The Economics of Early Marriage: Causes, Consequences and Policy Solutions

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Abstract

There is growing consensus among researchers, policymakers and other stakeholders that the practice of female early marriage has adverse consequences for the women who experience them, their families and the wider population. While it is evident that the practice of female early marriage is entwined with longstanding customs and traditions, there is also good reason to believe that economic factors are important drivers behind current behaviour and underpin a range of solutions being explored by policymakers. This chapter provides an economic perspective on the issue. It examines the literature for theories and evidence relating to the economic causes and consequences of female early marriage and the efficacy of alternative policies, and highlights current knowledge gaps.

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1 Introduction

An estimated 650 million women alive today were married before reaching the age of 18 (UNFPA 2019). The practice – which we henceforth call female early marriage – exists in every region but the prevalence rates are particularly high in the developing world. In the 47 least developed countries, latest available figures show that 38% of women aged 20-24 years experienced early marriage. Adolescent girls living in rural areas in these countries, with limited access to education and economic opportunities, are particularly at high risk of being forced into early marriage (UNFPA 2019). In two other countries, India and Nigeria, which have a combined population of 250 million living in extreme poverty (World Bank 2018), the proportion marrying before 18 are 27% and 43% respectively (UNFPA 2019). According to one recent projection, 150 million girls will be married before 18 during the next decade (UNFPA 2020). Although the practice is illegal in most countries, the law is frequently ignored and rarely enforced in poorer countries (UNFPA 2012). In addition, the law allows exceptions to the legal age of marriage in many countries (Pew Research Center 2016).

There is growing consensus among researchers, policymakers and other stakeholders that the practice of female early marriage has adverse consequences for the women who experience them, their families and the wider population. The UN Sustainable Development Goals includes, under the goal of gender equality (Goal 5), the target of eliminating the practice of early marriage by 2030. However, progress towards this target has been slow. According to the latest trend-related data, the proportion of women aged 20-24 who experienced early marriage declined from 25% to 21% globally during the previous decade, primarily due to progress in India. In some parts of the world such as West and Central Africa, and Latin America and the Caribbean, there has been little change over the same period (UNICEF 2018). Since the start of the Covid-19 pandemic in early 2020, there has also been growing concern that school closures and increased poverty induced by economic lockdowns will reverse recent progress in stemming the practice of female early marriage, with adverse long-term consequences (Girls Not Brides 2020; Save the Children 2020).

This chapter provides an economic perspective on the issue. It examines the existing literature to gauge current knowledge about the socio-economic causes and consequences of female early marriage and the efficacy of alternative policies. While it is evident that the practice of female early marriage is entwined with longstanding customs and traditions, there is also good reason to believe that economic factors are important drivers behind current behaviour and underpin a range of solutions being explored by policymakers. The

economic focus in this chapter necessarily means that it misses out some important work on non-economc drivers and consequences of early marriage but, hopefully, enables a coherent discussion of existing work. Part of this focus involves articulating an economic theory framework to describe potential causes and consenquences of female early marriage, and assess policy solutions, and using the framework to organise the related empirical literature and identify gaps in knowledge. This approach is the chapter's key distinguishing feature compared to other existing reviews of the literature on female early marriage.

In addition, in reviewing the empirical literature on the consequences of early marriage and policy-related questions, the chapter focuses on studies that address identification issues in line with current best practice, which implicitly gives priority to quantitative studies based on natural experiments and randomised control trials. Consequently, an important part of the literature addressing these questions using alternative empirical methods are left out.

It is also worth noting at the outset that the chapter does not give specific attention to other traditional marriage-related practices that may accompany female early marriage in many societies, such as forced marriage, consanguinity, female genital mutilation. The chapter also does not consider male early marriage, a practice that is still extant albeit with a much lower rate of prevalence than female early marriage.

The chapter does not attempt to provide a systematic overview of the current prevalence of, and trends in, female early marriage in different parts of the world as there are a number of other publications that regularly provide updates on existing patterns including the UNFPA State of the World Reports. There are a number of other recent reviews on female early marriage that the reader may find useful accompaniments to this chapter. Wooden et al. (2017) provide an overview of the literature on the consequences of female early marriage on a broad range of micro and macro outcomes Malhotra and Elnakib (2020) conduct a systematic review of evaluation studies conducted in the last 20 years of interventions and programmes for which female marriage timing was one of the targeted outcomes. In addition to these reviews, Jensen and Thornton (2003) provides an overview of the potential effects of female early marriage and the extent of the practice in different parts of the world at the turn of the century. Compared to Wooden et al. (2017), we give specific attention to methodological innovations in the empirical literature to address the issue of confounding factors in identifying the consequences of early marriage. In our discussion on interventions aimed at tackling early marriage, we cover much of the same empirical literature as Malhotra and Elnakib (2020), but we focus on the specifics and variety of interventions and policies evaluated – and methods used

– within this literature, to identify evidence gaps.

