Master Thesis

DETERMINANTS AND CONSEQUENCES OF CHILD MARRIAGE AMONG GIRLS IN VIET NAM

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Abstract

Child marriage is a universal phenomenon closely related to gender inequality. However, the causes and effects of this practice vary across regions and cultures. This thesis uses data from Young Lives (2002-2014) (n=459 females) and MICS (2014) (n=6,969 females) to study the determinants and consequences of child marriage among girls in Viet Nam. A quantitative approach is employed. Using logistic regression models, the paper finds that household size is a significant predictor of child marriage and that child marriage is strongly linked to early childbearing and child mortality. This approach also allows us to estimate how socioeconomic and demographic characteristics of a household affect the age at birth of a mother and the mortality of her child. These findings are important because they help us understand the real drivers of child marriage, early birth and child mortality in Viet Nam. This information is useful for policy makers seeking to design programs to eradicate the practice.

Key words: child marriage, early birth, child mortality, gender inequality, Viet Nam

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Chapter I. Introduction

1. Background

Owing to huge efforts made for decades to narrow the gender gap in developing countries, women have achieved progressive improvements in rights, health, and access to education and occupation (World Bank, 2012). In education, gender inequality has declined rapidly and has even been reversed in many developing regions, for example, in Latin America and East Asia. Regarding life expectancy, women are living longer than men in all countries (World Bank, 2012). Additionally, a considerable increase in the number of women participating in the labour force in developing nations has led to an enormous growth resulting in more than half a billion women in paid work in the world. This increase is attributed to an exceptional reduction in fertility rates in the developing world (World Bank, 2012). However, progress has not come easily. Females still constitute a major share of the world's most vulnerable people (Sandra, 2015). According to The World Bank (2012), females are more likely to die than males in low- and middle- income countries. These deaths amount to approximately 3.9 million girls and women under 60 each year. Additionally, girls are suffering disparities in schooling, household and workplace (World Bank, 2012). In regards to schooling, enrollment rates among girls remain lower than among boys for disadvantaged populations in Africa and Asia. Regarding household dynamics, poor women have less power in decision making and less control over financial resources. In the workplace, women occupy fewer seats on boards of directors and earn less than men (World Bank, 2012).

In Viet Nam, there are common gender stereotypes regarding the role of women in both the economy and society. Within the economic sphere, although Vietnamese women enjoy lower gender pay gaps compared to women from other countries in the region, they are seriously underprivileged in economic opportunities, access to and utilization of productive services, levels of education, and decision-making power in both household and community levels (Jones & Tran, 2010). This marginalization is also present in society at large. Despite overall developments in human capital (e.g. little difference between boys' and girls' schooling, high literacy rates among adults, more widespread access to health care facilities), persistent gender discrimination regarding education and

health care still exists, especially in rural areas (Jones & Tran, 2010). While school enrollment rates for boys remain stable across different regions and ethnicities, those rates for girls demonstrate strong differences across groups. For instance, those of Kinh and Chinese ethnicity (i.e ethnic majorities) have much higher enrollment rates than those of ethnic minorities. Girls also suffer more limited access to health care facilities, contributing to the fact that 63 to 75% of women in the northern mountainous and central regions of Viet Nam give birth at home (Jones & Tran, 2010). These considerable gender disparities in both economic and social aspects have resulted in serious consequences in women's lives including child marriage.

2. Research topic

The UN Conventions on the Rights of the Child (1989) announce that every human being under the age of eighteen is a child. Hence, child marriage is a formal or informal union in which either or both participants is below 18 years old (Ashley, 2016). Child marriage is definitely one of the most pressing issues in the world today, especially in developing nations, despite efforts to eradicate the practice. According to reports from UNICEF, globally, 18% of girls are married before 18. Of these marriages, 61% are between a girl under 18 and a man who is 15 years older than her (Ashley, 2016). The region that has the highest incidence of child marriage is South Asia which is home to 42% of child marriage cases in the world. East Asia and the Pacific follow with 25% while Africa hosts 18%. Unless the trend is stymied, it is estimated that there will be an increase of 280 million girls subjected to child marriage by the time they are 18. This number will even reach 320 million by 2050, making the total number of women married early increase from 720 million today to 1.2 billion by 2050 (UNICEF, 2014). In contrast, if serious steps are taken, the total number of girls exposed to child marriage are estimated to drop to 450 million by 2050 (UNICEF, 2014).

When a child is engaged in marriage, her childhood is shortened, and her fundamental human rights are violated (UNICEF, 2001). Young girls are deprived of opportunities and rights to further develop and attain education, well-being, full reproductive health and integration into civil society. Moreover, since they are married too early, they have to take on roles for which they are not psychologically and physically ready (Bayisenge, 2010). While many are not allowed to decide the timing of the marriage or choose their partners (i.e. forced marriage), others are too young to make their own decisions (Bayisenge,

2010). The impacts of child marriage are global but reasons for the high proportion of child marriage vary across different cultures and regions in different countries (UNICEF, 2001). This paper studies factors contributing to the high prevalence of child marriage in Viet Nam and its consequences.

3. Research problem

Viet Nam has a relatively low prevalence of child marriage compared to other low income countries, with prevalence rates of 0.9% for women aged 15 - 49 years married before 15 and 10% for women aged 20 - 49 married before 18 (GSO & UNICEF, 2015). However, these rates have increased recently (Hang, 2016). According to the UNFPA (2016), the rate of marriage before 15 is relatively higher in the Northern Uplands and Central Highlands, where many ethnic minorities are situated. Among ethnic minorities, H'Mong people constitute the highest proportion of child marriage with 33%, followed by Thai people with 23% (UNFPA, 2016). Although boys can also be involved in child marriage, girls are disproportionately impacted (UNICEF, 2014). Therefore, my thesis focuses on child marriage among girls in Viet Nam.

Studies show that individual and social factors such as education, occupation, customs and norms are strong predictors of variation in age at marriage (Field and Ambrus, 2008; Adjei, 2015; Singh and Vennam, 2016). Others indicate that there are strong relationships between child marriage, adolescent birth and poor child health outcomes (e.g child morbidity and mortality). Some also conclude that delaying marriage and childbearing reduces child mortality and improves child health (Phipps, 2002; Taffa, 2003; Markovitz, 2005; Ayotunde, 2009; Oyefara, 2013; Hammann, 2014). Most studies focus on the determinants and consequences of child marriage in African and South Asian countries such as Ghana, Nigeria, Kenya, India, Bangladesh and Nepal, where the prevalence of child marriage is higher. However, there remains a need for research on child marriage in other developing countries. Therefore, this study aims to extend previous research by examining which household factors shape child marriage and the effects of child marriage on the timing of pregnancy and child survival in Viet Nam.

The objectives of my thesis will contribute to ongoing research on child marriage in particular and gender equality in general. Firstly, the thesis aims to gain a better understanding of which household factors best explain child marriage among girls.

Secondly, it intends to examine the consequences of child marriage in Viet Nam. Finally, the paper provides suggestions to reduce the negative impacts of child marriage among girls in Viet Nam. The research questions this study intends to answer state as follows:

Question 1: *What are the determinants of child marriage among girls in Viet Nam?*

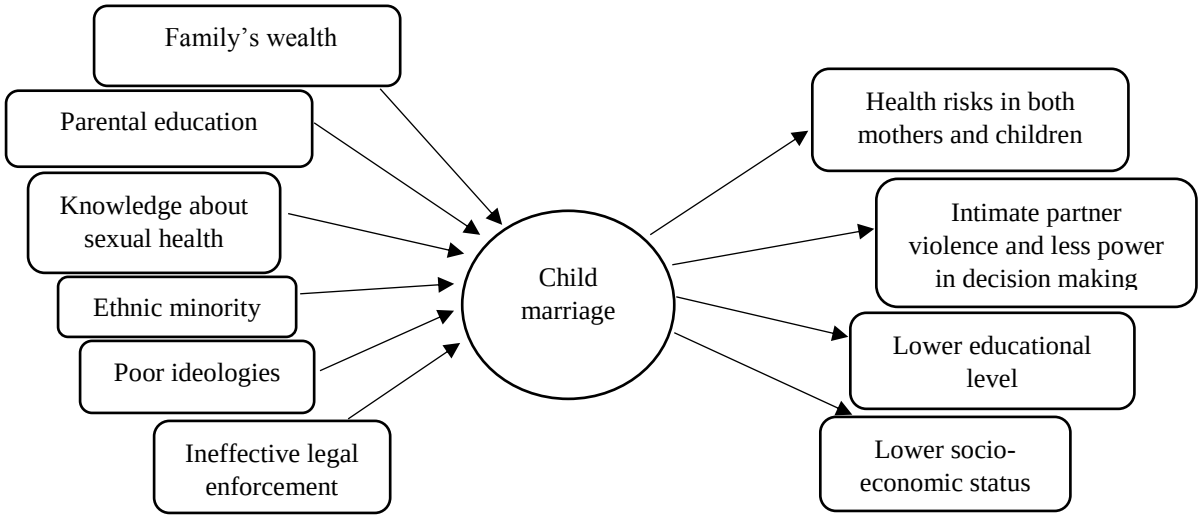
Question 2: *Does child marriage lead to early birth in Viet Nam?*

Question 3*: Does child marriage result in higher risk of child mortality in Viet Nam?*

The paper is organized as follows. Chapter One of this thesis introduces the overall problem and objectives of the study. Chapter Two covers determinants of child marriage. In this chapter, literature reviews are presented first, followed by details about the data and methodology of the analysis, and finally the results are shown. Chapter Three which discusses consequences of child marriage has a similar structure to the previous one. The research is concluded with a discussion of the findings and a conclusion, presented in Chapter Four.

A conceptual framework regarding the causes and consequences of child marriage is illustrated in Figure 1. On the left of the model, factors shaping child marriage are listed. Consequences of child marriage are presented on the other side of the model. These factors are discussed respectively in the literature reviews in Chapter 2 and 3 of the thesis.

Figure 1. Causes and consequences of child marriage in Viet Nam



Chapter II. Determinants of child marriage among girls in Viet Nam

1. Literature reviews

1.1.Child marriage in Viet Nam

Under Vietnamese Marriage and Family Law, the minimum age of marriage for girls is 18 (Ministry of Justice, 2000). Although the rate of child marriage in Viet Nam is not high compared to the rates in other low- and middle-income countries, it has increased recently despite efforts of the government to eliminate the problem. According to MICS (2006, 2011, 2014), the rate of women aged 15 - 19 years already married rose from 5% in 2006 to 8% in 2011 and 10% in 2014. Likewise, the proportion of girls married before 15 also increased slightly from 0.7% in 2006 and 2011 to 0.9% in 2014 (GSO and UNICEF; 2007, 2012, 2015). The study by Hang (2016) finds that child marriage is the most prevalent in the Northern mountainous areas where many ethnic minorities are located. The prevalence is especially high for rural girls coming from the poorest households or living with less educated caregivers. A similar finding is reported by Jones et al. (2014a). The author shows that girls from H'Mong ethnicity (i.e the most popular ethnic minority in Viet Nam) have much higher rates of child marriage compared to girls from other ethnic minorities. This problematic situation can be attributed to a traditional custom - bride abduction - and persistent discriminatory gender norms. Vietnamese women in general and H'Mong girls in particular are also put under social pressures when marrying late or when fighting against gender-based violence (Jones et al., 2014a).

