

Extended Abstract:

Risk factors associated with child marriage among Roma girls in Serbia

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Background: Most empirical research on the issue of child marriage focuses on females in low- and lower middle-income countries with a relatively high percentage of females who first marry younger than 18 years of age. Relatively little research has been conducted in richer countries where the prevalence of child marriage is low among the overall population, but high among ethnic sub-groups. A case in point is Serbia. In 2010, about half (50.4 percent) of Roma women 20 to 24 years of age reported first marrying at 17 years of age or younger, compared to 5.0 percent of all women in Serbia in the same age group.

Objectives: The purpose of this study is to compare the risk factors associated with the prevalence of child marriage among Roma and non-Roma females in Serbia. Evidence of the factors associated with child marriage is needed in order to improving the targeting of child marriage prevention strategies in Serbia.

Methods: Based on an extensive review of the analytical literature on child marriage, a conceptual framework was developed to investigate the determinants of child marriage. The framework posits that country-, community-, household-, and individual-level factors play crucial roles in determining whether households decide to marry their daughters prior to the legal age of marriage. The framework also hypothesizes that household decisions regarding whether to marry daughters as children, the formal education of daughters, and labor force participation of daughters are made simultaneously and not sequentially. The framework incorporates factors emphasized by researchers from a number of disciplines, including economics, sociology, and anthropology.

The primary source of data for the study is the 2010 Serbia Multiple Indicator Cluster Survey (MICS), which included a nationally representative sample of women of reproductive age throughout the country and a separate representative of women living in Roma settlements.

Both bivariate and multivariate analyses were carried out using data from both samples. The bivariate analyses are used to investigate the associations between two indicators of child marriage (first marrying before 18 years of age and first marrying before 15 years of age) among women 20 to 24 years of age and the following household- and individual level characteristics: urban/rural residence, region, religion, household wealth, and educational attainment.

Multivariate analysis was conducted to explore how individual-, household-, and community-level factors affect the risk of child marriage and educational enrollment. Using the 2010 MICS data set, the two outcomes are measured as follows:

- Marital status: currently married or in union (dichotomous variable)
- Education: attended school in the current year (dichotomous variable)

Observed factors hypothesized to influence these outcomes include individual-level and household-level characteristics, as well as social norms. Because our data do not include measures of social norms, we use as proxies the following community-level measures:

- Percent of sampled adults in community who do not justify wife beating: For all five reasons: if wife goes out without telling husband; if wife neglects the children; if wife argues with husband; if wife refuses to have sex with husband; if wife burns the food.
- Percent of sampled adults in community with secondary or higher levels of education
- Percent of sampled females in community who were married before age 18

Because these decisions are hypothesized to be made jointly and not sequentially, a bivariate probit model was estimated in which the outcome variables are marital status and school enrollment. Two separate models were estimated: one for 15 to 17 year old girls from the nationally representative sample, and another for 15 to 17 year old girls from the separate sample of households in Roma settlements.

Descriptive statistics for the variables included in the Bivariate Probit models are presented in Annex Table 1.

There are two advantages of using a simultaneous modeling approach, as compared to sequential modeling approach that estimates the probability of child marriage as a function of educational attainment (or vice versa). First, if there is interdependence among these joint outcomes of family decisions, modeling one outcome as a function of another may lead to biased parameter estimates of the association between education and the prevalence of child marriage. Second, the cross-sectional nature of the MICS survey does not permit the investigation of the sequential process of household decision-making regarding child marriage.

Results: Roma girls in Serbia are at very high risk of being married as children. In 2010, 50.4 percent of women 20 to 24 years of age report being first married at 17 years or younger (Table 1) and 13.2 percent were first married at age 14 years or younger. In contrast, 25.9 percent of Roma males 20 to 24 years of age were married at age 17 or before, and 3.4 percent were married at age 14 or younger. Among the overall Serbian population, females are at much lower risk of being married as children. The practice is most common among females living in poorer households, those who have less education and those living in rural locations. Differences in prevalence of child marriage exist between the national and Roma populations, and with respect to religion and region of residence.

For the model based on the nationally representative sample (Table 2), the results of the analysis suggest that, after controlling for other factors, there is an increased risk of being currently married among girls living in communities with relatively high percentages of women who were first married as children ($p=0.019$). The other two community-level variables – which measure the percentage of women in the community with secondary or higher levels of education and with positive attitudes towards wife-beating – were not found to be statistically significant. With respect to the household- and individual-level factors, girls in living in households in the richest wealth quintile were significantly less likely to be currently married than girls living in the poorest wealth quintile, and girls who are 15 and 16 years of age were significantly less likely to be currently married vs. girls who are 17 years of age, after controlling for other factors.

For the model based on the Roma settlements sample, none of the three community-level variables were not found to be statistically significant. With respect to the household- and individual-level factors, the only significant predictor of whether sample girls are currently married is age – girls who are 15 years of age were significantly less likely to be currently married vs. girls who are 17 years of age, after controlling for other factors.

