Household Shocks And Transition Into Marriage: Evidence From Rural Ethiopia

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ABSTRACT

Using panel data modeling this study examines the effect of non-agricultural and agricultural household shocks on a child's transition into marriage. The general expectation is that a shock to the economic status of a household could lead to children transitioning to marriage earlier than usual. The data was collected from 15 villages during the Ethiopia Rural Household Survey (ERHS). The sample for this study comprises a cohort of children (aged between 5 and 20 years) followed over a 10-year period starting in 1999. The findings of this study may be important in influencing public policy on early child marriage, social safety nets and education in Ethiopia.

1 INTRODUCTION

Household shocks such as death of a parent(s), prolonged illness of a parent(s) or loss of assets from an agriculture disaster can among other things cause a financial and psychological imbalance in a home. The household shocks can lead to: (i) a child prematurely leaving school, (ii) failure to be enrolled in school, (iii) to disturbance of the child's way of life by relocating (Yamano and Jayne, 2004) to a poorer household, (iv) facing psychological trauma (Deb and Cosic, 2008) or (v) even suffering poor health (Kadiyala et al., 2009). In other cases, a family may due to either economic or social pressures opt to arrange for their child an early marriage as a means of survival. The latter is particularly plausible in the case of a girl child. In situations, where maternal mortality has a greater impact on a child's welfare it may be the case that a male child may opt to start a family earlier as a way of seeking extra labour for the family (Jensen and Nielsen, 1997), or could lead to a delay as they seek to re-establish themselves economically (Fafchamps and Quisumbing, 2005).

Other things remaining the same the situations presented above could lead to an increase in the proportion of early marriages in a community. However, the plausibility of this argument is premised on the assumption that early marriage is an exception rather than the norm in the villages in the sample. There is also debate on whether the marriages are forced (Alemu, 2008) or voluntary (Oleke et al., 2006). Incidences of early marriage have been a source of concern in developing countries including Ethiopia. For example, Bongaarts (2007) reported that, "at national level 62% of Ethiopian women aged 20-49 get married before the age of 18 (p.1)". While economic factors may partially explain this trend, societal pressures have had a role to play as well (Alemu, 2008).

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In this era of high HIV prevalence in some developing countries increased premature prime-age mortality or prolonged morbidity could worsen the situation. This study has been influenced by an earlier one (Beegle and Krutikova, 2008). Unlike the latter study, we attempt to measure the influence of other household shocks such as parental morbidity and agriculture shocks in addition to parental mortality. Marital status in 2009 is used as the dependent variable. Either year-of-first marriage or age-at-first marriage would have been a better variable to use but the structure of the data forbids such an analysis. Most of the previous studies have mainly focused on parental mortality and its impact on school outcomes, child health and child labour. The studies on early marriage have generally focused on its impact and causes. There is so far not many studies on parental mortality and a child's transition into marriage.

The purpose of this study is to establish a statistical correlation between household shocks and a child's transition into marriage using data from 15 villages in Ethiopia. Early marriage has implications on health and education of the concerned children and possibly their offspring.

Then, this may negatively affect a country's human capital development. More so, in the case of a poor country like Ethiopia. This paper will push the theses that:

1. Household shocks impact children in different ways according to gender and age.
2. Agriculture shocks may impact a child's transition into marriage less significantly.
3. Village fixed-effects and not household shocks may have more influence on child early marriage decisions.

One of the limitations of this study is the absence in the data of information on timing of first-marriage. The latter would have been helpful in refining the link between the occurrence of a significant household shock and a family's decision on a child's marriage. This is one of the benefits of using DHS data.

The paper is organised as follows: In Section 2, the paper describes the model and methodology used to arrive at the results that are presented and analysed in Section 3. Lastly but not the least, the conclusion is presented in Section 4.

2.METHODOLOGY

2.1 The Theory

The longitudinal nature of the data available for this study means that Ordinary Least Squares (OLS) regression may not be an appropriate econometric model to use. This is because the study focused on measuring the probability of marriage rather than the percentage by which a regressor increases the regressand. A suitable methodology for this study would have been use of survival analysis with a time-to-event dependent variable (Kleinbaum and Klein, 2012).

