Bride Price as Consumption Smoothing Method

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Abstract

Bride price is viewed as a source of income, which can lead to early marriage and even child marriage. The consumption smoothing theory predicts that economic shocks will have a negative impact on the marriage age of daughters. I examines how bride price affects the age at which daughters in societies where it is prevalent marry, with a focus on the impact of economic shocks. To investigate this relationship, I utilized the Indonesian Family Life Survey, a panel dataset never before used to study the causal link between economic shocks and daughters' marriages. Using shock information provided in the data as the main source of variation, the study finds evidence that certain types of shocks decrease the marriage age of daughters.

1 Introduction

Bride price is a cultural practice in which the groom or his family gives a substantial consideration, usually in the form of goods, livestock, or money, to the family of the bride as a condition for the marriage to take place. This practice is prevalent in many African, Asian, and Oceanian societies. The standard cost to groom can be 3200 to 9600 USD in Thailand, that is 30%-95% of average annual income of a household. In urban areas in China, the bride price is usually in the range of 15,000 to 20,000 USD. While in some rural areas, the price is even higher. The reasons for the practice of bride price vary across cultures, but it is often seen as a way of compensating the bride's family for the loss of her labor and as a way of establishing the groom's rights over his wife. In some societies, it may also be used to cement alliances between families or to demonstrate the groom's ability to provide for his bride. It must be note that the practice of bride price is a harmful tradition due to the following reasons. First, it treats women as commodities, which leads to less education investment for girls and results in perpetuating poverty and gender inequality. Second, it can turn the marriage into a transactional relationship. This can lead to a lack of mutual respect which may lead to unhappy marriages or even domestic violence. Last, it can contribute to early and forced marriage because it encourages families to marry off their daughters at a young age in order to receive the payment.

My study is driven by the research question: Will households use bride price as a tool to smooth consumption during periods of economic distress? Specifically,I seeks to understand whether households in bride price societies use their daughters' marriages as a strategy to manage financial challenges. In times of economic hardship, families may expedite the marriage of their daughters to receive the bride price, thus providing a significant financial infusion. This would suggest that bride price is not merely a cultural practice but also an economic mechanism, allowing households to cope with income fluctuations by accessing a large, one-time payment. As such, this research will explore whether economic pressure leads to earlier marriages for daughters, and whether their age at marriage is influenced by the

need to manage consumption.

This study potentially reveal how deeply cultural practices, such as bride price, are intertwined with economic behavior in societies with limited access to formal financial systems. This has broader implications for the study of household decision-making, gender dynamics, and economic vulnerability. Additionally, this research can inform policy debates on the consequences of bride price, particularly concerning its effects on early marriage, gender inequality, and the welfare of women and girls.

2 Literature Review

My research is closely related to three sets of literature: the role of bride price on female's well-being; economic theories of consumption smoothing; and utilizing random economic shocks as sources of exogenous variation.

2.1 Economic Theories of Consumption Smoothing

The consumption smoothing theory is built up on the Permanent Income Hypothesis (PIH), introduced by Friedman (1957)[6] suggests that individuals make consumption decisions based on their long-term or "permanent" income expectations rather than their current or short-term income.

The literature on consumption smoothing has explored various mechanisms by which households respond to economic shocks, with different findings across country contexts and policy interventions. Ghosh and Ostry (1995)[8] examine the role of capital mobility in consumption smoothing in developing countries. They find that, in a majority of the 45 countries studied, the current account acts as a buffer to smooth consumption in the face of shocks.

Bazzi et al. (2015)[1] analyze the effects of fiscal interventions on household consumption using data from an unconditional cash transfer program in Indonesia. Their study

highlights the importance of timing in shaping household responses to transfers. Delays in receiving transfers significantly reduce household expenditures, whereas timely transfers have no significant impact on spending. This indicates that liquidity constraints and asymmetric responses to shocks play a key role in consumption smoothing.

Gerry and Li (2010)[7], using data from the Russian Longitudinal Monitoring Survey (RLMS), investigate the channels through which individuals manage consumption fluctuations in response to economic shocks. They find that married individuals in small, urban households with educated heads are better positioned to smooth consumption, often relying on informal coping mechanisms such as support from relatives and home production. Their findings suggest that while formal social safety nets are insufficient, informal networks and home production are critical for the most vulnerable populations in Russia.

In developing economies where households face credit constraints and limited access to formal financial markets, consumption smoothing often relies on informal mechanisms. Studies like Deaton (1992)[5] highlight how households use strategies such as asset sales or marriage practices to stabilize consumption during times of economic distress. Similarly, Chetty and Looney (2005) find that Indonesian households adjust educational expenditures to smooth consumption, underscoring the diverse ways in which families navigate financial shocks.

2.2 Marriage Decisions and Financial Shocks

Corno and Hildebrandt (2020)[3] examine how droughts impact marriage rates in Sub-Saharan Africa and India, finding opposing effects: marriage rates increase in Sub-Saharan Africa but decrease in India. The authors propose that these differences can be explained by the role of marriage payments as a form of consumption smoothing in the face of reduced crop yields due to drought. Their study highlights that aggregate shocks, such as rainfall, have significant effects on marriage behaviors in developing countries, particularly in regions reliant on rain-fed agriculture. However, their estimation strategy assumes limited

migration, which may affect the robustness of the results.