For both models, statistical tests were conducted to assess whether education and marriage decisions are made jointly. Based on the nationally representative sample, the regression results suggest that households make decisions about girls' current school attendance and child marriage jointly, suggesting that decisions are not sequential. As expected, household decisions about girls' school attendance in Serbia are negatively correlated with decisions about child marriage – that is, girls who enter into marriage or unions as children are less likely to have attended school in the current year. However, for the model based on Roma girls, the statistical tests do not indicate that households make decisions about girls' current school attendance and child marriage jointly, suggesting that decisions are sequential. The reason for the different findings between models based on the nationally representative and Roma samples is not clear.

Discussion: The bivariate analysis suggests that the lower education and early marriage are associated for both the nationally representative and Roma settlements samples, as girls who enter into marriage or unions as children were less likely to have attended school in the current year. Moreover, a multivariate analysis of factors associated with child marriage and school enrollment among 15 to 17 year old girls in Serbia provides evidence that households make decisions about girls' current school attendance and child marriage jointly – suggesting that the decisions are not sequential. However, for the model based on Roma girls, the statistical tests do not indicate that households make decisions about girls' current school attendance and child marriage jointly, suggesting that decisions are sequential. In addition, the analysis of the determinants of marriage among 15 to 17 year olds yielded suggests that there is a decreased risk of being currently married among girls living in communities with relatively high percentages of females who are currently married, among girls who are 15 and years age (vs. 17 year olds), and among girls living in poorer households, while in the model based on the Roma settlements sample, the only significant predictor was age. The reason for the different findings between models based on the nationally representative and Roma samples is unclear.

Table 1: Percentage of women 20 to 24 years of age in the Roma settlements sample and nationally representative sample who report first marrying at 17 years of age or younger.

	Roma 2010			Serbia 2010		
	%	95% CI		%	95% CI	
Total	50.45	[44.00,	56.89]	5.03	[3.49,	7.20]
Residence						
Urban	44.50	[36.78,	52.49]	4.46	[2.56,	7.65]
Rural	63.83	[53.95,	72.66]	5.92	[3.71,	9.31]
Regions						
Belgrade	46.60	[32.65,	61.10]	0.44	[0.14,	1.35]
Vojvodina	50.84	[38.21,	63.36]	7.29	[3.94,	13.08]
Sumadija and Western Serbia	43.43	[23.17,	66.14]	5.36	[2.65,	10.53]
Southern and Eastern Serbia	54.27	[45.98,	62.33]	8.02	[4.32,	14.39]
Religion						
Orthodox Christians	47.29	[38.63,	56.12]	3.21	[2.19,	4.69]
Others	54.51	[45.67,	63.07]	22.46	[12.07,	37.95]
Household wealth						
Poorest	68.01	[56.88,	77.41]	13.19	[7.77,	21.52]
Poorer	56.44	[44.29,	67.85]	8.05	[4.03,	15.44]
Middle class	55.47	[37.94,	71.74]	4.68	[2.17,	9.78]
Richer	33.59	[22.12,	47.39]	1.58	[0.41,	5.86]
Richest	35.15	[22.98,	49.61]	0.66	[0.18,	2.34]
Women's education						
None	59.55	[46.19,	71.64]	--	--	--
Primary	51.01	[42.36,	59.60]	23.99	[14.13,	37.71]
Secondary	30.5*	[17.41,	47.75]	5.72	[3.60,	8.96]
Higher	--	--	--	0.49	[0.12,	1.93]

Base sample: All women 20-24 years old.

%: Weighted percentage

-- Indicates cell sizes <25

** Indicates cell sizes between 25-49*

NA: Information not available

Table 2: Bivariate Probit results of the determinants of current marital status and enrollment status, all girls 15-17 years (Serbia nationally representative sample).