1.2.Causes of child marriage in Viet Nam

1.2.1. Poverty

Poverty is regarded as the root cause of the decisions and practices regarding child marriage. Adedokun et al. (2011) explain that poor households do not have enough resources to afford educational costs of their daughters. Consequently, these girls can not extend schooling and skill development to guarantee their future. In Viet Nam, although public school tuition fees are set at low level (around VND 80,000 (USD 3.52) per month)

for primary, secondary and high school pupils from mountainous areas (The Vietnamnet, 2017), the pupils still have to spend a significant amount of money on book and transportation costs. The study by Duc and Tam (2013) reveals that there are very few upper secondary schools in rural areas, but many in urban areas or the district capital. Therefore, families in remote communes have to travel a longer distance to school than those in urban areas, which makes transportation costs a problem. ICRW (2013) shares the same idea. The author adds that while extra educational expenses such as book, transportation and facility costs hinder poor families to extend girls' schooling, educational expenditures on their sons are considered a necessary investment. As a result of school drop-out, girls are more likely to be married off due to their parents' arrangements (ICRW, 2013).

1.2.2. Low parental education

Parental education plays an important role in decisions regarding the timing of marriage of daughters. This idea is in line with Uddin (2015), who argues that illiterate and uneducated parents arrange for their daughters from birth when and whom to marry, and what roles they must play in the family as well as society. These parents are not interested in their daughters' formal education. They teach the girls how to obey parents and husbands' families and how to raise and care for children after marriage (Uddin, 2015). Therefore, the girls can not make their own decisions on the timing of marriage and are often married off early by their parents.

The association between parental education and the timing of marriage is also presented by Singh & Vennam (2016). The study indicates that the educational aspirations mothers have for their daughters and the mothers' attitudes about the importance of education play extremely significant roles in socializing girls during adolescent period. Specifically, less educated mothers with early married daughters hold that there is no difference as to whether or not their daughters are educated because they are still not able to get a job (Singh & Vennam, 2016). Therefore, these mothers suggest that girls leave school early and marry soon after puberty so that they can work as daily wage earners of the families. In contrast, highly educated mothers have more supportive attitudes towards their daughter's education and encourage them to complete higher degrees and find appropriate jobs (Singh & Vennam, 2016).

1.2.3. Lack of knowledge about sexual health

Lack of knowledge about sexual health and HIV prevention may contribute to unwanted pregnancy and subsequent child marriage (Ashley, 2016). According to UNESCO (2017), early pregnancy is intimately linked to child marriage in many country. Thus, the education sector has a responsibility to educate parents, teachers and students about sexual health and HIV prevention (UNESCO, 2017). However, Vietnamese youth still lack knowledge regarding unintended pregnancy prevention and sexually transmitted diseases, particularly HIV. The main reason is elaborated on by Pham et al. (2012). The author argues that access to sexual health and HIV prevention programs in Viet Nam is inconsistent and constrained by factors regarding state-sponsored agencies, literacy capability, and school state. Additionally, teacher-student or parent-children communication about sexuality, contraception and associated health risks is avoided or ignored due to embarrassment and the belief that this information is not suitable for adolescent and unmarried children (Pham et al., 2012). Therefore, Vietnamese children's access to information and services in regard to sexual and reproductive health are restricted (Klingberg et al., 2008).

1.2.4. Ethnic minorities

Viet Nam is a multiethnic nation and has an unequal distribution of child marriage among various ethnic communities. In some ethnic minority communities in Viet Nam (e.g H'Mong ethnicity), girls have higher rates of child marriage than the other ethnicities due to their traditional customs. For example, the H'Mong are one of the largest ethnic minorities in Viet Nam, with a population of over 1 million. Unfortunately, this ethnicity simultaneously suffers a high rate of poverty (80%) and the lowest average age of marriage as well as the highest fertility rate. The fertility rate of the H'Mong is more than double the national average rate (Jone et al., 2014a). The reasons for these problems are pointed out in the study by Jone et al. (2014a). Particularly, H'Mong adolescent girls are challenged by deeply rooted customs that deprive them of their fundamental rights and impose on them traditional roles as wives and mothers. For instance, bride kidnapping is a long-established custom of the H'Mong. According to this custom, boys or young men, if interested in "diligent" girls in "nice dresses", have the right to "drag" them home during the Love market-days (Jone et al., 2014a). Even the girls' parents feel powerless and hardly have chances to interfere as they only know about the "marriage" after their

daughters have been “kidnapped”. After the bride kidnapping, the grooms’ families will give sacrifice back to the brides’ families as compensation for the loss of their labour, which is called bride-price (Jone et al., 2014a).

1.2.5. Ideologies

It is strongly believed in Vietnamese society that males play a crucial role in social, cultural and economic development. The paper by Guilmoto (2012) gives an example that men in traditional families play a vital role in old-age support, household well-being and ancestor worship. This gender ideology is rooted in patrilocal residence pattern (i.e women live with husband’s families after marriage). Therefore, son preference is widely kept in mind by spouses, families and communities.

These negative gender ideologies even determine the life of ethnic minority girls. They are often viewed as “other people’s women” from the moment they were born and underprivileged in numerous ways after marriage (Lee and Tapp, 2010; Lemoine, 2012). Particularly, Jone et al. (2014a) indicates that it is high patriarchy among H’Mong culture that limits girls’ promotion, recreation and socialization, and negatively influences their educational attainment. In greater detail, DeJaeghere and Miske (2009) argue that girls from early childhood are indoctrinated the belief that their responsibility is to do the housework, such as looking after siblings, cleaning, washing, collecting wood and water, and breeding buffalo. However, these poor traditional norms will be broken if more and more women foresee improved opportunities in the workplace (Geist, 2017). Women will spend more time working outside the home, hence changing the norms about the importance of marriage and women’s roles in the family. For this reason, Geist (2017) believes that young women with less traditional values and attitudes towards gender issues may consider marriage and household responsibility a less central position. Hence, they delay marriage to have higher educational levels and participate in labour force.

Another traditional ideology causing high rates of child marriage in Viet Nam is the idea of having a large family. A large household is a family with multiple children or with more than two generations living together (multigenerational family). Angrist (2005) argues that an older daughter from a large family may be tempted to marry soon when crowded by her younger siblings. This may be because children from large families are more likely to share a room, which stimulates girls to leave the crowded households

quickly to set up an independent one, as explained by Caceres (2004). Additionally, Fuller-Thompson and Minkler (2001) and Brandon (2005) point out that children living in a multigenerational family may have to share resources with their old and poor grandparents. This may cause children to have fewer economic resources for education, hence encouraging them to drop out of school. Therefore, many parents choose to marry off their daughters to relieve the economic burdens of the large families (UNFPA, 2016).

1.2.6. Lack of Birth registration and ineffective legal enforcement

According to Plan (2014), the birth registration rate in Viet Nam is relatively high (95%). However, this is not a completely exact figure. Under Vietnamese law, a child must be registered within 60 days of birth, but this is impossible when the parents are under 18 - the legal age of marriage. Consequently, young couples often do not register their childbirth (Ashley, 2016). The research by Ashley (2016) indicates that penalties for child marriage are rarely imposed as young couples could simply escape detection by not applying for a marriage certificate until reaching the legal age.

1.3.Hypotheses

Insights into the causes of child marriage in this study are based on the family social-cultural theory. According to the theory, each child acquires values and norms in the socio-cultural environment that she was born into and grew up in through a socialization process (Uddin, 2015). These socio-cultural values and norms have massive impacts on her entire life, from birth to marriage and to death (Uddin, 2015). Therefore, household characteristics have great impacts on the timing of marriage of girls. Household factors are varied. However, due to data limitations, the current study focuses on wealth status, parental education, residential area, region and household size. Five hypotheses are formulated as follows:

Hypothesis 1: *Girls from poor households are more likely to marry early than those from rich families*.

Hypothesis 2: *The higher the parents' level of education, the greater the age at marriage of the girls*.

Hypothesis 3*: Rural girls are more likely to marry early than urban ones.*

Hypothesis 4: *Girls living in more developed regions are more inclined to delay marriage than their peers in less developed regions.*

Hypothesis 5: *Girls living in large families have higher probabilities of marrying in childhood than their counterparts in small families*".

2. Data and methodology

2.1.Data

To find out which household factors cause child marriage in Viet Nam, this study uses the data derived from the International Study of Childhood Poverty by Young Lives (2002 - 2014). The key objectives of Young Lives are to provide long-term panel data about the causes and consequences of childhood poverty, and to provide information on the effects of pro-poor policies and the ways by which poverty is intergenerationally transmitted in Ethiopia, India (Andhra Pradesh), Peru and Vietnam (Young Lives, 2011). These four countries were selected from a list of 25 nations based on several criteria. These criteria represented the four central regions of the developing world that have different socio-economic and political structures (Young Lives, 2011). The survey tracked the lives of two cohorts of children in each country in 4 rounds (2002, 2006, 2009 and 2013-2014) with round 1 containing 2 groups of children: a one year old group (2000 children) and eight year old group (1000 children); round 2 aiming at the same children who were 5 and 12 years old; round 3 returning to survey the same group again at the age of 7-8 and 14-15; and finally, round 4 surveying the same children at aged 12 and 19 years (Young Lives, 2002-2014).

In Viet Nam, two cohorts of children were selected purposively and randomly through multiple steps (Nguyen, 2008). Households were chosen randomly within a study site. This site was picked according to preset criteria. Four sentinel sites in each of five "representative" regions (Northern Uplands, Red River Delta, Phu Yen, Da Nang and Me Kong River Delta) were selected in a complicated consultative process. This process was conducted according a pro-poor selection principle based on the wealth ranking of each site (Nguyen, 2008). For the purpose of research, this study selects the sample of the older cohort of girls from Young Lives, who were being tracked through adulthood, to examine the association between household variables and age at marriage among girls in Viet Nam. The four rounds of quantitative panel data provide individual and household level

data of 459 girls, 85 married/cohabited (including 4 separated/divorced) and 374 unmarried (Table A1, Appendix). Basic socioeconomic and demographic information including region, place of residence and details on each family's prosperity such as parental education and household wealth are all obtained from Round 1 when the children were approximately 8 years old. Additionally, data on the date of marriage, which is used to calculate the age at first marriage, is taken from Round 4 when the children were roughly 19 years old.

2.2.Methodology

The dependent variable *age at first marriage* is a dummy variable indicating whether (1) or not (0) girls were married before 18 (child marriage). According to Vietnam Marriage and Family Law, the minimum legal marriage age for girls was set at 18 (Ministry of Justice, 2000). Therefore, a first marriage before 18 years old is considered child marriage. In this study, *age at first marriage* is measured as follows: Firstly, I calculate the difference between the date of the interview and the date of the marriage taken in Round 4; Next, the age at first marriage is the difference between the age of the girls (at the time of the interview) and the time difference estimated in the first step. In Young Lives data, nearly 13% of girls were married before 18 (Table A2, Appendix). The definition of marriage used in this analysis includes cohabitation. Unmarried girls aged 19 are included in the group of marriage at 18 and older.