Similarly, Corno and Voena (2016)[4] use survey data from Tanzania to study the influence of social norms on individual outcomes. They exploit exogenous weather shocks to analyze the causal effects of income shocks, using these shocks as a proxy for the need for bride price transfers. This approach helps to mitigate omitted variable bias when studying marriage decisions. Hoogeveen et al. (2011) take a different approach by using idiosyncratic shocks instead of correlated shocks like rainfall, which may impact the entire marriage market and introduce equilibrium effects.

Hankins and Hoekstra (2008)[9] use Florida lottery data to assess how income shocks affect marriage and divorce. They find that large lottery wins can significantly delay marriage for females, highlighting how unexpected positive income shocks alter marriage timing. Finally, Jungho and Prskawetz (2009)[10], using the same dataset as my study, show that income shocks reported in surveys are likely exogenous, with no significant changes in consumption behavior prior to the occurrence of such shocks. This further supports the use of shocks as a valid exogenous source of variation in studying marriage decisions.

Several studies have explored the effects of financial shocks and the bride price custom on various social and economic outcomes. For instance, Miguel et al. (2004)[12] points out negative financial shocks increase conflict rates. Ashraf et al. (2020)[13] examined the role of bride price in ethnic groups and discovered that daughters receive more years of education when the bride price custom is practiced, as their education increases the bride price paid to their parents. Similarly, Bishai et al. (2009)[2] found that bride price is statistically significantly associated with lower rates of non-spousal sexual contact in women. Mbaye & Wagner (2016)[11] found in Senegal, in polygamous households and for arranged marriages, a lower bride price increases fertility pressure. Bride price payments have less power over economically independent women.

My research makes two important contributions to the existing literature. First, I introduce a novel shock measurement to analyze consumption smoothing, using idiosyncratic

shocks like the death or sickness of household members. This method avoids the potential ambiguity that may arise when shocks are common to an entire geographic area, ensuring more precise results. Second, my study deepens the understanding of the bride price practice and its implications for women in developing countries. Since bride price is closely linked to gender equality issues, this research provides a foundation for future studies on the practice and its impact on women. Overall, this paper offers new insights into both consumption smoothing and bride price, with significant implications for scholars, policymakers, and practitioners.

3 Empirical Strategy

3.1 Econometric Model

To examine the whether household use marriage of daughter to smooth consumption, I use the economic hardships to identify households that need the bride price money to smooth consumption. The equation I will be estimating is

$$Y_{ijt} = \alpha + \beta X_{jt} + \lambda C + \epsilon \tag{1}$$

Where Y_{ijt} is a binary variable equal to 1 if woman i from household j married in year t. X_{jt} is the main variable of interest, it equals 1 if the household j experienced economic hardship in year y (or y-1). C is a vector of control variables includes age and education of woman i, and the household characteristics - head's gender, head's education, number of children of age 0-14, as shown in Table 1. I am expecting α_1 to be positive. It indicates that woman from a household that experienced economic shocks in year t is more likely to get married in year t.

A similar but slightly different equation I can estimate given the availability of data is

$$Y_{ij} = \alpha + \beta X_j + \lambda C + \epsilon \tag{2}$$

Y_{ij} is the age of first marriage of woman i from household j. X_j is a binary variable, equal to 1 if household j has gone through economic hardship 1 year prior to the woman's marriage. In this case, I expect α_1 to be negative, meaning daughters from households that experienced shock is likely to marry at a younger age.

In order for my identification strategy to produce unbiased estimates, a key assumption is that the economic hardship experienced by households is a genuine shock. This means that the hardship should be random and occur independently of the households' prior conditions, such as their wealth, number of household members, or other household characteristics. If these shocks are correlated with unobserved factors that also influence marriage decisions, it would introduce endogeneity into the model, leading to biased estimates.

For the identification strategy to be robust, it is essential that the economic hardship occurs to specific households rather than affecting the overall community uniformly. If the shock is widespread and impacts both the bride's and groom's families equally, the equilibrium outcome becomes ambiguous, as both families could adjust their behaviors in response to the same economic conditions.

To ensure that the shocks meet these criteria, I carefully define and measure economic hardship, considering factors such as income loss, unexpected medical expenses, or natural disasters that specifically impact the household. Additionally, I will examine the timing and nature of these shocks to confirm that they are indeed idiosyncratic to the households in question.

I also demonstrate that the sample of households affected by the shock is not significantly different from those that do not experience a shock. In cases where the two groups of observations differ, I include those variables as controls in my analysis. This approach will

help confirm that the identified shocks genuinely serve as exogenous events that can be interpreted as causal influences on the timing of marriages.

Establishing the economic hardship as a true shock is vital for ensuring the integrity of my estimates, allowing me to draw meaningful conclusions about how households may utilize their daughters' marriages as a mechanism for consumption smoothing during times of economic distress.