	Coef.	Robust Std. Err.	z	p-value	[95% Confidence Interval]	
Currently married						
Area of residence-Rural	0.145	0.415	0.35	0.727	-0.673	0.964
Religion-Others	0.453	0.455	0.99	0.321	-0.446	1.351
Wealth class-Poor	-1.104	0.543	-2.03	0.044	-2.176	-0.031
Wealth class- Middle class	-1.108	0.596	-1.86	0.065	-2.284	0.069
Wealth class- Rich	0.017	0.552	0.03	0.975	-1.071	1.106
Wealth class- Richest	-9.880	0.802	-12.32	0.000	-11.463	-8.297
Age-15 years	-2.647	0.724	-3.65	0.000	-4.077	-1.217
Age-16 years	-2.162	0.576	-3.75	0.000	-3.298	-1.025
Community % for secondary or higher levels of education	-0.026	0.015	-1.79	0.076	-0.055	0.003
Community % of child marriage	0.051	0.022	2.36	0.019	0.008	0.093
Community % of females with positive attitudes towards wife-beating	-0.036	0.021	-1.71	0.090	-0.079	0.006
_cons	3.442	2.303	1.49	0.137	-1.102	7.987
Attended school in current year						
Area of residence-Rural	0.342	0.315	1.08	0.280	-0.280	0.964
Religion-Others	0.199	0.442	0.45	0.652	-0.673	1.072
Wealth class-Poor	0.675	0.486	1.39	0.167	-0.285	1.635
Wealth class- Middle class	1.329	0.476	2.80	0.006	0.391	2.268
Wealth class- Rich	0.741	0.548	1.35	0.179	-0.342	1.823
Wealth class- Richest	9.316	0.750	12.42	0.000	7.836	10.795
Age-15 years	1.164	0.333	3.49	0.001	0.506	1.821
Age-16 years	0.219	0.462	0.47	0.636	-0.692	1.130
Community % for secondary or higher levels of education	0.020	0.009	2.23	0.027	0.002	0.038
Community % of child marriage	-0.026	0.020	-1.29	0.199	-0.065	0.014
Community % of females with positive attitudes towards wife-beating	0.023	0.019	1.18	0.241	-0.015	0.061
_cons	-3.007	2.198	-1.37	0.173	-7.345	1.332
athrho	-13.571	0.872	-15.56	0.000	-15.292	-11.849
rho	-1.000	0.000			-1.000	-1.000

Reference categories: Marital status (ref- currently unmarried), area of residence (ref- urban), religion (ref- Orthodox Christians),

Table 3: Bivariate Probit results of the determinants of current marital status and enrollment status, all girls 15-17 years (Roma settlements sample only).

	Coef.	Robust Std. Err.	z	p-value	[95% Confidence Interval]	
Currently married						
Area of residence-Rural	0.577	0.303	1.90	0.060	-0.026	1.180
Religion-Others	0.229	0.266	0.86	0.393	-0.301	0.758
Wealth class-Poor	-0.208	0.409	-0.51	0.612	-1.021	0.605
Wealth class- Middle class	0.267	0.359	0.74	0.459	-0.447	0.980
Wealth class- Rich	-0.521	0.437	-1.19	0.237	-1.392	0.349
Wealth class- Richest	-0.689	0.433	-1.59	0.115	-1.550	0.172
Age-15 years	-1.523	0.304	-5.01	0.000	-2.128	-0.917
Age-16 years	-0.244	0.299	-0.82	0.417	-0.839	0.351
Community % for secondary or higher levels of education	-0.008	0.012	-0.62	0.540	-0.032	0.017
Community % of child marriage	0.010	0.011	0.92	0.362	-0.012	0.032
Community % of females with positive attitudes towards wife-beating	0.003	0.009	0.35	0.727	-0.016	0.022
_cons	-0.971	1.090	-0.89	0.375	-3.139	1.197
Attended school in current year						
Area of residence-Rural	-0.359	0.290	-1.24	0.220	-0.936	0.218
Religion-Others	-1.065	0.308	-3.46	0.001	-1.677	-0.452
Wealth class-Poor	-0.157	0.496	-0.32	0.753	-1.143	0.830
Wealth class- Middle class	0.619	0.480	1.29	0.201	-0.337	1.575
Wealth class- Rich	0.861	0.486	1.77	0.080	-0.106	1.827
Wealth class- Richest	1.355	0.522	2.60	0.011	0.317	2.394
Age-15 years	0.892	0.307	2.91	0.005	0.281	1.503
Age-16 years	0.257	0.316	0.81	0.419	-0.373	0.886
Community % for secondary or higher levels of education	-0.004	0.014	-0.31	0.756	-0.032	0.023
Community % of child marriage	-0.009	0.015	-0.60	0.553	-0.038	0.020
Community % of females with positive attitudes towards wife-beating	-0.015	0.009	-1.65	0.102	-0.034	0.003
_cons	0.917	1.289	0.71	0.479	-1.647	3.481
athrho	-19.549	14.359	-1.36	0.177	-48.120	9.021
rho	-1.000	0.000			-1.000	1.000

Reference categories: Marital status (ref- currently unmarried), area of residence (ref- urban), religion (ref-Orthodox Christians), wealth (ref- poorest quintile), and age (ref- 17 years).

Annex Table 1: Descriptive statistics for variables included in Bivariate Probit models.

	Roma 2010	Serbia 2010
	%	%
Residence		
Urban	64.89	53.64
Rural	35.11	46.36
Religion		
Orthodox Christians	56.58	87.53
Others	43.42	12.47
Household wealth		
Poorest	19.06	14.84
Poorer	20.19	18.68
Middle class	19.31	27.84
Richer	22.07	20.19
Richest	19.37	18.44
Mean Community prevalence		
Secondary or higher levels of education	12.56	82.87
Child marriage	62.77	9.66
Attitudes towards wife-beating	75.41	96.43

%: Weighted percentage

-- Indicates cell sizes <25

** Indicates cell sizes between 25-49*

NA: Information not available