The first independent variable *household wealth* is a dummy variable indicating whether (1) or not (0) girls are members of a rich family. The household wealth index in Young Lives data has value between 0 and 1, measured as the average of the 3 indices: Housing Quality index, Consumer Durables index and Services index (Huttly & Jones, 2014). Based on its values, I have divided the household wealth index into quantiles: "rich" and "poor".

The second independent variable *household size* is an interval variable ranging from 1 to 12. It indicates the number of members living together in a family.

The third independent variable *mother's education* is an interval variable ranging from 0 to 14. Each value is equal to the number of grades one has obtained. The mothers obtaining post-secondary/vocational education take value 13, and university value 14. In the data, there are 80 missing values on mother's education. These missings are handled

by ‘dummy variable adjustment’ method (Allison, 2002). Particularly, a dummy is added to the model which indicates whether (1) or not (0) a case is missing on the variable *mother’s education*. Then the missing cases are replaced by the mean value of the cases for which the values are known. The added dummy indicated the effect of being missing on the dependent variable (Allison, 2002). Although educational levels of both mothers and fathers are supposed to impact the age at marriage of their daughters, only mother’s education is chosen in the current study. The first reason is that educational level of the fathers and mothers may be highly correlated. The prevailing culture in Viet Nam indicates that women and men search for partners with similar educational levels. Secondly, results from studies by Mooyaart and Liefbroer (2016) and Marchetta and Sahn (2015) show that a mother’s education matters more than a father’s education with regard to the timing of union and marriage. Mooyaart and Liefbroer (2016) explain that mothers invest more in their childbearing, hence spending more time with their children.

The fourth independent variable is region. The variable *Region* is a categorical variable with six groups of region: (1) Northern Uplands, (2) Red River Delta, (3) Phu Yen, (4) Da Nang, (5) Mekong River Delta and (6) Other. The third category “Phu Yen” is chosen as the reference because Phu Yen has the highest rate of girls married in childhood. The Young Lives survey did not elaborate on which regions were included in the last category “Other”.

The final independent variable *Place of residence* is a dummy variable indicating whether (1) or not (0) girls are living in urban areas. There are 34 missing values in the data on the place of residence of the girls.

Further details on each variable are provided in the bivariate tables (Table A3-A5 Appendix). Table A3 shows the distribution of girls by household wealth and age at first marriage. According to the table, 19% of girls coming from poor households were married before 18. Whereas, only 7% of girls living in rich families were married in childhood. Table A4 shows the distribution of girls by region and age at first marriage. Phu Yen has the highest rates of child marriage (15%), followed by the Northern Uplands with 14%. Red River Delta, Da Nang and Mekong River Delta have equivalent proportions of child marriage, which are 4%. Table A5 provides the details on the distribution of girls by residential area and age at first marriage. The percentage of early married girls in urban areas is 5%, whereas this rate in rural areas is 11%.

To answer the research question, analyses will be carried out using Stata 14. A logistic regression model is employed to assess the effects of the household factors on the age at first marriage among girls in Viet Nam. Logistic regression is chosen because the dependent variable *age at first marriage* has a binary outcome, taking value '1' if the girl was married before 18 (child marriage) and '0' otherwise.

A summary of variable constructions is provided in Table A6 (Appendix).

3. Results

Table 1 provides descriptive statistics. It is observed that 13% of the girls aged 19 in the sample were married before 18. The average number of members in a household was 4 people. Approximately 20% of girls were living in an urban area.

Table 2 shows the results of the logistic regression analysis. The results reveal that household size is significantly and positively associated with child marriage. For a one-person increase in the household, the odds of marriage as a child increase by 49%, ceteris paribus. This finding is in line with hypothesis 5: "Girls living in large families are more tended to marry early than their counterparts in small families".

The effect of region is found to be a significant difference between Red River Delta and Phu Yen. The odds of marriage in childhood are 88% lower for girls living in Red River Delta compared to those living in Phu Yen, which is chosen as the reference category, ceteris paribus. This finding does not support hypothesis 4: "Women living in more developed regions are more likely to delay marriage than in less developed regions".

No significant effect is reported on living in rich families, mother's education and living in urban areas. Therefore, the impacts of household wealth, maternal education and place of residence on marriage age remain unproved, rejecting hypotheses 1, 2 and 3.

Table 1. Descriptive statistics: Percentages, means of characteristics of girls aged 19 (N=424)

Variables	%, mean	Min	Max	SD
Married before 18 (dependent variable)	12.8%	0	1	0.34
Independent variables				
Living in a rich household	49.7%	0	1	0.50
Household size (person)	4.26	1	12	1.52
Mother's education (grade)	7.66	0	14	3.12
Living in urban area	20.2%	0	1	0.40
Region	3.21	1	6	1.55

Source: Young Lives

Table 2. Logistic regression analysis of child marriage among women aged 19: log odds, standard errors and odds ratios

	β	SE	Exp(β)
Intercept	-3.844***	1.006	
Wealth index			
Living in a rich household	-0.153	0.578	0.858
Household size	0.396**	0.132	1.486
Mother's education	-0.100	0.098	0.905
Place of residence			
Living in urban area	-0.315	2.203	0.730
Region			
Northern Uplands	-0.843	0.677	0.430
Red River Delta	-2.107**	0.802	0.122
Phu Yen (ref)			
Da Nang	-1.126	2.317	0.324
Mekong River Delta	-0.662	0.659	0.516
Other	-0.208	2.217	0.812

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ (N=424 girls aged 19)
The dependent variable indicates whether (1) or not (0) a girl was married before 18 (child marriage).
The model included a dummy for missings on mother's education.

The findings of the analysis of the determinants of child marriage will be further discussed in Chapter IV of the thesis.

Chapter III. Consequences of child marriage among girls in Viet Nam

1. Literature reviews

Child marriage not only violates human rights but also leads to severe consequences among girls including physical and psychological health risks, gender-based violence, poor decision making and lower socioeconomic status.

1.1. Health risks

The practice of child marriage has been linked to various physiological and psychological health risks. Regarding physiological risks, Nguyen and Wodon (2012) argues that child marriage may increase the likelihood of suffering from vesico-vaginal fistulae, "*a preventable yet debilitating injury resulting from obstructed labour or prolonged childbirth*" (Girls Not Brides, 2016), and HIV. This is partly because young married girls may have difficulty refraining from sex and consequently increase the frequency of sexual relations without using condom. Likewise, Ashley (2016) points out that marriage at a young age can threaten the lives of the mothers and the children because child marriage may put girls in a situation where they are giving birth while remaining children themselves. Particularly, girls between 15 and 19 are much more prone to die in childbirth than adult girls (i.e girls in their 20s); and girls below 15 are at even higher risks (Girls Not Brides, 2016). More seriously, the children of these young brides are more likely to be stunted or to die within the first week of birth. According to MICS (2014), the infant mortality rate is nearly three times as high for mothers below 20 compared to those at 20-34 years old (Table 3) (GSO & UNICEF, 2015). Additionally, babies of young girls have a higher probability of suffering low birth weight and adverse long-lasting consequences to their health (Girls Not Brides, 2016).

In addition, young girls might suffer psychological risks when giving birth early. Adolescents may be stressed and need more empathic support during childbearing period than adults (Treffers et al., 2001; Wiemann et al., 2005). Klingberg et al. 's study (2008) in a rural district in the North of Hanoi examined the experiences and emotions of adolescents in the process of pregnancy and motherhood. Contrary to the satisfaction of the husband's family, young mothers were inclined to be anxious and disappointed due

Table 3. Distribution of early childhood mortality at different mother's ages in Viet Nam (per thousand live births)

Mother's age at birth	Infant mortality rate (first 12 months)	Child mortality rate (1-5 years old)	Under-5 mortality rate (first 5 years)
Below 20	34.6	8.2	42.6
20-34	12.5	3.2	15.6
35-49	33.4	3.9	37.1

Source: MICS 2014

to the awareness of fewer opportunities in their prospective lives (Klingberg et al., 2008). Additionally, child marriage may lead to a higher possibility of suicide when girls are forced to marry, as stated in the study of Pridmore and Walter (2013). According to the author, the motivation for suicide in these cases may be to escape undesirable social conditions, a gloomy future and a feeling of being trapped, or similar tragic circumstances.

1.2.Intimate partner violence and lower voice in decision making

Violence is proved to have a strong relationship with early marriage in Viet Nam. The study by Hong Le et al. (2014) finds that girls married early are roughly twice as likely to suffer intimate partner violence, compared to those married later. This association results from the interaction between different factors, including low educational attainment, financial dependence of women on their husbands, lack of exposure to mass media and social isolation (Hong Le et al., 2014). This lower status in the household restricts early married girls from raising their voice concerning decisions regarding their lives (ICRW 2005; UNICEF 2005). Jain & Kurz's research (2007) indicates that women married early are more likely to have partners who make important decisions about the use of contraception, sexual activities, frequency of visits to family or friends, ability to work and daily expenditures.

1.3.Low education and socioeconomic status

The impacts of child marriage on girls' education and socio-economic status are tremendous. Particularly, Jain & Kurz (2007) indicates that child brides have fewer chances to attend schools and apply for jobs. Hence, they do not benefit from education

or economic development programs because their time is completely monopolized by childcare and household tasks. As a result, early marriage, as well as early childbearing, tends to impede further education of girls, leading to poverty (Jain & Kurz, 2007).

In fact, the relationship between child marriage and low educational attainment can go in both ways. Child marriage may simultaneously be the cause and consequence of low educational levels and low socioeconomic status. Wodon et al. (2017) indicates that on the one hand, it is very difficult for girls to remain in school after marriage. More seriously, child marriage may negatively impact the education of the children of these girls indirectly. On the other hand, a year increase in the secondary education considerably decreases the probability of marrying as a child. In line with this idea, Kamal (2012) concludes that poverty and low educational levels are two major risk factors as well as negative reproductive outcomes of child marriage.

1.4. Hypotheses

Research on the consequences of child marriage laid a foundation for this study. The impacts of child marriage on the lives of both girls and their children are attributed to patriarchy, which prevents girls from having a voice in the family and partaking in development activities in society (Pilcher & Imelda, 2008; Reuben, 2014). After marriage, women's lives completely depend on their husbands. Particularly, they can not decide how many children to have, when to have them, and even who among girls and boys should go to school (Reuben, 2014). As a result of this dependency, young wives may have early pregnancy. Becoming mothers during childhood might threaten the lives of their children. Shawky and Milaat (2000) point out that girls in early teenage marriage are at four times the risk of combined fetal death and infant mortality. Although the consequences of child marriage are varied, I can not study all of them due to data limitations. Hence, the current study analyzes two consequences of child marriage, early birth and child mortality. Two hypotheses are formulated as follows:

Hypothesis 6: *Girls married as a child are more inclined to have early childbearing than girls married at adult age.*

Hypothesis 7: *Girls married early have a higher probability of experiencing child mortality than girls married later*.