4 Data

4.1 Data Description

The primary dataset used in this study is the Indonesian Family Life Survey (IFLS), a longitudinal survey that provides rich information on households, individuals, and communities across Indonesia, representing approximately 83% of the population. Conducted in 1993, 1997, 2000, 2007, and 2014, the IFLS tracks individual-level information, such as marriage age, education, and salary, along with household-level data, including household assets and member composition. This dataset is particularly well-suited for this research because Indonesia is one of the countries where bride price is widely practiced. Additionally, the pre-2007 waves of the IFLS contain questions on household economic shocks, which provide the variation needed to analyze how households use bride price as a financial transfer to manage consumption during times of economic distress. The longitudinal design of the IFLS allows for the examination of changes in household financial conditions, marriage decisions, and consumption patterns over time, making it an ideal source for this study.

Ideally, this study compares the age at first marriage among women in regions where bride price is practiced, ensuring that they share similar characteristics, while some of their households experience economic shocks. I utilize the 2000 wave of the Indonesian Family Life Survey (IFLS) because it provides detailed information on the type of shock and the year in which the shock occurred. The 1993 and 1997 survey data are employed to match

households that qualify for the study, while the 2007 and 2014 waves are used to capture marriage information.

To construct the ideal sample, I first identify households with marriage-age daughters (those aged at least 14 years by the year 2000) from the 1993 and 1997 data. Out of the 10,269 households surveyed, approximately 2,700 meet this criterion. Among these, around 600 households experienced an economic shock between 1995 and 2000. I then create a variable labeled "true shock," coded as 1 if the daughter's marriage occurred after the economic shock, ensuring that the shock's timing is correctly aligned with the marriage event. This is crucial to avoid misattributing the effects of the shock, which could otherwise lead to ambiguous results.

Control variables include factors potentially correlated with the economic shock. Demographic controls for daughters include age, years of education, and religion. Household characteristics consist of the number of children and seniors in the household, the household head's gender, education, and religion. Additionally, pre-shock household wealth is accounted for to control for baseline economic status.

The sample comprises 5,145 daughters from families surveyed in the year 2000, all of whom had at least one marriage-age daughter. Daughters who married after the age of 30 were excluded from the analysis due to their potential disadvantage in the marriage market. Among these daughters, 2204 were married, as indicated by the 2007 and 2014 surveys; however, marriage year information is available for only 1210 of them. Consequently, daughters without this information are excluded from the statistics in the marriage data section.

Table 2 presents the summary statistics for the daughters and their households. The data confirm that the majority of household heads are male and that Islam is the predominant religion in Indonesia. The average household income over the past year is approximately \$340, with some households reporting incomes as high as \$260,000. On average, daughters in the sample have 8 years of education, which is equivalent to completing middle school in

the United States. The average reported salary for these daughters in the past 12 months is about $150. Given their young age, it is reasonable to assume that most of them are not working full-time or may not have any income at all.

Notably, the youngest recorded age at marriage is just 5 years old. Furthermore, 45 marriages occurred before the age of 16, which is the legal minimum age for marriage without parental permission. I chose not to exclude these observations from my sample, as child marriage practices remain prevalent in some communities, often facilitated by the payment of fines or other cultural mechanisms. This inclusion underscores the reality that early marriages continue to occur in developing countries, highlighting the challenges faced by young women in these contexts and the urgent need for policies that address both the economic and social factors contributing to such practices.

4.2 Marriage Statistics

In this section, I present the statistics related to marriage.

Table 3 is a summary statistics table that is similar to table 2. Daughters are categorized into groups by the number of years after the shock they got married. Unsurprisingly, daughters married after shocks have younger ages than daughters who did not have a shock.

Table 4 is the count of marriages by year. On average, there are 70 daughters get married each year from 1995 to 2000. The sample consists of about 5000 daughters, so the marriage rate is roughly 1.4%. The fourth row says there are 4 daughters get married in 1997 because they had shocks in 1996. Among 25 people who had shocks in 1996, 4 of them got married the next year, which calculates a marriage rate of 16% among daughters who had shocks. Similarly, the marriage rate among daughters who got shock is 8.8%, 14.3%, 8.8%, and 6.58% in subsequent years.

The significantly higher marriage rates among daughters from shock-affected households compared to the overall average suggest that economic shocks influence marriage decisions. These findings provide initial evidence that household shocks may accelerate marriage for

daughters, likely as a strategy to smooth consumption.

4.3 Financial Shocks

In this section, I compare household characteristics between those that reported experiencing economic shocks in the past five years and those that did not. The key assumption for my identification strategy is that shocks should be random, conditional on household characteristics.

Table 5 presents summary statistics categorized by shock type. Notably, the difference in average marriage age between daughters from households that experienced shocks and those that did not is not statistically significant. This is primarily due to the higher average marriage age in households affected by unemployment shocks. This may suggest that the consumption smoothing mechanism differs when households face unemployment shocks compared to other types of shocks. Unemployment shocks, for example, appear to impose the highest financial burden, with costs more than double those associated with death shocks.

The analysis also reveals that the distribution of certain household characteristics differs significantly between households that experienced shocks and those that did not. To account for these differences and mitigate potential bias, I include these variables as controls in my regression analysis.