Survival analysis also has the benefit of properly accounting for sample attrition owing to censoring. However, this has not been possible owing to incomplete information on time of event for the cohort of interest. The function that determines the value of the dependent variable is based on a limited likelihood.

The logit methodology is based on a cumulative density function of the form:

$$\psi(X'\beta) = e^{X'\beta} / 1 + e^{X'\beta}$$

2.2 The Model

The basic logit model presented in this study is univariate of the nature:

$$M_{ijt} = S_{ijt}\theta + \upsilon_{it}$$

However, it is important to control for the possibility of other variables having influence on the outcome. This thus calls for a multivariate analysis of the nature:

$$M_{ijt} = S_{ijt}\theta + X_{ijt}\beta + \upsilon_{it}$$

where M = Marriage outcome, S = Matrix of shock events (either death, illness or agricultural) and X = Matrix of other covariates and subscripts i = Child, j = Household and t = Time.

The 15 villages in the study are situated in different regions of the country therefore, raising the possibility that the model may suffer from Omitted Variable Bias (OVB). The latter may be caused by regional factors such as cultural norms (Stock and Watson, 2003). In addition, the panel is being tracked over two cycles. Therefore, it will be appropriate to use fixed effects regression. The basic model (1) specified above is modified to include a matrix comprising dummy variables that shall capture village-specific effects.

$$M_{ijt} = S_{ijt}\beta + X_{ijt}\theta + Z_i\psi + \upsilon_{it}$$

where, Z = Matrix of village-specific effects / Regional-specific effects.

The model measured the probability of a child entering into marriage after having experienced either a household shock or combination of shocks as defined in this study. The dependent variable measures the probability of a child being married within the 10 years given the existence of a shock or combination thereof.

3. RESULTS

3.1 The Basic Model

To recap, the basic model measures the impact of the three household shocks on the probability of marriage. Table 2 shows that households that reported a severe impact of an agricultural shock were more likely to have married children compared to those that were not severely impacted by such shock. In addition, death of a parent is found to increase the probability of marriage. Both agricultural and death shocks are statistically significant at 5% level of significant. Prolonged parent illness reduced the probability of marriage other things held constant but was statistically insignificant.

The results are in line with expectations in as far as the resultant exogenous shock that the events may bring to the household economic position. However, in the case of an agricultural shock it could be argued that the wide spread nature of such an event would imply that families may not be very keen to take on extra headcount as the basic needs would tend to be in short supply. But critical in furthering this argument would be availability of data on the timing of marriage in the proximity of the calamity.

3.2 Inclusion of the Time-Invariant Variables

In this model, time-invariant variables representing gender and location are analysed. In the first of the two models considered in this section of the study location is represented by Peasant Association (PA) dummies Table 3. The latter represent the smallest unit of community grouping and are the same as villages. Each household in the study is located in a PA.

The results of the panel data logit reveal that all the household shock variables and the gender variable have positive signs although the illness and gender variables are statistically insignificant. It will be noted that agric remains very significant at 5% level of significance.

The results also show that orphans compared to non-orphans had a higher likelihood of being married by 2009 other things held constant. In the absence of data on time-to-marriage caution is advisable in the interpretation of the impact of orphan-hood on the probability of marriage.

According to the results, the location variable shows a mixture of positive and negative influences. Suffice to say, children from four of the villages in the study had a high and significant probability (at 5% of level of significance) of being married by 2009. The finding indicates the possible influence of cultural, religious and generally village level factors that may have been captured in the error term in the basic model. From a policy perspective, this finding could help in implementation of targeted initiatives aimed at discouraging possible trends of early child marriages in the concerned villages.

In the second model under consideration, the study used a regional dummy in the place of the one for village. Reasons for this type of modeling are explained in the methodology section above. As Table 4 shows, that compared to the respective base categories the agric and death variables have a positive and significant influence on the probability of marriage other things held constant. Being located in regions 3 (Amhara) and 4 (Oromya) compared to region 1 (Tigray) increases the probability of marriage all else remaining constant. This result is in line with the presentation in (Muthengi and Erulkar, 2009), which reports a high incidence of early child marriages in Amhara region of Ethiopia. It is also imperative to mention here that close scrutiny of the data shows that the 4 villages with significant statistics alluded to above are all located in Oromya region of Ethiopia. This finding all else held constant also has implications for targeted programs aimed at reducing possible cases of early child marriage.