2. Data and methodology

2.1.Data

This study utilizes data from The Viet Nam Multiple Indicator Cluster Survey (MICS) conducted in 2013 - 2014 by The Viet Nam General Statistic Office (GSO) in cooperation with the United Nation Children's Fund (UNICEF) (GSO &UNICEF, 2014). The global MICS program is an international household survey developed by UNICEF to collect information on multiple indicators on the well-being of children and women, to create data for use in policies and projects, and to evaluate progress towards the Millennium Development Goals (MDGs) and other global commitments (GSO &UNICEF, 2014). The main analysis in this study is carried out using data from the fifth round of MICS in Viet Nam (2014). The survey contains information covering numerous issues regarding the development of children and women in Viet Nam (GSO &UNICEF, 2014).

Viet Nam MICS 2013-14 was conducted using a sample of 10,018 interviewed households, with 9,827 women aged 15 - 49 years and 3,316 children aged under 5. The survey was constructed to provide estimates for a wide range of indicators at the national level for children and women in urban and rural areas as well as six geographic regions (The World Bank, 2015). A multistage and stratified cluster sampling method was utilized for the sample selection of the survey (The World Bank, 2015). This study uses a sample of 6,969 women aged 20 - 49 who have ever married or cohabited (including divorced/separated) and have ever given birth to at least a child. These parameters are chosen to investigate two consequences of child marriage among girls in Viet Nam, early birth and child mortality. The reason for selecting women aged 20 - 49 instead of including younger women (married and with a child), especially at a very young age (i.e 15,16 and 17), is to avoid selection bias. The analyses of the main independent variable (age at first marriage) compare the group of women married at a young age (15,16 and 17) with the group married at an older age (18 and older). Therefore, analyses on the former group are based on a sample of women aged 15 - 49, whereas analyses on the latter group are based on a sample of women aged 18 - 49. This means that the age of marriage effect may be caused by the difference between two sampled groups. Hence the selection of sampled women aged 20 - 49 solves this problem to a large extent.

2.2.Methodology

This section provides descriptions of the variables and methods used to investigate whether child marriage is associated with early childbearing and child mortality in Viet Nam. In order to answer the research questions, analyses are performed using Stata 14. Two separate models are employed to study these associations. The major independent variable is age at first marriage. The models control for the age of women, wealth index, area of residence and educational level of the head of household.

The first dependent variable *mother's age at birth* is a dummy variable indicating whether (1) or not (0) mothers gave birth before 20 (early birth). According to UNFPA (2012), women giving birth at 15-19 (adolescent birth) have a risk of death that is twice as high compared to those giving birth at 20 and older. In the MICS data, more than 21% of women aged 20-49 gave birth before 20 (Table A7, Appendix).

In addition to early birth, the paper examines child mortality as another consequence of child marriage. The second dependent variable is a dummy variable indicating whether (1) or not (0) mothers had child mortality. This information was obtained from answers to a question posed to mothers about whether she has ever had at least one child who was born alive but later died (Lee et al., 2016). According to the survey, 6% of women aged 20-49 who have ever given birth experienced child mortality (Table A8, Appendix).

The independent variable *age at first marriage* is a categorical variable. It is constructed differently corresponding to each of the two dependent variables. In the first model studying the association between age at marriage and age at birth, *age at first marriage* is classified into 3 age groups: (1) below 16, (2) 16-17 years old and (3) 18 and older (reference). On the other hand, in the second model analyzing the relationship between age at marriage and whether the mother has ever had child mortality, the variable is categorized into 5 groups: (1) below 16, (2) 16-17 years old, (3) 18-24 years old (reference), (4) 25-34 years old and (5) 35 and older. The reason for this classification is to further clarify the effects of different groups of age at marriage on the mortality of the children. Research suggests that mothers giving birth at too young or too old an age may have higher levels of child mortality (Ayotunde et al., 2009; Finlay et al., 2011; Oyefara, 2013; Hammann, 2014).

The control variables in the models are the age of women, household wealth index, area of residence and education of the household head. The reason for the inclusion of these control variables is to exclude alternative explanations while testing the hypotheses with dependent variables. The variable *age of women*, measured in years, is an interval variable ranging from 20 to 49. Household wealth scores were obtained by Principal Component Analysis, using information gathered from each household's ownership of consumer goods and facilities, and then divided into quintiles: 'Poorest' (reference), 'Poorer', 'Middle', 'Richer', 'Richest'. The variable *area of residence* is a dummy variable indicating whether (1) or not (0) the women are living in an urban area. The variable *education of household head* is a categorical variable indicating the educational attainment of the household heads at 5 levels: (0) no education, (1) primary, (2) lower secondary, (3) upper secondary, (4) tertiary.

Further details on each variable are provided in the bivariate tables (Table A9-A13 Appendix). Table A9 shows the distribution of women aged 20-49 by age at first marriage and age at birth. 94% of women married before 16 and 89% of women married at 16-17 gave birth before 20. Whereas, only 10% of those married at the legal age gave birth early. The distribution of women aged 20-49 by age at first marriage and whether the mother has ever had child mortality is provided in Table A10. The rate of women married before 16 that have ever had child mortality is 21%, much higher than that of women married at the legal age (18-24; 24-34; 35 and older). Table A11 provides the distribution of women aged 20-49 by household wealth index, age at birth and whether the mother has ever had child mortality. It can be observed that among the women coming from the poorest households, 36% gave birth before 20 and 12% have ever had child mortality. The rates decrease in order from the poorest to the richest category. In Table A12, we see that the rates of rural women that gave birth early and have ever had child mortality are approximately twice as high as that of urban women. Table A13 shows the distribution of women by education of household head, age at birth and whether the mother has ever had child mortality. The percentages of women living with uneducated household heads that had early childbearing and child mortality are the highest (38% and 14% respectively). These rates once again decrease in order from women living with uneducated household heads to those living with tertiary-level educated ones.

The primary interest in this study is to examine two consequences of child marriage among girls in Viet Nam. Logistic regression models are employed in both analyses

because two dependent variables have binary outcomes. Particularly, the dependent variable *mother's age at birth* has two outcomes: (1) giving birth before 20 (early birth) and (0) otherwise. Likewise, the second dependent variable depicts whether (1) or not (0) the mother has ever had child mortality.

A summary of variable constructions is provided in Table A16 (Appendix).

3. Results

Table 4 provides descriptive statistics. It is observed that more than 21% of women aged 20-49 in our sample gave birth early and 6% had child mortality. The average age of sampled women was around 36. Approximately 41% of women are living in an urban area.

Table 4. Descriptive statistics: Percentages, means of characteristics of women aged 20-49 (N=6,969)

Variables	%, mean	Min	Max	SD
Model 1				
Giving birth before 20 (dependent variable)	21.4%	0	1	0.41
Age at first marriage (independent variable)	2.83	1	3	0.44
Model 2				
Child mortality (dependent variable)	6.4%	0	1	0.25
Age at first marriage (independent variable)	3.01	1	5	0.64
Control variables				
Age of women	36.16	20	49	7.84
Household wealth index	3.05	1	5	1.44
Living in urban area	40.6%	0	1	0.49
Education of household head	2.05	0	4	1.11

Source: MICS 2014

3.1.Early birth

Table 5 shows the outcomes of the logistic regression analysis. The analysis begins by looking at *age at first marriage*. In general, child marriage (marriage before 18) is positively and significantly associated with early childbearing. In detail, the odds of having early birth are 100 times higher for girls married before 16, and 67.6 times higher for those married at 16-17, compared to those married at the legal age, ceteris paribus. This means that hypothesis 6 is strongly supported.

In addition, there is a significant and negative association between the age of women and early birth. For every one-year increase in the age of women, the odds of having early

Table 5. Logistic regression analysis of early birth among women aged 20-49 in Viet Nam: log odds, standard errors and odds ratios

	β	SE	Exp(β)
Intercept	-0.382	0.223	
Age at first marriage			
Below 16	4.605***	0.306	100.030
16-17 years old	4.214***	0.128	67.617
18-24 years old (ref)			
Age of women	-0.033***	0.005	0.968
Wealth index quintiles			
Poorest (ref)			
Poorer	-0.337**	0.124	0.714
Middle	-0.104	0.121	0.901
Richer	-0.389**	0.131	0.678
Richest	-0.740***	0.168	0.477
Area of residence			
Living in urban area	-0.169	0.097	0.845
Education of household head			
None (ref)			
Primary	-0.021	0.155	0.979
Lower Secondary	-0.158	0.153	0.854
Upper Secondary	-0.403*	0.183	0.669
Tertiary	-1.696***	0.263	0.183

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ (N=6,969 women aged 20-49 who were married and have given birth)
The dependent variable indicates whether (1) or not (0) a mother gave birth before 20.

childbearing decrease by 3%. It is obvious that this effect is strong. Given that the sample includes women aged 20-49 who have given birth, those of age 49 have a much higher probability of having given birth at 20 and older than those of age 20. This variable hence largely reflects and thus controls for this selection effect. Furthermore, the finding to a certain extent suggests that women in the past had a higher probability of delaying pregnancy.

Table 5 also shows that household wealth is an important indicator of a mother's age at birth. Living in a wealthier family will decrease the odds of giving birth before 20. Compared to women from the 'poorest' households, those from the 'poorer' and 'richer' categories have 29% and 32% lower odds of giving birth early, respectively. Living in the 'richest' households decreases the probabilities of early childbearing by 52% compared to living in the 'poorest' ones. The effect for the difference between living in

the ‘middle’ households and in the ‘poorest’ ones is found to be nonsignificant. This finding is not in line with expectation. From table A11 (Appendix), it is expected that there would be a significant difference between the ‘middle’ and the ‘poorest’ households.

The education of household heads at the upper secondary and tertiary level are found to be negatively and significantly associated with mother’s early childbearing. The size of the effect is approximately 33% weaker for women living with household heads obtaining upper secondary education than with uneducated household heads. The effect is much weaker for those living with the heads with tertiary level, which is 82% weaker than living with uneducated heads.

3.2.Child mortality

The outcomes of the logistic regression analysis are shown in Table 6. Based on the results, it is observed that the age at first marriage is negatively and significantly associated with child mortality. After controlling for other factors, the odds of experiencing child mortality are 3.3 times and 1.8 times higher for women married before 16 and at 16-17, respectively, compared to those married at 18-24 (reference). On the other hand, women married at 25-34 years old have 52% lower odds of child mortality compared to women at 18-24 years old. The effect is not statistically significant for the final marriage age group “35 and older”. This finding supports the hypothesis 7 of the thesis.

Additionally, the age of women is positively and significantly related to the experience of child mortality. For every one-year increase in the age of the women, the odds of experiencing child mortality increase by 10%.

The results also show that household wealth is a significant indicator of whether a mother has ever had child mortality. Women from ‘poorer’, ‘middle’, ‘richer’ and ‘richest’ categories have much lower odds of experiencing child mortality compared to those from the “poorest” category. In those situations, the size of the effect is decreased by 51%, 46%, 56% and 68%, respectively. Therefore, the effect of the household wealth on child mortality is the weakest if the mother lives in the ‘richest’ household.