Lastly, Table 6 presents a side-by-side regression analysis where the binary shock variable is regressed on household control variables. The results indicate that the occurrence of shocks is not heavily influenced by household characteristics. First, the coefficients for most variables are statistically insignificant, suggesting limited correlation between household conditions and the likelihood of experiencing a shock. Second, while some coefficients, such as household head's education, are statistically significant, the economic impact is negligible—each additional year of education increases the probability of experiencing a shock by less than 0.35%, a change that is economically insignificant.

Interestingly, the household head's religion appears to influence the likelihood of death

shocks. Heads of households who identify as Muslim are less likely to experience a death shock. This may be due to Islam being the dominant religion in Indonesia, where religious practices might discourage risky behaviors that could lead to fatal outcomes. Furthermore, the gender of the household head shows strong predictive power for death shocks. A possible explanation is that female household heads may have less access to or knowledge of first aid, making them less likely to take appropriate action in emergencies, which could result in higher fatality rates. These two variables have significant coefficients indicates that controlling for those household characters is crucial to produce unbiased estimates.

5 Analysis

In this study, I make several key assumptions in order to identify the causal impact of economic shocks on daughters' marriage outcomes. First, I assume that the self-reported data on whether a shock occurred is free from recall bias, and that the reported cost of the shock contains only random measurement error. This implies that while the costs might not be perfectly measured, any errors in reporting are not systematically related to household characteristics or marriage decisions, allowing for unbiased estimates. Second, I assume that households facing financial hardship due to shocks do not have access to other short-term coping mechanisms, such as borrowing, selling assets, which could otherwise alleviate the need for arranging early marriages to smooth consumption. Lastly, I assume that marriage market dynamics, including the supply and demand of potential spouses and broader societal factors affecting marriage decisions, remain constant over the study period. These assumptions are necessary for isolating the relationship between economic shocks and marriage decisions in the context of this analysis.

The dataset used in this study offers sufficient variation in shocks, which is the key independent variable. Based on the summary tables, these shocks appear to influence marriage decisions, the primary outcome variable. From the regression results, the shock variable ap-

pears to be conditionally random, given most household characteristics. However, it remains important to control for household traits such as the gender and religion of the household head to ensure unbiased estimates.

The main results, presented in Table 7, show the effects of different types of shocks on the marriage age of daughters. The significant coefficient in column 3 indicates that, on average, a marriage-age daughter will marry 9-10 months earlier if a family member experiences a serious illness. This effect of sickness shocks is both statistically and economically significant. In contrast, the effects of other types of shocks show signs that contradict the hypothesis that shocks decrease the marriage age of daughters, but these estimates are not statistically significant. Thus, there is insufficient evidence to conclude that other shock types influence marriage timing.

As expected, control variables behave in line with theoretical expectations: daughters with more education tend to marry at an older age, and having more elderly members in the household delays marriage. This may be because daughters are often counted on as caregivers for the elderly. On the other hand, having more children in the household tends to push daughters into earlier marriages, likely due to household resource allocation towards younger children. Marrying off a daughter may also help the household financially, through marriage alliances or bride price. A side-by-side regression analysis, assessing the impact of household characteristics on different types of shocks, is included in the appendices.

Following equation (2), I also use the marriage decision as an alternative dependent variable. Table 8 shows the effect of shocks on marriage decisions. Surprisingly, all types of shock decrease the probability of being married by the year of 2000 by 11% to 22%. Tables 9 show the effect of costs due to different shocks on marriage age. Cost due to death shock (per 1 000 000 Indonesian rupiah or 118.7 USD in the year 2000) decreases daughters' marriage age by approximately 5 months, and such effect is statistically significant. In contrast to Table 7, using binary shock indicator, the death shock has no significant effect on marriage age. This result implicates the variation in the intensity of shocks. While accounting for how

severe the shock was, households that experience a costly shock may feel a greater financial burden, pushing them to marry off their daughter earlier to alleviate economic pressure. Thus, the cost of the shock has a stronger influence than the mere occurrence of a shock.

Table 10 examines the effect of shock costs on whether a daughter is observed as married by the year 2000. Similar to Table 8, the cost of shocks negatively impacts the likelihood of a daughter being married by 2000. While shocks decrease marriage age, they also reduce the probability of being married, a seemingly contradictory yet logical result. Shocks may delay marriages on average, making daughters less likely to be married by 2000. However, for those who do marry post-shock, they tend to marry at a younger age. Households needing bride price to smooth consumption are more likely to marry daughters earlier after shocks, while those less dependent on bride price may delay marriage, perhaps because they need the daughter's financial contribution.

6 Conclusion

In this study, I used the Indonesian Family Life Survey panel data to examine the causal relationship between economic shocks and the marriage outcomes of daughters. The results show that, on average, economic shocks reduce the likelihood of daughters getting married. However, among those who do marry, certain shocks significantly lower the marriage age. These findings provide evidence supporting the consumption smoothing theory, as households appear to use marriage-age daughters to secure bride price payments in response to financial hardships. Additionally, I analyzed how the cost of shocks influences marriage age. Contrary to my expectations, the results on the relationship between shock costs and marriage age require further investigation. This suggests a need for more nuanced research into how the severity and nature of financial shocks impact both marriage timing and marriage decisions.