Notwithstanding, it should be noted that the result may be influenced by the fact that 40% of the children in the sample were from the Oromya region.

3.3 Impact of Time-Variant Regressors

Table 5 shows that for the subjects, who were in the age group 15-20 years old at the end of the survey increase in a child's age reduces the probability of marriage. The statistic is significant at 10%.

The results also show that although increasing the highest school grade achieved has a negative impact on the probability of a child entering marriage at a tender age the influence seems to be stronger for those over the age of 21. This could be attributed to the ability for such child to be old enough to insist on remaining in school if pressured into marriage by parents.

Notwithstanding the argument, it can be seen too that female children have a higher and significant likelihood of being married. This result supports earlier expectations.

In this model too, the region variables have positive and significant signs implying that regional factors may have more impact on marriage decisions that the household shocks do. In addition, the bigger the household size the more likely the probability of a child being married and more so when they are in the older age group.

4. CONCLUSION

Using panel data modeling and analysis, the study finds that death of a parent and prolonged illness generally do not have statistically significant impacts on the probability of a child being married. Interestingly, it can be seen from the results that agricultural shocks on the other hand have a positive and highly significant impact on the probability of marriage. This finding raises the need for concerted efforts in educational and social safety net programs during times of calamity. The result does not, however, imply that the agricultural shock cause early marriage but that based on the data children from households that were severely impacted by agricultural shocks were more likely to be married.

A significant finding of this study is the result that regional factors seem to have more influence on marriage decisions in the households covered in this study. The results presented in this study are not at all conclusive and would benefit from more refined data and modeling probably of the nature of survival analysis.

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APPENDICES

Table 1: Summary Statistics

Variable	Mean	Std.Dev.	N
region	4.295	1.971	1832
pa	10.947	6.653	1832
year	2004	5.001	1832
age	16.21	5.348	1832
grade	2.974	12.621	1797
female	0.406	0.491	1832
married	0.053	0.224	1832
death	0.075	0.264	1832
agric	0.45	0.498	1832
ill	0.166	0.372	1832
age_sq	291.359	183.567	1832
hhs	0.457	0.498	1832
ln_nfe	6.717	1.215	1832
N		1832	

Table 2: Basic Model

Variable	(1) Age 15-20	(2) Age 21-30	(3) Age 15-30
married			
i.agric	0.421	0.362	2.960**
	(0.40)	(0.81)	(5.78)
i.death	-0.891	0.472	1.163**
	(-0.86)	(1.44)	(2.13)
i.ill	-0.511	-0.091	-0.059
	(-0.88)	(-0.31)	(-0.13)
cons	-3.716**	-1.731**	-8.488**
	(-3.32)	(-3.95)	(-12.05)
lnsig2u			
cons	-2.890	-6.051	2.611**
	(-0.16)	(-0.27)	(14.21)
N	593	323	1832