In addition, there is a negative and significant association between living in an urban area

Table 6. Logistic regression analysis of the experience of child mortality among women aged 20-49 in Viet Nam: log odds, standard errors and odds ratios.

	β	SE	Exp(β)
Intercept	-5.266***	0.316	
Age at first marriage			
Below 16	1.207***	0.200	3.343
16-17 years old	0.579***	0.136	1.783
18-24 years old (ref)			
25-34 years old	-0.726***	0.191	0.484
35 and older	-0.870	0.736	0.419
Age of women	0.094***	0.007	1.098
Wealth index quintiles			
Poorest (ref)			
Poorer	-0.707***	0.154	0.493
Middle	-0.609***	0.155	0.544
Richer	-0.815***	0.167	0.443
Richest	-1.129***	0.219	0.323
Area of residence			
Living in urban area	-0.257*	0.128	0.773
Education of household head			
None (ref)			
Primary	-0.380*	0.169	0.684
Lower Secondary	-0.505**	0.170	0.603
Upper Secondary	-0.377	0.215	0.686
Tertiary	-0.425	0.260	0.654

t statistics in parentheses
$^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$ (N=6,969 women aged 20-49 who were married and have given birth)
The dependent variable indicates whether (1) or not (0) a mother had child mortality.

and child mortality. The odds of child mortality are 23% lower for women living in an urban area compared to those living in a rural one .

Another finding of the study is that compared to living with uneducated household heads, mothers living with household heads with primary or lower secondary level education have 32% and 40% lower odds of having child mortality, ceteris paribus. The effects are found to be nonsignificant for those living with household heads with upper secondary and tertiary levels.

Chapter IV. Discussion and conclusion

1. Discussion

This section provides a discussion of the two analyses of the determinants and consequences of child marriage. In the first subsection, the results of the analysis of the determinants of child marriage will be discussed. Then, limitations regarding the data and methodologies will be presented, followed by suggestions for future research. The second subsection which discusses the results of the analyses on the consequences of child marriage have the same structure as the previous one.

1.1.Determinants of child marriage among girls in Viet Nam

To investigate which household factors are associated with child marriage, I have tested for five hypotheses. In hypothesis 1, I predicted that girls from poor households were more likely to marry early than those from rich families. The previous studies found that poor girls dropped out of schools and were married off because the parents could not afford their daughters' educational costs (Adedokun et al., 2011; Duc & Tam, 2013; ICRW, 2013). In hypothesis 2, I expected a positive relationship between a mother's educational level and the age at marriage of the girls. Highly educated mothers often encourage their daughters to attain higher educational levels and obtain an appropriate job (Singh & Vennam, 2016). Hypothesis 3 indicated that rural girls were more likely to marry early than urban ones. This is mostly due to the fact that upper secondary schools are located in urban districts, which makes it difficult for girls from remote communes to reach the schools (Duc & Tam, 2013). Hypothesis 4 assumed that girls living in more developed regions were more inclined to delay marriage than their peers in less developed regions. And hypothesis 5 is that girls living in large families have higher probabilities of marrying in childhood than their counterparts in small families. Research found that girls living in more crowded families have to share financial resources with more members (their siblings and grandparents). Therefore, they may have fewer resources available to invest in education and skill development, which causes higher probabilities of school drop-out (Thompson and Minkler, 2001; Caceres, 2004; Angrist, 2005; Brandon, 2005). On the basis of a logistic model using Young Lives data on 459 girls

aged 19, the study found broad evidence supporting hypotheses 4 and 5. However, the findings of the study rejected hypotheses 1,2 and 3.

The study found that family size was positively and significantly related to child marriage (marriage before 18). The finding is in line with Angrist et al. (2005) and Krueger et al. (2015). The latter study found that children living in extended families had worse outcomes than their counterparts in married couple families (i.e only parents and children). This is not surprising since living in a large family means that children have fewer resources available for education and skill development, a possible reason for the school drop-out and early marriage. In greater detail, children have to share resources with their siblings or their grandparents, and even grand-grandparents. Although evidence has revealed that the presence of grandmothers in the household is important for the life chances of children, very old and unhealthy grandmothers may draw money and social support away from their grandchildren and become a burden rather than a resource for the family (Fuller-Thomson & Minkler, 2004; Krueger et al., 2015; Schrijner & Smits, 2018). Additionally, the childcare of the parents may be affected by the grandparents who have traditional norms and outdated parenting skills (Krueger, 2015). These restrictive ideologies might negatively influence the children's development and behaviors in the future.

Region is not strongly associated with age at marriage. The effect of region is found to be a significant difference between Red River Delta and Phu Yen. Girls in Red River Delta tend to be married at a young age significantly less frequently than girls in Phu Yen. While Red River Delta ranks second is in monthly average income per capita in Viet Nam (behind the South East), the South Central Coast, where Phu Yen is located, is at the bottom, according to General Statistics Office of Viet Nam (2010). Moreover, Red River Delta has a denser population and much more rapid urbanization and globalization than Phu Yen. This rapid development of Red River Delta has triggered an explosion of Internet access in recent decades, which allows teenagers to get easier access to sexual and reproductive health education (Nguyen et al., 2016). Thus, it is possible that Red River Delta girls are developing a more comprehensive understanding of sexual education and thus become more careful in their sexual risk-taking than Phu Yen girls. This finding is line with Kamal (2012) in indicating that the regional socioeconomic development differences strongly impact the timing of marriage. In particular, women

from more developed regions are more inclined to delay marriage because most of them are more highly educated and have greater career opportunities than their counterparts in less developed regions.

The study has several important limitations regarding the data and methodologies in both Young Lives and MICS data. In the Young Lives data, the first challenge is that the sample is not well representative. The sample of the older cohort girls for study is quite small, with totally 459 correspondents (85 married/cohabited). In addition, it is important to note that the Young Lives data has a pro-poor sample and the number of rural girls disproportionately outweighs the number of urban girls (Table 7). Da Nang is the only region where all Young Lives girls were living in urban areas, which is completely contrary to other regions. This may be due to the rapid urbanization of Da Nang, which contains only 11 out of the 9111 rural communes in Viet Nam (the fewest), according to The General Statistics Office of Viet Nam (2009). However, this problem was solved to a large extent because the model has controlled for household wealth and urbanization. Therefore, collinearity is not expected in the model.

The second drawback is the lack of data on mother's educational level due to missing values. The sample contains 459 girls but only 379 girls have data on their mother's level of education, which means that nearly one fifth of the data on mother's education is missing. Although the 'dummy variable adjustment' procedure made it possible to include all the sampled women, the problem remains that the coefficient of mother's education was based on fewer observations than that of the other variables.

Difficulties in calculating the age at marriage is another methodological limitation of the research. In the study of Singh and Vennam (2016) using Young Lives data to examine factors shaping early marriage in India, the authors calculated the age at first marriage by taking the difference between the date of marriage obtained in Round 4 and the date of birth of the girls obtained in Round 1 of the survey. Unfortunately, information about the date of birth of the sampled girls is not published to external users due to privacy policies. Therefore, in this study, the age at first marriage was measured through two steps: firstly, the difference between the date of interview and the date of marriage taken in Round 4 is calculated; next, the age at marriage is the difference between the age of girls (at the time of interview) and the time difference estimated in the first step. The problem is that in the Young Lives dataset, the date of the interview is formed with date, month and year but

Table 7. Distribution of girls aged 19 by region and place of residence (%)

Region	Place of residence		**N**
	Urban	Rural	**(100%)**
Northern Uplands	1.3%	98.7%	**79**
Red River Delta	5.1%	94.9%	**98**
Phu Yen	1.3%	98.7%	**79**
Da Nang	100%	0%	**76**
Mekong River Delta	1.1%	98.9%	**89**
Other	50%	50%	**4**
Total	**20.2%**	**79.8%**	**425**

Source: Young Lives

information about the date of marriage is constructed with month and year. Hence, the calculated age at marriage may be slightly different from the real age at marriage of the sampled girls. And this difference is a maximum 1 month.

With these data limitations, future empirical research on the determinants of child marriage are needed using more extensive data. Moreover, a combination of a quantitative and qualitative approach is recommended in prospective research so that we can gain multidimensional perspectives on causes of child marriage in Viet Nam.

1.2.Consequences of child marriage in Viet Nam

To investigate the consequences of child marriage in Viet Nam, I have tested for two hypotheses. In hypothesis 6, I predicted that girls married at a young age were more inclined to have early childbearing than girls married at a greater age. Research indicates that young brides have higher frequencies of sexual intercourse without using contraceptives (Nguyen, 2012). Additionally, some point out that early married girls have less of a say in important decisions regarding sexual activities like the use of contraception (Jain and Kurtz, 2007; ICRW, 2013). Hypothesis 7 indicated that girls married early had higher probabilities of experiencing child mortality than girls married later. Multiple studies show that babies of young brides, particularly those who are below 15 when giving birth, have higher likelihoods of suffering low birth weight and adverse long-lasting effects on their health (MICS 2014; Girls Not Brides 2016; Ashley, 2016). On the basis of two separate logistic regression models using MICS data on 6,969 women aged 20-49 (ever married and given birth to at least a child), the study found broad evidence supporting hypotheses 6 and 7.

By using a logistic regression model to examine the relationship between child marriage and early childbearing, the study found that this association was strong. This outcome is in line with the previous studies of Kamal (2012), Goli et al. (2015) and Woden (2017). This is not surprising because almost all early married girls have difficulty refraining from sex after marriage. Consequently, this increases the frequency of sexual intercourse without using contraceptive methods (Nguyen, 2012). This is a result of a lack of sexual health knowledge regarding unintended pregnancy prevention because young girls, particularly in rural areas, have restricted access to sexual and reproductive health information (Klingberg et al., 2008). Furthermore, in Viet Nam, early married girls are often put under pressure from husband's families to have babies as soon as possible (The World Bank, 2009). If they make some delay in pregnancy, they are thought to be biologically incapable of childbearing. Therefore, to prove their fertility, most girls engage in childbirth as soon as possible after marriage (Kamal, 2012). Although in Viet Nam, child marriage is likely the cause of early birth (Girls Not Brides, 2016), early pregnancy may result in child marriage in some cases. Studies have revealed that Vietnamese adolescents are increasingly involving in sexual activity, with corresponding levels of unintended pregnancy (UNICEF, 2018). Over 10% of unmarried girls aged 15-24 who have had sexual intercourse were reported to have unintended pregnancy (Hoang et al., 2012). This high level of unintended pregnancy among unmarried girls is a result of combined factors including a lack and inadequate quality of sexual health education in the schools, permissive attitudes and practices of premarital sex, poor communication among couples or between parents and adolescents on sexuality-related issues and a lack of deliberate policy on sexuality education for youths (Vinh and Tuan, 2015). As a consequence of unintended pregnancy, some adolescents drop out of school and get married.