A key limitation of this study is the relatively small sample size, particularly the limited number of households that can be classified as part of the treatment group—those that

experienced significant economic shocks. This constraint may reduce the statistical power of the analysis, making it more difficult to detect subtle effects of shocks on marriage decisions. With fewer households experiencing shocks, there is a risk that the observed effects may not be fully representative of broader trends,

Future research should expand on the findings of this study by exploring several important areas. First, examine long-term effects of early marriage on women's well-being, education, and labor force participation, allowing for a more comprehensive view of the socio-economic consequences of economic shocks. Another direction for future research is to explore the relationship between marriage age and access to financial institutions or government assistance policies. By examining whether improved access to credit or social safety nets reduces the need for households to marry off daughters early during economic hardship, researchers can assess the effectiveness of these financial policies. This approach could provide valuable insights into how financial inclusion and targeted government support impact young women's life choices, particularly their marriage age, and contribute to broader efforts to empower women and reduce economic vulnerability.

Figures and Tables

married	= 1 if married before 2000
marage	the daughter's age when she get married
salary	the daughter's salary last year
educ	the daughter's years of education
nsenior	number of seniors (>65) in the household
nchild	number of children (<12) in the household
nmember	number of household members
cost of shock	reported cost of the shock. 10^6 Indonesian rupiah or 118.7 USD

Table 1: Explanations of variables

	count	mean	sd	min	max
Panel A: daughters					
age	5008	18.28	6.37	0	34
married	5154	.43	.49	0	1
marage	1210	21.72	3.62	5	29
salary	1085	2282876	4136925	0	7.20e+07
educ	5154	8.00	4.15	0	18
Panel B: household heads					
female	5154	.11	.32	0	1
islam	5154	.85	.36	0	1
head's educ	5154	6.08	4.15	0	23
head's income	4272	5134844	1.27e+07	0	4.00e+08
Panel C: household characters					
nsenior	5154	.24	.49	0	3
nchild	5154	1.42	1.33	0	9
nmember	5154	7.46	2.54	2	22
HH labor income	5154	1290932	3.14e+07	0	1.01e+09
HH farm asset	5154	2767967	1.64e+07	0	6.06e+08

Table 2: Summary Statistics of the Sample

	No shock mean	1 year mean	2 years mean	3 years mean	4 years mean	5 years mean
Panel A: daughters						
marage	21.72	20.88	21.10	20.50	20.50	20.11
salary	2138358.08	2835333.33	370000	1760000.00	1593333.33	38000.00
educ	7.91	9.88	12.10	9.08	7.25	7.89
islam	0.89	0.88	1.00	0.83	0.94	1.00
Panel B: household heads						
female	0.11	0.19	0.10	0.17	0.25	0.33
islam	0.88	0.77	0.90	0.75	0.88	1.00
head's educ	6.14	4.77	6.30	6.92	5.06	5.78
head's income	5234521.23	4020294.12	4452857	3637500.00	2251857.14	5126666.67
Panel C: household characters						
nsenior	0.22	0.31	0.00	0.33	0.69	0.44
nchild	1.41	1.19	0.80	1.08	1.50	0.44
nmember	7.36	8.00	6.60	7.75	7.50	5.67
HH labor income	1508282.69	515326.92	302000	401000.00	80312.50	0.00
HH farm asset	2903881.32	3387038.46	718700	1273416.67	2157812.50	960755.56
Observations	4094	26	10	12	16	9

945 out of 4094 no shock daughters are married.

Salary and head's income is not observed for all individuals.

Daughters with missing marriage year is not included in this table.

Table 3: Married Various Number of Years After the Shock

count/year	1995	1996	1997	1998	1999	2000	2001	2002	2003
number of marriages in this year	48	53	82	86	83	85	65	52	76
number of HH had shocks in this year	3	25	34	56	68	76			
married this year, had shock before	0	1	6	10	12	16	15	8	20
... had shock 1 year before	0	0	4	3	8	6	5		
... had shock 2 years before	0	0	0	1	0	3	5	1	
... had shock 3 years before	0	0	0	1	1	1	0	3	6

Table 4: Number of Marriage Happened Each Year

	No shock mean	Any shock mean	Diff	Death mean	Sick mean	Unemployment
Panel A: daughters						
marage	21.72	21.65	0.08	21.59	21.33	22.88
salary	2138358.08	2750866.21		1775218	2988054.96	3117403.85
educ	7.91	8.37	-0.45**	8.09	8.39	8.76
islam	0.89	0.82	0.06***	0.79	0.85	0.83
Panel B: household heads						
female	0.11	0.15	-0.04***	0.20	0.10	0.14
islam	0.88	0.74	0.14***	0.59	0.80	0.79
educ	6.14	5.83	0.31*	4.24	6.21	6.74
income	5234521.23	4668271.28		4496998	4458713.79	5554472.39
Panel C: household characters						
nsenior	0.22	0.28	-0.06***	0.35	0.28	0.26
nchild	1.41	1.48	-0.07	1.43	1.51	1.72
nmember	7.36	7.83	-0.47***	7.61	7.90	8.12
HH labor income	1508282.69	451467.26	557603.9*	292814.1	555669.76	342243.48
HH farm asset	2903881.32	2243032.06	288977.7	2693072	2697386.49	1613008.71
Total cost of death shock				2015788		
Total cost of sickness shock					3810236.15	
Total cost of unemployment shock						5938265.22
Observations	4186	1087		401	605	236