The remainder of the chapter is organised as follows. The next section reviews the literature on the causes of early marriage, beginning with an overview of theoretical models that attempt to account for the practice, followed by an overview of the empirical evidence that provide a basis for testing the predictions of these models or, at any rate, that theoretical explanations of early marriage must account for. Section 3 explores the economic consequences of early marriage, again beginning with theoretical models that hypothesize potential effects, followed by a review of the empirical literature that has tested these predictions using rigorous methods. Section 4 considers policies and programmes to stem or eradicate the practice of female early marriage, beginning with a conceptual discussion on the issues, followed by a review of empirical studies providing rigorous evaluations of a range of policy alternatives.

2 Causes of Early Marriage

2.1 Theory

This section reviews the theoretical explanations that have been put forth in the literature to account for the historic prevalence and ongoing persistence of female early marriage in different parts of the world. An understanding of the underlying causes can aid in the formulation of effective policies to tackle the issue. Two types of explanations that are frequently put forth in the literature are poverty and the lack of economic opportunities for adolescent girls and young women. While there is evidence (discussed in the next section) to indicate that these are important drivers behind female early marriage, these explanations are necessarily incomplete as poverty and lack of opportunities do not translate into female early marriage across all societies, and even women from well-off families marry – or have, historically, married – at an early age in certain societies. The following review of the theoretical literature is drawn, in part, from Wahhaj (2018).

A rich literature has offered explanations for a related phenomenon that, across most societies, husbands are typically older than their wives. Bergstrom and Bagnoli (1993) have shown that if individual characteristics which determine one's desirability as a marriage partner are revealed or realised at a later age for men than for women, then there would to a marriage market equilibrium in which men are older than their wives. Coles and Francesconi (2011) offer an alternative explanation for the marriage age gap based on the assumption that economic success (which increases with age) and physical health (which declines with age)

are complementary characteristics in a marriage. This leads to an age gap between marriage partners. When labour market opportunities are limited for women, marital matches involve older men and younger women. But it is important to note that economic explanations of the marriage age gap cannot tell the full story behind female early marriage given that the practice is specific to certain societies and regions, while the marriage age gap appears to be a much more widespread phenomenon.

The fact that achieving a high level of fertility would necessarily require a woman to begin procreating at an early age may explain some of the variation in female marriage age across societies. For example, Goody (1990) argued that, in traditional societies, young brides are desired as they have a longer period of fertility ahead of them. Relatedly, Becker's theory of fertility (Becker 1960; Becker and Lewis, 1973) implies a negative relationship between household income and desired fertility and, thus, female marriage age. Specifically, if households substitute away from quantity towards quality of children as they become richer, then desired fertility and thus the demand for young brides should be lower in wealthier households and societies. Additionally, a desire for higher child quality may also lead to a desire for a bride with higher human capital who can make the necessary investments in her children, which will likely mean older brides who have had the time to accumulate this human capital.

Explanations regarding female marriage age based on the level of human capital desired in the mother raises the question why these human capital investments cannot take place *after* marriage. A review of traditional marriage practices around the world shows that, indeed marriage of pre-pubescent girls – which necessarily means that the bride was transferred to the household of the groom before human capital investments in her are complete – have been prevalent in the past but these practices have diminished over time (Leeson and Suarez, 2017; Aldashev and Wahhaj, 2019). Leeson and Suarez (2017) offer an explanation for this phenomenon based on 'son preference'. Specifically, if it is common for couples to desire at least one male child, this will lead to some couples having multiple daughters through their unsuccessful attempts to conceive a son. In this theory, female pre-pubescent marriages are a low-cost means of unburdening households of unwanted daughters. Although they are less desirable than post-pubescent brides on the marriage market, there will be demand for such brides if son preference also leads to higher female child mortality and, consequently, imbalanced sex ratios on the marriage market.

Aldashev and Wahhaj (2019) offer an alternative explanation for pre-pubescent marriages based on the notion that in societies where brides are expected to be virgins, a girl who remains unmarried till she has

reached puberty may be (perceived to be) at high risk of becoming unmarriageable, and/or bringing her family into disrepute, through pre-marital loss of virginity. In this context, pre-pubescent marriage removes this risk factor. Bringing forward the marriage of a daughter need not disrupt human capital investments in her, especially as marriage-related transfers (a dowry or brideprice) can be adjusted to allow the groom's family to cover the cost of these investments. Aldashev and Wahhaj argue, however, that the pre-pubescent marriage of daughters entail a psychological cost for parents (to a greater extent than a post-pubescent marriage) and, as such, alternative marriage arrangements may be preferred, depending on the environment. For example, if it is possible to arrange marriages within a short space of time following the onset of puberty or if it is possible to arrange marriages in advance, with the bride joining the groom's household at a future date (forward marriage contracts), this will diminish the practice of pre-pubescent marriages.