In the sample of women aged 20-49 who have given birth, older women are less inclined to give birth early. The explanation of the age effect is to a large extent selectivity, as explained in the section 3.1 (Chapter III). Additionally, this finding to a certain extent suggests that there is a difference in the age at birth between Vietnamese women in the past and today. This difference may be attributed to youths having a more accepting view of pre-marital sex. In contemporary Viet Nam, young people have easier access to Western movies, music and ideas through social media. As a consequence, they consider having sex while studying normal but they do not have much knowledge about safe sex

(Nguyen et al., 2016). There are many confusing beliefs and fears of side effects regarding contraceptives among adolescents (Vinh and Tuan, 2015). For instance, they believe that contraceptives may make them weak, unfeminine or even cause fertility and cancer (Nguyen et al., 2006; Wolf et al., 2010). Therefore, having sex without contraceptives increases the risks of unintended pregnancy among younger people.

The results also show that there is a positive relationship between household poverty and early birth. This finding is consistent with Kara (2013) in pointing out that the wealthier the households are, the less likely the girls are to have early childbearing. Additionally, the attainment of upper secondary and tertiary education of the household heads was found to increase the probabilities of delaying childbearing. It is possible that highly educated people have a more adequate understanding of prenatal care and child health due to higher education levels (e.g colleges and universities), communities and social networks. Accordingly, they can make more rational decisions on the timing of pregnancy for the girls (The World Bank, 2015).

To find out whether, and in which ways, the effect of the age at marriage on the age at birth differs across circumstances, I have tested for interaction between age at marriage and other control variables in the logistic regression model. The results showed that the effects of interaction terms are statistically nonsignificant. This means that there is no difference in the effect of the age at marriage across circumstances. Hence, interaction terms were not included in the model.

With the help of a logistic model, the research demonstrated that marriage in childhood is closely linked to child mortality. This finding is consistent with previous studies which report that infants and children born to mothers below the age of 20 have a higher risk of death than those born to mothers by the age of 20 and above (Phipps, 2002; Taffa, 2003; Markovitz, 2005; Ayotunde, 2009; Oyefara, 2013). This association seems to be a consequence of the physical and biological immaturity of the young mothers (Raj et al., 2010). Particularly, early married girls do not have enough physical and psychological preparation or knowledge to become mothers, leading to a wide range of adverse effects on babies' health and lives. In contrast, this outcome is not in line with Raj et al. (2010) and Hammann (2014) who indicate that child mortality is found at higher rates among children born to old mothers than young ones. This inconsistency may be because the current analysis did not include as many demographic and socioeconomic proxies as the

analyses of Raj et al. (2010) and Hammann (2014) due to the data limitations. Therefore, this sheds lights on future research to include more demographic and socioeconomic variables in the analyses so that we can have a more thorough and complete understanding about the association between early marriage and early motherhood in Viet Nam.

In the group of sampled women, older women were found to be more likely to have experienced child mortality. This is not surprising because older women have lived for a longer time period than younger ones.

Another finding of the analysis is that the poorer the family, the higher the likelihood that the mother had child mortality. A plausible reason for this outcome is that poor households may suffer risks regarding personal insurance, poor working and living conditions and low accessibility to healthcare services due to the lack of financial resources (Lee et al., 2016). As a consequence, poor children with illnesses and morbidity can not be treated properly and immediately, causing high risks of child death.

Living in an urban area is negatively associated with experiencing child mortality. This is not surprising because medical facilities (e.g hospitals, clinics, health centers) are more adequate in urban areas, which allows urban women to get easier access to healthcare services. This advantage of living in urban areas partly explain why urban children often receive more immediate and effective treatments from medical services than rural children.

A final finding is a negative correlation between the educational level of household heads and the likelihood of child mortality. The attainment of primary and lower secondary education of the household heads was found to decrease the probabilities of experiencing child death by mothers, compared to the attainment of no education. In Viet Nam, the heads of households are often the decision makers on issues regarding healthcare access. The mothers can benefit from the assistance of skilled household heads during delivery. Therefore, the lack of education of the heads of the families can be a barrier to women's utilization of proper healthcare methods (Vallières, 2013).

Once again, to investigate if the effect of the age at marriage on whether the mother has ever had child survival differs across situations, I have tested for interaction between age at marriage and other control variables in the logistic regression model. The results

showed that the effects of interaction terms are statistically nonsignificant. There is no difference in the effect of the age at marriage across circumstances. Hence, interaction terms were again not included in the model.

Although the findings of the study have given crucial insights into the associations between child marriage and early childbearing and child mortality in Viet Nam, important limitations need to be discussed. Firstly, all women included in the sample are currently in their reproductive age (20-49), which makes this retrospective data a problem with older women because the demographic and economic characteristics of households change over time. For example, the analyses on the wealth index in this study may be biased because the current wealth status of the women might be significantly different from the moment when they gave birth or when their child died. Likewise, the analyses on the area of residence might be partly impacted because the women may currently live in an area which is different from the one they lived when they gave birth or when their child died. The analyses of the educational level were not influenced because the education is fairly constant over time. Therefore, the inclusion of sampled women aged 20-49 years could result in time varying measurement error in identifying the demographic and economic factors associated with early childbearing (Kara, 2013). This problem might be solved in future studies by narrowing the sample of women (e.g women aged 20-24 years, defined as youth (WHO, 2012). By restricting the sample in this way, the time inconsistent measurement error will be reduced. Therefore, it would be more accurate in identifying possible reasons of early childbearing and child mortality (Kara, 2013).

Secondly, the analyses were performed using cross-sectional data, which can not capture changes overtime. Data collected only at the point of the survey can be problematic. Particularly, it may produce inaccurate interpretations and conclusions because it does not yield insights into changes in society (Rafferty, 2011). Additionally, analyses based on cross-sectional data make the causality impossible to be inferred. For example, we can not infer from the study that a household's poverty preceded early childbearing or the other way around. However, since child marriage happens before the evaluated outcomes, ordering of this exposure to early birth and experience of child mortality can be assumed (Raj et al., 2010). Caution is still needed in the interpretation of the results. Due to these limitations regarding cross-sectional data, additional analyses should be based on time

series and panel data to provide further insights into early childbearing and child mortality in Viet Nam.

Finally, only early birth and child mortality are examined in the study. Research pointed that intimate partner violence, less power in decision making, low level of education and economic status are other consequences of child marriage (Jain & Kurz, 2007; Hong Le et al., 2014). Thus, prospective investigations are needed to extend the research on the effects of child marriage among girls in Viet Nam.

2. Conclusion

This study examined the determinants and consequences of child marriage among girls in Viet Nam using the Young Lives data (n=459 girls aged 19) and the 2014 MICS (n=6,969 women aged 20-49 who were married and have given birth). The study employed logistic regression models to determine the household factors shaping child marriage and the associations between child marriage and early birth and child mortality. Household factors included in the analysis of determinants of child marriage are household wealth, household size, mother's education, place of residence and region. Findings showed that larger families were more frequently associated with child marriage. Although the effect of region was not significant for all categories, living in the Red River Delta decreased the likelihood of marriage in childhood compared to living in Phu Yen. Contrary to expectation, household wealth, residential area and mother's educational level were not significant predictors of child marriage. In addition, the study found broad evidence for the association between child marriage and early birth and child mortality. When controlling for the age of women and household characteristics (household wealth, area of residence, educational level of the household heads), child marriage was significantly and positively associated with early childbearing and child mortality. On the basis of these findings, interventions to reduce child marriage among girls in Viet Nam should focus on programs to decrease the size of the families. Children should live in small families with 4 or 5 members (i.e parents and maximum 3 children). Additionally, policies aimed at educating children and adolescents about sexual health should be more effectively implemented, particularly in less developed regions. In general, interventions to reduce the family size should go along with policies aimed at improving young people's knowledge of reproductive health and contraceptive methods.

References

- Adedokun, O.A., Gbemiga, E.A., & Cholli, D. (2011). Child marriage and maternal health risks among young mothers in Gombi, Adamawa State, Nigeria: Implications for mortality, entitlements, and freedoms. Lagos, Nigeria: Lagos State University
- Adjei, D. (2015). The cycle of poverty and early marriage among women in Ghana (A case study of Kassena-Nankana. University of Northern British Columbia.
- Angrist, Joshua D., Victor Lavy, and Analia Schlosser (2005). "New Evidence on the Causal Link between the Quantity and Quality of Children." NBER Working Paper No. 11835.
- Allison, P. D. (2002). *Missing data*. Thousand Oaks Calif.: SAGE (Quantitative applications in the social sciences, 136). Available at: INSERT-MISSING-URL.
- Ashley D. Jordana (2016). Situational Analysis on Child, Early and Forced Marriage in Vietnam, Laos, Myanmar and Cambodia. World Vision.
- Ayotunde, T., Mary, O., Melvin, A., & Faniyi, F. (2009). Maternal Age At Birth And Under-5 Mortality In Nigeria. *East African Journal of Public Health*, 6(1).
- Bayisenge, J. (2010). Early marriage as a barrier to girls ' education: A development challenge in Africa. National University of Rwanda: Social Science Department
- Boyden, J. (2016). Young Lives: an International Study of Childhood Poverty: Rounds 1-4 Constructed Files, 2002-2014. [data collection].2nd Edition. UK Data Service
- Brandon PD (2005). Welfare receipt among children living with grandparents. *Popul Res Pol Rev 2005*; 24:411–29
- Caceres, J. (2014). Impact of Family Size On Investment in Child Quality: Multiple Births as Natural Experiment. Mimeo, Department of Economics, University of Maryland.
- DeJaeghere, J. and Miske, S. (2009) Limits of and Possibilities for Equality: An Analysis of Discourse and Practices of Gendered Relations, Ethnic Traditions, and Poverty among Non-majority Ethnic Girls in Vietnam. In Baker, D. and Wiseman, A. (eds) Gender, Equality and Education from International and Comparative Perspectives. Bingley: Emerald Group

- Duc, L. T and Tam T.N.M (2013). Why Children in Vietnam Drop out of School and What They Do After That. *Young Lives*, Oxford Department of International Development (ODID), University of Oxford.
- Field, E., & Ambrus, A. (2008). Early Marriage, Age of Menarche, and Female Schooling Attainment in Bangladesh. *Journal of Political Economy, 116(5), 881–930.*
- Finlay, J. E., Özaltin, E., & Canning, D. (2011). The association of maternal age with infant mortality, child anthropometric failure, diarrhoea and anaemia for first births: Evidence from 55 low- and middle-income countries. *BMJ Open*, 1(2).
- Fuller-Thomson E, Minkler M. (2001). American grandparents providing extensive child care to their grandchildren: prevalence and profile. *Gerontologist*; 41:201–9.
- Geist, C. (2017). Marriage Formation in Context: Four Decades in Comparative Perspective. *Social Sciences*, *6*(1), 9.
- General Statistics Office (GSO) (1996): Population Data of Sparsely Populated Areas in Vietnam. Statistical Publishing House, Hanoi
- General Statistics Office (GSO) (2009). The 2009 Vietnam Population and Housing census: General Statistics Office of Vietnam
- General Statistics Office (GSO) (2009): Socio-economic Statistical Data of 63 Provinces and Cities, Vietnam. Statistical Publishing House, Hanoi
- General Statistics Office and UNICEF (2007). Viet Nam Multiple Indicator Cluster Survey 2014, Final Report. Ha Noi, Viet Nam
- General Statistics Office and UNICEF (2012). Viet Nam Multiple Indicator Cluster Survey 2014, Final Report. Ha Noi, Viet Nam
- General Statistics Office and UNICEF (2014). Viet Nam Multiple Indicator Cluster Survey 2014, Key Findings. Ha Noi, Viet Nam
- General Statistics Office and UNICEF (2015). Viet Nam Multiple Indicator Cluster Survey 2014, Final Report. Ha Noi, Viet Nam
- Goli, S., Rammohan, A., & Singh, D. (2015). The Effect of Early Marriages and Early Childbearing on Women's Nutritional Status in India. *Maternal and Child Health Journal*, *19*(8), 1864–1880.
- Guilmoto, C. (2012) 'Son Preference, Sex Selection, and Kinship in Vietnam'. Population and Development Review, 38(1): 31–54