Diff column is the difference between No shock and Any shock

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 5: Summary Statistics by Shock Types

Shock type	Any shock	death	sick	unemploy
female head	0.0788***	0.104***	-0.0228	0.00685
	(0.0208)	(0.0125)	(0.0166)	(0.0105)
Islam	-0.0821***	-0.0498***	-0.0183	-0.0114
	(0.0178)	(0.0107)	(0.0141)	(0.00896)
head's educ	0.00340**	-0.00151*	0.00318***	0.00231***
	(0.00147)	(0.000882)	(0.00117)	(0.000741)
head's inc	-7.33e-10	-1.83e-10	-6.16e-10*	1.12e-11
	(4.62e-10)	(2.78e-10)	(3.68e-10)	(2.33e-10)
farm asset	-2.64e-10	9.90e-11	-1.14e-11	-2.12e-10
	(3.28e-10)	(1.97e-10)	(2.61e-10)	(1.65e-10)
nsenior	0.0195	0.0229***	0.0101	0.000828
	(0.0127)	(0.00762)	(0.0101)	(0.00640)
nchild	0.00520	0.000282	0.00310	0.00535**
	(0.00441)	(0.00265)	(0.00351)	(0.00222)
_cons	0.213***	0.0958***	0.0966***	0.0257**
	(0.0206)	(0.0124)	(0.0164)	(0.0104)
N	4272	4272	4272	4272
adj. R^2	0.009	0.024	0.002	0.002

Standard errors in parentheses

Note 1: Robust standard errors are displayed in parenthesis.

Significance levels: * p<0.10; ** p<0.05; *** p<0.01

Table 6: Shocks and Household characters Regression

Table 7: Effect of different shocks on marriage age

	(1) marage	(2) marage	(3) marage	(4) marage
any shock	-0.0907			
	(0.333)			
death shock		0.983		
		(0.671)		
sickness shock			-0.812**	
			(0.380)	
unemployment shock				0.982
				(0.621)
educ	0.350***	0.350***	0.348***	0.348***
	(0.0406)	(0.0406)	(0.0405)	(0.0406)
nsenior	0.468*	0.451	0.464*	0.463*
	(0.275)	(0.275)	(0.275)	(0.275)
nchild	-0.446***	-0.449***	-0.446***	-0.457***
	(0.154)	(0.153)	(0.154)	(0.154)
nmember	0.0620	0.0596	0.0616	0.0657
	(0.0680)	(0.0681)	(0.0679)	(0.0682)
female head	0.525	0.397	0.501	0.536
	(0.500)	(0.493)	(0.499)	(0.500)
islam head	-0.795	-0.763	-0.828	-0.776
	(0.510)	(0.504)	(0.508)	(0.508)
head's educ	-0.0234	-0.0212	-0.0231	-0.0237
	(0.0345)	(0.0347)	(0.0344)	(0.0345)
head's income	3.41e-08	3.40e-08	3.43e-08	3.30e-08
	(2.87e-08)	(2.85e-08)	(2.88e-08)	(2.85e-08)
urban	0.715***	0.731***	0.725***	0.700***
	(0.266)	(0.267)	(0.265)	(0.266)
Constant	19.81***	19.73***	19.91***	19.76***
	(0.727)	(0.719)	(0.726)	(0.722)
Observations	1063	1063	1063	1063
R^2	0.158	0.160	0.160	0.159
Adjusted R^2	0.150	0.152	0.152	0.151

Note 1: Robust standard errors are displayed in parenthesis.

Significance levels: * p<0.10; ** p<0.05; *** p<0.01

Table 8: Effect of different shocks on marriage decision

	marital status in 2000	marital status in 2000	marital status in 2000	marital status in 2000
any shock	-0.124***			
	(0.0284)			
death shock		-0.219***		
		(0.0419)		
sick shock			-0.117***	
			(0.0359)	
unemployment shock				-0.179***
				(0.0468)
educ	0.0167***	0.0165***		0.0166***
	(0.00167)	(0.00166)		(0.00167)
nsenior	0.0275*	0.0278*	0.0255*	0.0269*
	(0.0153)	(0.0154)	(0.0154)	(0.0154)
nchild	-0.0355***	-0.0356***	-0.0576***	-0.0352***
	(0.00655)	(0.00655)	(0.00599)	(0.00655)
nmember	0.0337***	0.0338***	0.0380***	0.0335***
	(0.00343)	(0.00342)	(0.00344)	(0.00343)
female head	0.127***	0.131***	0.123***	0.122***
	(0.0255)	(0.0256)	(0.0258)	(0.0256)
islam head	0.0748***	0.0743***	0.0611***	0.0737***
	(0.0188)	(0.0188)	(0.0190)	(0.0187)
head's educ	-0.00771***	-0.00774***	-0.00551***	-0.00764***
	(0.00153)	(0.00153)	(0.00156)	(0.00153)
head's income	-1.99e-09***	-1.97e-09***	-1.76e-09***	-1.96e-09***
	(3.76e-10)	(3.72e-10)	(3.07e-10)	(3.72e-10)
urban	-0.0707***	-0.0718***	-0.0475***	-0.0702***
	(0.0134)	(0.0134)	(0.0134)	(0.0134)
Constant	-0.0636**	-0.0647**	0.0511*	-0.0651**
	(0.0311)	(0.0311)	(0.0296)	(0.0311)
Observations	4286	4286	4290	4286
R^2	0.068	0.068	0.048	0.067
Adjusted R^2	0.066	0.066	0.046	0.065

