is taken as base category.

3.2.4 Caste Category: ID13

Similar to religion, caste is also a major factor in Indian society upon which traditional occupation used to depend. In present times, although diminished, it continues to be a

major societal framework whose effect is manifested in socio-economic indicators. It affects our explained variable, so its effect must be partial out. ID13 variable has value 1 for Brahmin, value 2 for Forward/General (except Brahmin), value 3 for Other Backward Caste (OBC), value 4 for Scheduled Castes (SC), value 5 for Scheduled Tribes (ST) and value 6 for Others. Upon using this variable as Dummy Brahmin is taken as base category.

3.2.5 Urban Residence from 2011: URBAN2011

Area of residence of the household also impacts highest female education attainment. If household lives in rural area then it will have lesser access to educational facilities, hence it will negatively affect prospect of education. URBAN2011 variable, which is used as a Dummy, takes the value 0 if household belong to rural area and 1 if household belong to urban area. Rural is the base category.

3.2.6 Household Head's Education: ID18C

Education level attained by household head has direct implication on the education attained by females of the household. Its effect is partialled-out by taking ID18C as one of the explanatory variables.

3.2.7 Highest Male Education: HHEDUCM

If a household helps males attain more education, then it explains household's attitude towards providing education in general. Inclusion of HHEDUCM with partial out effect of this attitude of household.

3.2.8 District Level Fixed Effects

To factor in differences in mentality and attitude of household across districts district level fixed effects are taken. It helps to consider inter-district variations. The rationale behind choosing district level fixed effect is people residing in a particular district will be having similar attitude towards dowry. This is due constant interaction among them and them sharing same public and social spaces.

4. SUMMARY STATISTICS

	(1)	(2)	(3)	(4)	(5)
VARIABLES	N	Mean	S.D.	Min	Max
HHEDUCF	9,298	4.765	5.036	0	16
pca1	9,298	-.0006	2.532	-6.034	5.602
INCOME	9,298	136885.5	233833.1	-204532	1.14e ⁺⁰⁷
Dummy: ID11	9,298	1.331	.838	1	9
Dummy: ID13	9,298	3.126	1.032	1	6
Dummy: URBAN2011	9,298	0.334	0.471	0	1
ID18C	9,298	2.189	3.603	0	16
HHEDUCM	9,298	7.669	4.859	0	16

5. RESULTS

OLS Results

VARIABLES	(5) HQ19 11.6 Highest female adult education	(4) HQ19 11.6 Highest female adult education	(3) HQ19 11.6 Highest female adult education	(2) HQ19 11.6 Highest female adult education	(1) HQ19 11.6 Highest female adult education
Scores for component 1	0.6199*** (0.0280)	0.5592*** (0.0299)	0.5628*** (0.0297)	0.4612*** (0.0290)	0.2244*** (0.0257)
HQ Total income		0.0000*** (0.0000)	0.0000*** (0.0000)	0.0000*** (0.0000)	0.0000*** (0.0000)
HQ3 1.11 Religion = 2, Muslim 2			-1.0779*** (0.1507)	-1.4713*** (0.1559)	-0.8101*** (0.1391)
HQ3 1.11 Religion = 3, Christian 3			0.6477 (0.4208)	0.9510** (0.4281)	0.7953** (0.3908)
HQ3 1.11 Religion = 4, Sikh 4			0.1766 (0.4762)	-0.1570 (0.4596)	0.4070 (0.4321)
HQ3 1.11 Religion = 5, Buddhist 5			-0.2189 (0.6087)	0.8951 (0.6135)	0.7133 (0.5793)
HQ3 1.11 Religion = 6, Jain 6			3.3035*** (1.1338)	2.1814* (1.1153)	0.5176 (0.8798)
HQ3 1.11 Religion = 7, Tribal 7			-1.5282** (0.6813)	-0.4643 (0.6864)	-0.5892 (0.5886)
HQ3 1.11 Religion = 8, Others 8			0.2857 (2.2390)	1.0983 (2.2660)	2.4843 (1.7270)
HQ3 1.11 Religion = 9, None 9			-0.7236 (2.4317)	-0.4051 (2.4010)	-1.2766 (2.4997)
HQ3 1.13 Caste category = 2, Forward/General (except Brahmin) 2				-1.3422*** (0.2688)	-0.3476 (0.2309)
HQ3 1.13 Caste category = 3, Other Backward Castes (OBC) 3				-2.7776*** (0.2567)	-1.1594*** (0.2248)
HQ3 1.13 Caste category = 4, Scheduled Castes (SC) 4				-3.4754*** (0.2667)	-1.5943*** (0.2343)