- Hammann L. (2014). Effect of Child Marriage in Bangladesh. Erasmus School of Economics, Erasmas University Rotterdam
- Hang, N.T.T. (2016). Addressing the Risk Factors for Early Marriage in Viet Nam. *Young Lives Viet Nam Policy Brief 3.*
- Hoang T.A., Pham V.T., Quach T.T., Nguyen Q.P,. Nguyen T.T. (2012). A research on adolescent sexuality and sexuality education. Center for Creative Initiative in Health and Population; What do they know? What do they want to know? What do we think they need to know?
- Hong Le, M. T., Tran, T. D., Nguyen, H. T., & Fisher, J. (2014). Early Marriage and Intimate Partner Violence Among Adolescents and Young Adults in Viet Nam. *Journal of Interpersonal Violence*, *29*(5), 889–910
- Huttly, S., Jones, N. (2014). Young Lives: an International Study of Childhood Poverty: Round 1, 2002. [data collection]. *5th Edition*. *UK Data Service*. SN: 5307
- International Center for Research on Women (ICRW) (2005). Development Initiative on Supporting Health Adolescents (DISHA) Project. *Analysis of quantitative baseline survey data conducted in 2004.* ICRW: Washington, D.C
- International Center of Research on Women (ICRW) (2013). Asia child marriage initiative: Summary of research in Bangladesh, India, and Nepal. Retrieved May 30, 2013 from http://www.plan-intemational.org/asia
- Jain, S., & Kurz, K. (2007). New insights on preventing child marriage. A global analysis of factors and programs. *US Agency for International Development*: Pact Inc
- Jones, N. and Tran, T.V.A (2010). Gendered risks, poverty and vulnerability in Viet Nam: A case study of the National Targeted Programme for Poverty Reduction. Overseas Development Institute, London.
- Jones, N., Presler-Marshall, E. and Tran, T.V.A (2014a) Early Marriage among Vietnam's H'Mong: How Unevenly Changing Gender Norms Limit H'mong Adolescent Girl's Options in Marriage and Life. *ODI Country Report*, London: Overseas Development Institute.
- Kamal, S. M. M. (2012). Decline in Child Marriage and Changes in Its Effect on Reproductive Outcomes in Bangladesh. *Journal of Health, Population, and Nutrition*, 30(3), 317–330.

- Kara, R. (2013). Determinants of Childbearing among Young People in South Africa: Findings from National Income Dynamics Study. *University of KwaZulu-Natal, South Africa.*
- Klingberg-Allvin, M., Nguyen, B., Johansson, A. et al. (2008) 'One Foot Wet and One Foot Dry: Transition into Motherhood among Married Adolescent Women in Rural Vietnam'. *Journal of Transcultural Nursing* 19: 338-346
- Krueger, P. M., Jutte, D. P., Franzini, L., Elo, I., & Hayward, M. D. (2015). Family structure and multiple domains of child well-being in the United States: a cross-sectional study. *Population Health Metrics,* 13, 6
- Lee, G. and Tapp, N. (2010) Culture and Customs of the Hmong. Santa Barbara, CA: Greenwood.
- Lee, H. Y., Do, D. V., Choi, S., Trinh, O. T. H., & To, K. G. (2016). Trends and determinants of infant and under-five childhood mortality in Vietnam, 1986-2011. *Global Health Action, 9*(1).
- Lemoine, J. (2012) 'Commentary: Gender-based Violence among the (H)mong'. *Hmong Studies Journal* 13: 1-27
- Marchetta F. & Sahn D.E. (2015). The Role of Education and Family Background in Marriage, Childbearing and Labor Market Participation in Senegal. *Discussion Paper No. 8876, IZA Discussion Paper,* The Institute for the Study of Labor.
- Markovitz, B. P., Cook, R., Flick, L. H., & Leet, T. L. (2005). Socioeconomic factors and adolescent pregnancy outcomes: distinctions between neonatal and post-neonatal deaths? *BMC Public Health, 5,* 79.
- Mooyaart, J. E., & Liefbroer, A. C. (2016). The Influence of Parental Education on Timing and Type of Union Formation: Changes Over the Life Course and Over Time in the Netherlands. *Demography, 53*(4), 885–919.
- Nguyen, H., Shiu, C., & Farber, N. (2016). Prevalence and Factors Associated with Teen Pregnancy in Vietnam: Results from Two National Surveys. *Societies, 6*(2), 17.
- Nguyen H.N., Liamputtong P., Murphy G. (2006). Knowledge of contraceptives and sexually transmitted diseases and contraceptive practices amongst young people in Ho Chi Minh City. Vietnam. *Health care for women international*; 27(5):399–417
- Nguyen, M. C., & Wodon, Q. (2012). Measuring Child Marriage. *Economics Bulletin2, 32*(1), 398–411

- Nguyen, N. (2008). An Assessment of the Young Lives Sampling Approach in Vietnam, Technical Note 4. *Oxford: Young Lives*
- Oscar Torres-Reyna. Getting Started in Logit and Ordered Logit Regression . Princeton University https://www.princeton.edu/~otorres/Logit.pdf
- Oyefara, J. L. (2013). Maternal age at first birth and childhood mortality in Yoruba society: the case of Osun State, Nigeria. Research on *Humanities and Social Sciences*. London. Retrieved from http://www.iiste.org/Journals/index.php/RHSS/article/view/4203/4257
- Pesando, Luca Maria, and Alejandra Abufhele (2018). Household Determinants of Teen Marriage and Childbearing: Sister Effects Across Four Low- and Middle-Income Countries. *University of Pennsylvania Population Center Working Paper* (PSC/PARC), 2018-16. https://repository.upenn.edu/psc_publications/16.
- Pilcher, J. and Imelda, W. (2008). 50 Concepts in Gender Studies. *Los Angeles: Sage*
- Plan (2014). Birth Registration and Children's Rights. Full report https://www.planusa.org/docs/reports/2014-birth-registration-research-full-report.pdf
- Pridmore, S., & Walter, G. (2013). Suicide and Forced Marriage. *The Malaysian Journal of Medical Sciences* : MJMS, 20(2), 47–51
- Pham, V., Nguyen, H., Tho, L. H., Minh, T. T., Lerdboon, P., Riel, R., … Kaljee, L. M. (2012). Evaluation of three adolescent sexual health programs in Hanoi and Khanh Hoa province, Vietnam. *AIDS Research and Treatment*, *2012*.
- Phipps, M. G., Sowers, M., & DeMonner, S. M. (2002). The Risk for Infant Mortality among Adolescent Childbearing Groups. *Journal of Women's Health*, *11*(10), 889–897.
- Rafferty, A. (2011). Analyzing Change Over Time: A guide to ESDS microdata resources. *Economic and Social Data Services*. URL: www.esds.ac.uk
- Raj, A., Saggurti, N., Winter, M., Labonte, A., Decker, M. R., Balaiah, D., & Silverman, J. G. (2010). The effect of maternal child marriage on morbidity and mortality of children under 5 in India: cross sectional study of a nationally representative sample. *The BMJ*, *340*, b4258.
- Raley, R. K., & Sweeney, M. M. (2009). Explaining Race and Ethnic Variation in Marriage: Directions for Future Research. Race and Social Problems, 1(3), 132–142

- Reuben, Monica A. (2014). Causes and effect of early marriage on the girl-child in Suba sub-county, Western Kenya. University of Nairobi Research Archive
- Sandra, F. (2015). Women and Poverty – A Human Rights Approach. African Journal of International and Comparative Law, 24 (4), p.494-517
- Schrijner, S. & Smits, J. (2018). Grandmothers and Children's Schooling in Sub-Saharan Africa. Hum Nat (2018) 29: 65. https://doi.org/10.1007/s12110-017-9306-y
- Shawky, S., & Milaat, W. (2000). Early teenage marriage and subsequent pregnancy outcome. *Eastern Mediterranean Health Journal*, 6(1), 46–54.
- Singh, R., & Vennam, U. (2016). Factors shaping trajectories to early marriage : Evidence from Young Lives , India. Young Lives Working Paper 149, (May), 1–25
- Snyder, A. R., Brown, S. L., & Condo, E. P. (2004). Residential differences in family formation: The significance of cohabitation. *Rural Sociology*, 69(2), 235–260
- Taffa, N. (2003). A comparison of pregnancy and child health outcomes between teenage and adult mothers in the slums of Nairobi, Kenya. *International Journal of Adolescent Medicine and Health*, *15*(4), 321–329
- The World Bank (2009). Country Social Analysis: Ethnicity and Development in Viet Nam, Summary Report. *Social Development Unit, Sustainable Development Department, East Asia and Pacific Region*.
- The World Bank. (2012). Gender equality in development. World Development Report 2012
- Treffers, P. E.,Olukoya,A. A.,Ferguson,B. J.,& Liljestrand,J. (2001). Care for adolescent pregnancy and childbirth. *International Journal of Gynaecology and Obstetrics*, 75(2), 111-121
- Uddin, M. E. (2015). Family socio-cultural values affecting early marriage between Muslim and Santal communities in rural Bangladesh. *International Journal of Sociology and Social Policy*, 35(3/4), 141–164
- UNESCO (2017). Early and unintended prenancy: Recommendations for education sector http://unesdoc.unesco.org/images/0024/002484/248418e.pdf
- UNFPA (2012). Adolescent Birth Rate in Viet Nam. *Advocacy Brief* http://vietnam.unfpa.org/sites/default/files/pub-pdf/Advocacy%20brief_Adolescent%20Birth%20Rate_Eng_0.pdf