Note 1: Robust standard errors are displayed in parenthesis.
Significance levels: * p<0.10; ** p<0.05; *** p<0.01

Table 9: Effect of cost of shocks on marriage age

	(1) marage	(2) marage	(3) marage
Total cost of death shock	-0.385**		
	(0.188)		
Total cost of sickness shock		-0.0710	
		(0.0514)	
Total cost of unemployment shock			-0.00924
			(0.0375)
educ	0.350***	0.351***	0.350***
	(0.0406)	(0.0406)	(0.0406)
nsenior	0.463*	0.458*	0.466*
	(0.275)	(0.275)	(0.275)
nchild	-0.448***	-0.450***	-0.447***
	(0.154)	(0.154)	(0.154)
nmember	0.0626	0.0627	0.0618
	(0.0681)	(0.0681)	(0.0681)
female head	0.564	0.504	0.515
	(0.503)	(0.500)	(0.500)
islam head	-0.785	-0.826	-0.788
	(0.511)	(0.512)	(0.511)
head's educ	-0.0230	-0.0253	-0.0235
	(0.0344)	(0.0347)	(0.0346)
head's income	3.45e-08	3.46e-08	3.41e-08
	(2.87e-08)	(2.87e-08)	(2.87e-08)
urban	0.707***	0.723***	0.715***
	(0.266)	(0.266)	(0.266)
Constant	19.80***	19.84***	19.79***
	(0.723)	(0.726)	(0.723)
Observations	1063	1063	1063
R^2	0.159	0.158	0.158
Adjusted R^2	0.151	0.150	0.150

Note 1: Robust standard errors are displayed in parenthesis.
Significance levels: * p<0.10; ** p<0.05; *** p<0.01

Table 10: Effect of cost of shocks on marriage decision

	marital status in 2000	marital status in 2000	marital status in 2000
Total cost of death shock	-0.0765***		
	(0.0238)		
Total cost of sickness shock		-0.00611	
		(0.0107)	
Total cost of unemployment shock			-0.0140***
			(0.00299)
educ	0.0166***	0.0166***	0.0165***
	(0.00166)	(0.00167)	(0.00167)
nsenior	0.0266*	0.0265*	0.0266*
	(0.0154)	(0.0154)	(0.0154)
nchild	-0.0357***	-0.0356***	-0.0356***
	(0.00655)	(0.00656)	(0.00655)
nmember	0.0337***	0.0337***	0.0337***
	(0.00343)	(0.00343)	(0.00343)
female head	0.126***	0.123***	0.123***
	(0.0256)	(0.0256)	(0.0256)
islam head	0.0741***	0.0731***	0.0736***
	(0.0187)	(0.0187)	(0.0187)
head's educ	-0.00762***	-0.00768***	-0.00770***
	(0.00153)	(0.00153)	(0.00153)
head's income	-1.96e-09***	-1.97e-09***	-1.97e-09***
	(3.72e-10)	(3.73e-10)	(3.72e-10)
urban	-0.0713***	-0.0707***	-0.0707***
	(0.0134)	(0.0134)	(0.0134)
Constant	-0.0659**	-0.0652**	-0.0653**
	(0.0311)	(0.0311)	(0.0311)
Observations	4286	4286	4286
R^2	0.066	0.066	0.066
Adjusted R^2	0.064	0.063	0.064

Note 1: Robust standard errors are displayed in parenthesis.
Significance levels: * p<0.10; ** p<0.05; *** p<0.01

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Appendices

Table 11: Effect of any shock on marriage age

	(1) marage	(2) marage	(3) marage	(4) marage	(5) marage
any shock	0.344	0.339	0.294	-0.0784	-0.0907
	(0.354)	(0.314)	(0.310)	(0.335)	(0.333)
educ		0.491***	0.439***	0.371***	0.350***
		(0.0314)	(0.0363)	(0.0396)	(0.0406)
nsenior			0.749***	0.445	0.468*
			(0.287)	(0.275)	(0.275)
nchild			-0.487***	-0.467***	-0.446***
			(0.147)	(0.154)	(0.154)
nmember			0.0650	0.0827	0.0620
			(0.0634)	(0.0684)	(0.0680)
female head				0.570	0.525
				(0.506)	(0.500)
islam head				-0.836	-0.795
				(0.512)	(0.510)
head's educ				-0.0157	-0.0234
				(0.0345)	(0.0345)
head's income				4.24e-08	3.41e-08
				(2.89e-08)	(2.87e-08)
urban					0.715***
					(0.266)
Constant	22.59***	18.46***	18.87***	19.79***	19.81***
	(0.144)	(0.296)	(0.476)	(0.729)	(0.727)
Observations	1288	1287	1287	1063	1063
R^2	0.001	0.156	0.175	0.152	0.158
Adjusted R^2	-0.000	0.155	0.171	0.145	0.150