t-statistics in parentheses * $p < 0.1$, ** $p < 0.05$

Table 3: Time-Invariant Model

Variable	(1) Age 15-20	(2) Age 21-30	(3) Age 15-30
married			
i.agric	0.465	0.993	3.016**
	(0.42)	(0.80)	(5.18)
i.death	-0.916	0.284	0.835
	(-0.84)	(0.41)	(1.45)
i.ill	-0.358	-0.703	0.008
	(-0.59)	(-0.78)	(0.02)
i.female	-0.118	0.279	0.289
	(-0.22)	(0.43)	(0.63)
2.pa	-20.459	-1.435	-1.524
	(-0.00)	(-0.64)	(-0.80)
3.pa	-20.386	0.738	1.718
	(-0.00)	(0.42)	(1.10)
5.pa	1.911*	-1.395	1.009
	(1.67)	(-0.64)	(0.88)
6.pa	0.774	2.027	2.699**
	(0.53)	(0.93)	(2.29)
8.pa	1.359	4.382	3.339**
	(1.14)	(1.05)	(2.95)
9.pa	0.375	2.706	2.967**
	(0.26)	(1.00)	(2.60)
10.pa	0.553	-0.022	1.169
	(0.38)	(-0.02)	(0.96)
12.pa	-20.249	-39.191	-36.642
	(-0.00)	(-0.00)	(-0.00)
13.pa	-20.243	-0.428	-0.834
	(-0.00)	(-0.30)	(-0.62)
14.pa	0.268	1.534	1.413
	(0.18)	(0.74)	(1.14)
15.pa	0.213	2.820	1.207
	(0.15)	(0.97)	(1.01)
16.pa	-20.402	0.631	-0.730
	(-0.00)	(0.29)	(-0.38)
22.pa	-20.395	-0.061	-0.645
	(-0.00)	(-0.04)	(-0.51)
23.pa	1.553	1.819	2.503**
	(1.22)	(0.86)	(2.05)
cons	-4.298**	-4.501	-9.274**
	(-2.28)	(-1.06)	(-6.06)
lnsig2u	-1.502	1.771	2.326**
cons	(-0.14)	(0.65)	(6.63)
N	593	323	1832

t statistics in parentheses * $p < 0.1$, ** $p < 0.05$

Table 4: Time-Invariant Model

Variable	(1) Age 15-20	(2) Age 21-30	(3) Age 15-30
married			
i.agric	0.796	0.428	2.887**
	(0.71)	(0.93)	(5.47)
i.death	-0.812	0.330	1.062*
	(-0.72)	(0.98)	(1.96)
i.ill	-0.529	-0.165	-0.174
	(-0.83)	(-0.55)	(-0.40)
i.female	-0.099	-0.007	-0.044
	(-0.18)	(-0.02)	(-0.10)
3.region	2.106*	0.784	2.250**
	(1.73)	(1.24)	(2.33)
4.region	1.065	1.363**	2.376**
	(0.94)	(2.37)	(2.63)
7.region	-0.063	0.588	0.591
	(-0.05)	(0.94)	(0.64)
cons	-5.628**	-2.672**	-9.480**
	(-2.51)	(-3.75)	(-6.98)
lnsig2u	0.366	-9.234	2.355**
cons	(0.15)	(-0.03)	(8.46)
N	593	323	1832

t-statistics in parentheses * $p < 0.1$, ** $p < 0.05$

Table 5: Time Variant Model

Variable	(1) Age 15-20	(2) Age 21-30	(3) Age 15-30
married			
age	-13.770*	1.997*	4.778**
	(-1.71)	(1.70)	(2.36)
age_sq	0.407*	-0.037	-0.086**
	(1.76)	(-1.61)	(-2.22)
grade	-0.020	-0.056**	-0.046
	(-0.84)	(-2.50)	(-1.46)
female	3.171	2.145**	7.018**
	(1.11)	(2.00)	(2.16)
1.agric	1.264	0.890*	2.760*
	(0.70)	(1.83)	(1.89)
1.death	-4.272	0.233	0.556
	(-1.05)	(0.53)	(0.45)
1.ill	0.804	-0.003	0.644
	(0.52)	(-0.01)	(0.60)
1.hhs	0.846	0.726**	1.982**
	(0.79)	(2.00)	(2.10)
1.poor	-1.328	0.191	0.111
	(-1.08)	(0.53)	(0.13)
3.region	3.646	2.000**	6.188**
	(1.47)	(2.28)	(2.16)
4.region	2.540	2.930**	8.187**
	(0.95)	(3.20)	(2.51)
7.region	1.525	2.072**	5.260*
	(0.52)	(2.06)	(1.82)
fdea	3.978	-0.222	-2.259
	(1.03)	(-0.30)	(-1.07)
fill	-3.848	-1.215	-5.966**
	(-1.33)	(-1.35)	(-2.12)
freg	-0.561	-0.468*	-0.985
	(-0.88)	(-1.85)	(-1.64)
cons	104.425	-31.138**	-77.637**
	(1.52)	(-2.07)	(-2.70)
lnsig2u	2.325**	-11.465	3.614**
cons	(3.27)	(-0.04)	(6.54)
N	483	276	1485

t statistics in parentheses * $p < 0.1$, ** $p < 0.05$