HQ3 1.13 Caste category = 5, Scheduled Tribes (ST) 5				-4.3643*** (0.3035)	-2.0569*** (0.2715)
HQ3 1.13 Caste category = 6, Others 6				-1.5362*** (0.5410)	-0.1876 (0.4974)
Urban residence from census 2011 = 1, urban 1					1.4426*** (0.1472)
HQ3 1.18c Education head's father/husband					0.2132*** (0.0144)
HQ19 11.6 Highest male adult education					0.3154*** (0.0105)
Observations	9,221	9,221	9,221	9,202	9,202
R-squared	0.247	0.272	0.278	0.311	0.430
District FE	NO	YES	YES	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Main Results of the model

Coefficient of our main X, i.e. $pca1$, is statistically significant at 5 percent level of significance. Its coefficient is approximately equal to 0.224, which can be interpreted as if the index of attitude towards dowry increases by a single unit, then level of highest female education attained in the household increases by 0.224 academic class years. Hence, there is a positive correlation between our Y and main X. It is to be noted that all the control variables chosen in the regression are statistically significant at 5 percent significance level. We can infer that after taking into account all the control variables a positive relation between index of attitude towards dowry and highest female education signifies that culture of dowry doesn't inhibit girl's education. This can be understood in such a way that households having strong culture of dowry will have its other socio-economic decisions get affected by it, not the amount of education that a female receives in long run.

Causality

Variables X and Y are correlated, but they don't have causal relationship. The research on this issue is a contested one. There are three strands to it, either attitude towards dowry has no relation to highest female education attainment, or attitude towards dowry has negative relation to highest female education

attainment, or attitude towards dowry has positive relation to female education attainment. Ours is the third case, although other researches have also being done on former two cases. The main reason for our model not being casual is presence of omitted variables. One of the omitted variable can relative wealth level of household among its cast/religion group. If relative wealth level of household is on the higher side then it will affect both our main X and Y. Other omitted variable which will affect both X and Y is the relative availability of bride's in the district. This will also have a bearing our study.

6. HETEROGENEITY, ROBUSTNESS AND MECHANISM

6.1 Heterogeneity

Some variables will be factored in which might have differential impact on the highest female education attained if they are accounted for with interaction with index of attitude towards dowry (i.e. our main X).

6.1.1 Bank Savings (DB9E)

Impact due to presence of bank savings for the household is checked via its interaction with index of attitude towards dowry. Upon regression respective coefficient came out as insignificant at 5 percent significance level. It can be concluded that there is no differential impact of existence of bank savings on highest female education attained.

	Coeff	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
DB9E#c.pca1 Yes 1	.0494121	.0364358	1.36	0.175	-.0220106	.1208347

6.1.2 Gold/Jewellery (DB9I)

Impact due to presence of gold/jewellery with the household in checked via its interaction with index of attitude towards dowry. Upon regression respective coefficient came out as insignificant at 5 percent significant level. It can be concluded that there is no differential impact of existence of gold/jewellery with the household on highest female education attained.

	Coeff	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
DB9I#c.pca1 Yes 1	.0315447	.0542843	0.58	0.561	-.0748652	.1379547

6.2 Mechanism

It might be that our main X, i.e. index of attitude towards dowry is driven by some external variable Z. We have check for its existence.