Note 1: Robust standard errors are displayed in parenthesis.
Significance levels: * p<0.10; ** p<0.05; *** p<0.01

Table 12: Effect of death shock on marriage age

	(1) marage	(2) marage	(3) marage	(4) marage	(5) marage
death shock	0.858	1.257**	1.158**	0.918	0.983
	(0.624)	(0.571)	(0.511)	(0.671)	(0.671)
educ		0.495***	0.443***	0.372***	0.350***
		(0.0315)	(0.0342)	(0.0396)	(0.0406)
nsenior			0.720***	0.429	0.451
			(0.245)	(0.275)	(0.275)
nchild			-0.489***	-0.470***	-0.449***
			(0.129)	(0.153)	(0.153)
nmember			0.0645	0.0810	0.0596
			(0.0597)	(0.0684)	(0.0681)
islam head				-0.808	-0.763
				(0.508)	(0.504)
head's educ				-0.0136	-0.0212
				(0.0348)	(0.0347)
head's income				4.25e-08	3.40e-08
				(2.88e-08)	(2.85e-08)
head's age				0.226	0.199
				(0.249)	(0.247)
urban					0.731***
					(0.267)
Constant	22.60***	18.41***	18.84***	19.50***	19.53***
	(0.135)	(0.291)	(0.456)	(0.767)	(0.761)
Observations	1288	1287	1287	1063	1063
R^2	0.002	0.159	0.177	0.154	0.160
Adjusted R^2	0.001	0.158	0.174	0.147	0.152

Note 1: Robust standard errors are displayed in parenthesis.
Significance levels: * p<0.10; ** p<0.05; *** p<0.01

Table 13: Effect of sick shock on marriage age

	(1) marage	(2) marage	(3) marage	(4) marage	(5) marage
sick shock	-0.368	-0.281	-0.327	-0.784**	-0.812**
	(0.450)	(0.382)	(0.410)	(0.384)	(0.380)
educ		0.491***	0.439***	0.370***	0.348***
		(0.0314)	(0.0343)	(0.0395)	(0.0405)
nsenior			0.760***	0.441	0.464*
			(0.245)	(0.275)	(0.275)
nchild			-0.489***	-0.468***	-0.446***
			(0.129)	(0.154)	(0.154)
nmember			0.0667	0.0827	0.0616
			(0.0598)	(0.0682)	(0.0679)
female head				0.548	0.501
				(0.504)	(0.499)
islam head				-0.869*	-0.828
				(0.511)	(0.508)
head's educ				-0.0154	-0.0231
				(0.0345)	(0.0344)
head's income				4.27e-08	3.43e-08
				(2.90e-08)	(2.88e-08)
urban					0.725***
					(0.265)
Constant	22.69***	18.55***	18.95***	19.89***	19.91***
	(0.139)	(0.297)	(0.458)	(0.729)	(0.726)
Observations	1288	1287	1287	1063	1063
R^2	0.001	0.155	0.174	0.154	0.160
Adjusted R^2	-0.000	0.154	0.171	0.147	0.152

Note 1: Robust standard errors are displayed in parenthesis.
Significance levels: * p<0.10; ** p<0.05; *** p<0.01

Table 14: Effect of unemploy shock on marriage age

	(1) marage	(2) marage	(3) marage	(4) marage	(5) marage
unemployment shock	1.281**	0.860	1.008	1.057*	0.982
	(0.618)	(0.587)	(0.656)	(0.614)	(0.621)
educ		0.490***	0.436***	0.369***	0.348***
		(0.0315)	(0.0343)	(0.0396)	(0.0406)
nsenior			0.753***	0.440	0.463*
			(0.245)	(0.275)	(0.275)
nchild			-0.499***	-0.478***	-0.457***
			(0.130)	(0.153)	(0.154)
nmember			0.0687	0.0864	0.0657
			(0.0598)	(0.0685)	(0.0682)
female head				0.583	0.536
				(0.506)	(0.500)
islam head				-0.817	-0.776
				(0.510)	(0.508)
head's educ				-0.0163	-0.0237
				(0.0346)	(0.0345)
head's income				4.11e-08	3.30e-08
				(2.87e-08)	(2.85e-08)
urban					0.700***
					(0.266)
Constant	22.61***	18.50***	18.91***	19.74***	19.76***
	(0.135)	(0.290)	(0.456)	(0.724)	(0.722)
Observations	1288	1287	1287	1063	1063
R^2	0.002	0.156	0.176	0.154	0.159
Adjusted R^2	0.002	0.155	0.172	0.147	0.151

Note 1: Robust standard errors are displayed in parenthesis.
Significance levels: * p<0.10; ** p<0.05; *** p<0.01