- UNICEF (2014). Progress and prospects. *Ending Child Marriage: Progress and Prospects, UNICEF*, 1–8
- UNICEF (2005). Early Marriage: A Harmful Traditional Practice: A Statistical Exploration. UNICEF: New York, NY
- UNICEF Innocenti Research Center (2001). Early Marriage: Child Spouses. *Innocenti Digest*, *7*(7), 1–29. Retrieved from http://www.unicef-irc.org/publications/pdf/digest7e.pdf
- United Nations (1989). Conventions on the Rights of the Child http://www.ohchr.org/EN/ProfessionalInterest/Pages/CRC.aspx
- Vallières, F., Hansen, A., McAuliffe, E., Cassidy, E. L., Owora, P., Kappler, S., & Gathuru, E. (2013). Head of household education level as a factor influencing whether delivery takes place in the presence of a skilled birth attendant in Busia, Uganda: a cross-sectional household study. *BMC Pregnancy and Childbirth*, *13*, 48.
- Vietnam Ministry of Health (2005). *Survey Assessment of Vietnamese Youth (SAVY I)*; United Nations Children's Fund (UNICEF): Hanoi, Vietnam.
- Vinh, N. T., & Tuan, P. C. (2015). FACTORS INFLUENCING UNINTENDED PREGNANCY AND ABORTION AMONG UNMARRIED YOUTH IN VIETNAM: A LITERATURE REVIEW. *Tap Chi Y Te Cong Cong*, 3(2), 3–16
- Wiemann, C. M., Rickert,V. I., Berenson,A. B., & Volk, R. J. (2005). Are pregnant adolescents stigmatized by pregnancy? *Journal of Adolescent Health*, 36(4), e351-e358
- Wodon, Q., C. Male, A. Onagoruwa, A. Savadogo, and A Yedan. (2017). The Cost of Not Investing in Girls in Uganda: Child Marriage, Early Childbearing, Low Educational Attainment for Girls, and their Impacts. Washington, DC: The World Bank.
- Wolf M., Thuy P.B., Hyman A., Huber A. (2010). Abortion in Vietnam: History, culture and politics collide in the era of Doi Moi: Local Dilemmas, Glabal politics. In: Whittaker A, editor. Abortion in Asia. United States.
- Young Lives (2011). Young Lives Method Guide Sampling. An International Study of Childhood Poverty: Round 1, 2002. UK Data Archieve Study Number 5307

Websites

- General Statistics Office in Viet Nam (GSO) (2010). Monthly average income per capita at current prices by residence and by region http://www.gso.gov.vn/default_en.aspx?tabid=474&idmid=3&ItemID=12653
- Girls Not Brides (2016). 5 reasons why ending child marriage can improve millions of women and girl's health https://www.girlsnotbrides.org/5-reasons-end-child-marriage-improve-maternal-health/
- Ministry of Justice (2000), The Vietnamese Marriage and Family Law http://www.moj.gov.vn/vbpq/en/lists/vn%20bn%20php%20lut/view_detail.aspx?itemid=373
- The World Bank (2015). Female Education and Child Bearing: A Closer Look at the Data http://blogs.worldbank.org/health/female-education-and-childbearing-closer-look-data
- The World Bank (2015). Viet Nam - Multiple Indicator Cluster Survey 2013-2014

  http://microdata.worldbank.org/index.php/catalog/2524/study-description
- UNICEF (2018). Addressing the patterns of child marriage, early union and teen pregnancy in Southeast Asia: A matter of urgency.

  https://www.unicef.org/eap/press-releases/addressing-patterns-child-marriage-early-union-and-teen-pregnancy-southeast-asia
- UNFPA (2016). Ending child marriage: towards a world where girls are free to dream http://vietnam.unfpa.org/en/news/ending-child-marriage-towards-world-where-girls-are-free-dream
- VGP News (2013). http://baochinhphu.vn/Doi-song/Mang-thai-vi-thanh-nien-Nguyen-nhan-va-hau-qua/172617.vgp
- Vietnamnet (2017). Hanoi to raise tuition fee at public schools http://english.vietnamnet.vn/fms/education/181384/hanoi-to-raise-tuition-fees-at-public-schools.html
- World Health Organization (WHO) (2012). Adolescent Health and Development.

http://www.searo.who.int/entity/child_adolescent/topics/adolescent_health/en/

- Young Lives: an International Study of Childhood Poverty: Round 1-4 Constructed Files, 2002-2014 https://discover.ukdataservice.ac.uk/catalogue/?sn=7483&type=Data%20catalogue

Appendix

Young Lives data

Table A1. Distribution of girls (aged 19) by marital status

Marital status	Frequency (girls)	Percent (%)
Single (never married)	374	81.5
Married or Cohabiting	81	17.6
Separated or Divorced	4	0.9
Total	**459**	**100**

Source: Young Lives

Table A2. Distribution of girls (aged 19) by age at first marriage

Age at first marriage	Frequency (girls)	Percent (%)
Below 18	59	12.9
18 and older	400	87.1
Total	**459**	**100**

Source: Young Lives

Table A3. Distribution of girls (aged 19) by wealth quantile and age at first marriage (%)

Wealth index	Age at first marriage		**N**
	Below 18	18 and older	**(100%)**
Poor	19.1%	80.9%	**230**
Rich	6.6%	93.4%	**227**
Total	**12.9%**	**87.1%**	**457**

Source: Young Lives

Table A4. Distribution of girls (aged 19) by region and age at first marriage (%)

Region	Age at first marriage		**N**
	Below 18	18 and older	**(100%)**
Northern Uplands	13.9%	86.1%	**79**
Red River Delta	4.1%	95.9%	**98**
Phu Yen	15.2%	84.8%	**79**
Da Nang	3.9%	96.1%	**77**
Mekong River Delta	4.0%	96.0%	**101**
Other	62.5%	37.5%	**24**
Total	**12.9%**	**87.1%**	**458**

Source: Young Lives

Table A5. Distribution of girls (aged 19) by place of residence and age at first marriage (%)

Area of residence	Age at first marriage		**N (100%)**
	Below 18	18 and older	
Rural	10.6%	89.4%	**339**
Urban	4.6%	95.4%	**86**
Total	**9.4%**	**90.6%**	**425**

Source: Young Lives

Table A6. Variables of interest

Variables	Description
Age at marriage	Takes value '1' if married before 18 (child marriage), value '0' otherwise.
Wealth index	Takes value '1' if respondent is a member of a "rich" household and '0' otherwise.
Household size	Measured in person, ranging from 1 to 12
Mother's education	Measured in grades, ranging from 0 to 14 (0 is equal to no education, 13 is equal to post secondary/vocational education and 14 is equal to university).
Region	Takes value '1' if respondent lives in Northern Uplands, value '2' if respondent lives in Red River Delta, value '3' if respondent lives in Phu Yen (reference), value '4' if respondent Da Nang, value '5' if respondent lives in Mekong River Delta and value '6' if respondent lives in other regions
Place of residence	Takes value '1' if respondent lives in an urban area and '0' otherwise.

MICS data

Table A7. Distribution of women (aged 20-49) by age at birth

Mother's age at birth	Frequency (women)	Percent (%)
Below 20	1,491	21.4
20 and older	5,478	78.6
Total	**6,969**	**100**

Source: MICS 2014

Table A8. Distribution of women (aged 20-49) by age at birth and whether they have ever had child who later died

Ever has child mortality	Frequency (women)	Percent (%)
Yes	447	6.4
No	6,522	93.6
Total	**6,969**	**100**

Source: MICS 2014

Table A9. Distribution of women (aged 20-49) by age at first marriage and age at birth (%)

Age at first marriage	Mother's age at birth		**N (100%)**
	Below 20	20 and older	
Below 16	94.0%	6.0%	**201**
16-17	89.1%	10.9%	**773**
18 and older	10.2%	89.8%	**5,995**
Total	**21.4%**	**78.6%**	**6,969**

Source: MICS 2014

Table A10. Distribution of women (aged 20-49) by age at first marriage and whether the mother has ever had child later died (%)

Age at first marriage	Ever had child who later died		**N (100%)**
	Yes	No	
Below 16	21.4%	78.6%	**201**
16-17	11.1%	88.9%	**773**
18-24	5.9%	94.1%	**4,829**
24-34	2.9%	97.1%	**1,121**
35 and older	4.4%	95.6%	**45**
Total	**6.4%**	**93.6%**	**6,969**

Source: MICS 2014

Table A11. Distribution of women (aged 20-49) by wealth index quintiles, age at birth and whether the mother has ever had child later died (%)

Household wealth index	Mother's age at birth		**N (100%)**	Ever had child who later died	
	Below 20	20 and older		Yes	No
Poorest	35.7%	64.3%	**1,464**	12.0%	88.0%
Poorer	23.6%	76.4%	**1,201**	6.1%	93.9%
Middle	23.6%	76.4%	**1,295**	6.2%	93.8%
Richer	17.5%	82.5%	**1,517**	4.8%	95.2%
Richest	7.7%	92.3%	**1,492**	3.0%	97.0%
Total	**21.4%**	**78.6%**	**6,969**	**6.4%**	**93.6%**

Source: MICS 2014

Table A12. Distribution of women (aged 20-49) by area of residence, age at birth and whether the mother has ever had child later died (%)

Area of residence	Mother's age at birth		**N (100%)**	Ever had child who later died	
	Below 20	20 and older		Yes	No
Rural	26.2%	73.8%	**4,140**	7.9%	92.1%
Urban	14.3%	85.7%	**2,829**	4.2%	95.8%
Total	**21.4%**	**78.6%**	**6,969**	**6.4%**	**93.6%**

Source: MICS 2014

Table A13. Distribution of women (aged 20-49) by education of household head, age at birth and whether the mother has ever had child later died (%)

Education of household head	Mother's age at birth		**N (100%)**	Ever had child who later died	
	Below 20	20 and older		Yes	No
None	37.7%	62.3%	**525**	13.7%	86.3%
Primary	29.0%	71.0%	**1,644**	7.5%	92.5%
Lower Secondary	22.7%	87.3%	**2,715**	6.0%	94.0%
Upper Secondary	14.7%	85.3%	**1,150**	4.9%	95.1%
Tertiary	3.2%	96.8%	**935**	3.4%	96.6%
Total	**21.4%**	**78.6%**	**6,969**	**6.4%**	**93.6%**

Source: MICS 2014

Table A14. Variables of interest

Variables	Description
Mother's age at birth	Takes value '1' if giving birth before 20 (early birth) and value '0' otherwise
Ever had child who later died	Takes value '1' if the woman has ever had a child who later died (child mortality) and value '0' otherwise.
Age at first marriage (Mother's age at birth)	Takes values '1' if married before 16, value '2' if married at 16-17 and value '3' if marriage at 18 and older (reference).
Age at first marriage (Ever had child who later died)	Takes values '1' if married before 16, value '2' if married at 16-17, value '3' if marriage at 18-24 (reference), value '4' if married at 25-34 and value '5' if married at 35 and older.
Wealth index quintiles	Takes value '1' if the woman lives in a 'poorest' household (reference), value '2' if the woman lives in a 'poorer' household, value '3' if the woman lives in a 'middle' household, value '4' if the woman lives in a 'richer' household and value '5' if the woman lives in a 'richest' household.
Area of residence	Takes value '1' if the woman lives in an urban area and value 0' otherwise.
Education of household head	Takes values '0' if the household head attains no education (reference), value 1 if the household head completes 'primary' education, value '2' if the household head completes 'lower secondary' education, value 3' if the household head completes 'upper secondary' education and value '4' if the household head completes 'tertiary' education.