6.2.1 Total Guests at Wedding (total_guests)

In India, dowry giving is a measure of prestige among households. More the dowry, more will be the prestige and respect garnered by the household. So, it is to be checked whether size of gathering at wedding instil/drive attitude of households in favour of dowry. After creating a new variable total_guests by adding number of guests from bride's side (MP5A) and number of guests from groom's side (MP5B) and putting this variable as another explanatory variable following result is obtained.

	Coeff	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
total_guests	.0000876	.0000653	1.34	0.180	-.0000405	.0002157

As it is clear, coefficient obtained is insignificant. Hence our main X, pca1, is not driven by total_guests.

6.2.2 Mean Expenditure at Wedding from Bride's side (avg_wed_exp)

In our society, wedding is a big business sector. Apart from dowry, there are other areas where household make significant expenditures related to wedding. So, it is to be checked whether these expenditures from bride's side are driving index of attitude towards dowry or not. Hence, a new variable avg_wed_exp is defined by taking mean of lower bound of bride's wedding expenses (MP4A) and higher bound of bride's wedding expenses(MP4B) and using it as another explanatory variable. Upon regression, following results are obtained

	Coeff	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
pca1	.1930454	.0268591	7.19	0.000	.1403952	.2456956
avg_wed_exp	9.90e-07	3.10e-07	3.20	0.001	3.84e-07	1.60e-06

It is clear that the specified model has omitted variable bias as coefficient pertaining to avg_wed_exp variable is significant. However, since coefficient pertaining to pca1 is still significant thus it has direct effect on the Y variable. Variable avg_wed_exp is not driving pca1.

6.3 Robustness

In order to check for robustness of the model, Bound Analysis Method i.e Oster Bounds has been used. This connects bias explicitly to coefficient stability.

Table 4 :Bound Analysis of Coefficient of Index of Attitude towards dowry

	Uncontrolled	Controlled	Identified (Estimated Bias)	
			$R_{max}^2 = 0.4299$	
			θ for $\delta = 1$	δ for $\theta = 0$
θ	0.22332	0.19305	0.2776	1.4214
R^2	0.013	0.432		

From the results above we can see that the sign of coefficient of uncontrolled regression is same as sign of coefficient of controlled regression. Also, for delta equal to 1 we see sign of coefficient is still positive and value is roughly the same. Value of delta is also greater than 1 when beta is zero. This shows the system chosen is robust.

7. LIMITATIONS AND SCOPE

7.1 LIMITATIONS

- The set of 22 dowry related variables has undergone PCA and its first component was chosen. Analysis would have been more precise if more components with appropriate weights would also have been chosen, albeit it would have made algebra much more complicated.
- Final analysis was done the set of 9298 household observations. Given the size and density of India, more samples would have made analysis accurate.
- There is omitted variable bias in the model as some explanatory variables with significant coefficients have been left out, e.g. average bride's household wedding expenses.
- There is case of reverse causality in the system, where highest education attained by female affects the mentality of household towards wedding gift giving/dowry.

- There might be some measurement error while calculating income variable in the dataset.

7.2 SCOPE

- The analysis done is based on the 3 type of responses (Rarely, Sometimes, Usually) to the dowry variables. If there would have more than 3 kind of responses then more subtle arguments could have been made.
- If the IHDS plan to add data on number of daughter-in-law in the household then it will result in more accurate and better results.
- Instrument Variables (IV) might be used to explain the same regression in more efficient manner.

8. CONCLUSION

The regression was done with Highest Female Education attained in Household as Y and Index of Attitude towards Dowry as the main X. After controlling for various other explanatory variables we got a significant coefficient for main X with 0.4299 value as R^2 . We checked Heterogeneity for couple of factors and got insignificant coefficients for them. We also did Mechanism for couple of variables where we checked whether our main X is driven by some other variable or not. It turned out it has direct correlation with Y, not through other variables. Upon checking for Robustness, our system came out as robust.