It is worth noting that while the argument from Aldashev and Wahhaj (2019) above emphasizes the onset of puberty as a critical age, the reasoning can be generalised to any age threshold beyond which an unmarried daughter may be perceived as a high risk factor. Wahhaj (2018) develops a theoretical model in which the quality of potential brides – which determines the value generated by a marriage – is not directly observable on the marriage market. When a marriage engagement occurs, the prospective groom's family receives a noisy signal about the bride's quality and has the opportunity to break off the engagement. Although the bride's quality is modelled in an abstract manner, it is interpreted as a formalisation of the phenomenon that "across a wide range of societies the honour and status of families are held to be dependent on the 'purity' of their women; and their reputation for 'purity' depends on their propriety in social and sexual behaviour." By assumption, women of high quality do not have the propensity to engage in such behaviour while women of low quality do. Wahhaj (2018) shows that, in this setting, the perceived quality of a prospective bride declines in the length of time she remains unmarried and a higher marriage payment is required to compensate for the perceived lower quality of older brides. Thus, parents have a financial incentive to marry off their daughters at a young age. The theory thus illustrates how early marriage may be due, at least in part, to informational problems on the marriage market that give rise to higher marriage payments for older brides. This mechanism also generates path dependence in the incidence of early marriage: transient shocks can have persistent effects on marriage timing decisions of future cohorts, such that there may be widely varying incidence in the practice of early marriage across societies with otherwise similar underlying economic conditions (discussed in more detail in Section 4.1).

Buchmann et al. (2021) also use the notion of unobserved heterogeneity in women on the marriage market to provide a theoretical explanation of early marriage. In their model, women are heterogeneous in terms of whether or not they adhere to 'conservative gender norms of behaviour'. Conservative women are more desirable on the marriage market but the bride's type cannot be observed directly by prospective grooms prior to marriage. Furthermore, conservative women have lower returns to education and, thus, face a lower cost of delaying marriage. The authors show that, under certain conditions (about liquidity constraints and the relative returns to education for different types of women), there is a unique marriage market equilibrium in which all women opt for early marriage although delayed marriage would lead to a Pareo improvement. The authors also show that, in this setting, financial incentives for delaying marriage and adolescent empowerment programmes can have contrasting effects on the incidence of early marriage (discussed in more detail in Section 4.1).

Notwithstanding the potential role of cultural factors – such as son preference and family honour – discussed above, it remains the case that the prevalence of early marriage today is highest among the least developed countries and among the poorest within these countries (see, for example, UNFPA 2019, 2020). Therefore, it is important to consider the theoretical relationship between household poverty and marriage timing. Corno, Hildrebrandt and Voena (2020) develop a theoretical model that shows that the relationship depends very much on the direction of marriage transfers, i.e. whether the society practises brideprice or dowry. Early marriage brings forward the timing of these pecuniary transfers. In addition, early marriage brings forward the transfer of the bride when she may be either a net contributor to or net consumer of household resources (i.e. whether her contribution to household income is more or less than the cost of her consumption or human capital investment needs). Corno, Hildrebrandt and Voena (2020) argue that for early marriage to occur in a brideprice society, the marriage transfer must be larger than the bride's net contribution to household resources; and for early marriage to occur in a dowry society, the marriage transfer must be larger than the bride's net consumption. Under these assumptions, early marriage always takes the form of a transaction between a rich household and a poor household: the daughter of a poor household joining a rich household in a brideprice society, and vice versa in a dowry society.

Corno, Hildrebrandt and Voena (2020) investigate how these marriage transactions are affected by aggregate income shocks. A negative income shock increase the supply of, and decrease the demand for, young brides in a brideprice society. The opposite effects occur in a dowry society. The authors show that if the net

contribution to household resources by an adult male is sufficiently high, then the aggregate shock leads to an increase in female early marriage in a brideprice society while decreasing it in a dowry society. Furthermore, an aggregate shock lowers the size of the marriage payments made in equilibrium in both brideprice and dowry societies.

Muchomba (2021) argues that if individual family members have different preferences regarding the marriage timing of their offspring, then the incidence of early marriage would depend, not only on total wealth but also on the balance of wealth within the family. This is because control of assets would affect bargaining power within the family, a factor which becomes more important when the marriage of a daughter requires a brideprice payment. Based on this reasoning, the author hypothesizes that asset ownership by the mother and asset ownership by the father have differential effects on the probability that a daughter experiences early marriage, and whether direction of customary marriage payments affects this relationship. The empirical findings from this study are discussed in the next section.

2.2 Empirical Evidence

This section highlights specific empirical evidence relating to female early marriage, including stylised facts, that can help assess the relevance of the theoretical factors discussed in Section 2.1. It begins with a summary of this evidence, followed by an assessment of their implications for the theoretical mechanisms discussed in Section 2.1.

Explanations of female early marriage based on the longer period of fecundity of younger brides (see the discussion in Section 2.1) predict that the female age at marriage will increase as the fertility rate declines. Figure 1, reproduced from Wahhaj (2018) shows a scatterplot of the total fertility rate (TFR) against the median of marriage for women aged 25-29 years based on every available DHS round for countries in South Asia, the Middle East and North Africa. The figure suggests, at best, a weak correlation between the two variables and wide variation in median age of marriage even in surveys in which the TFR was close to the replacement rate of 2. Therefore, a robust explanation of female early marriage must go beyond fecundity and account for the practice in social contexts where there is low fertility demand.

Figure 1: Country-Year Observations for Median Marriage Age and Total Fertility Rate

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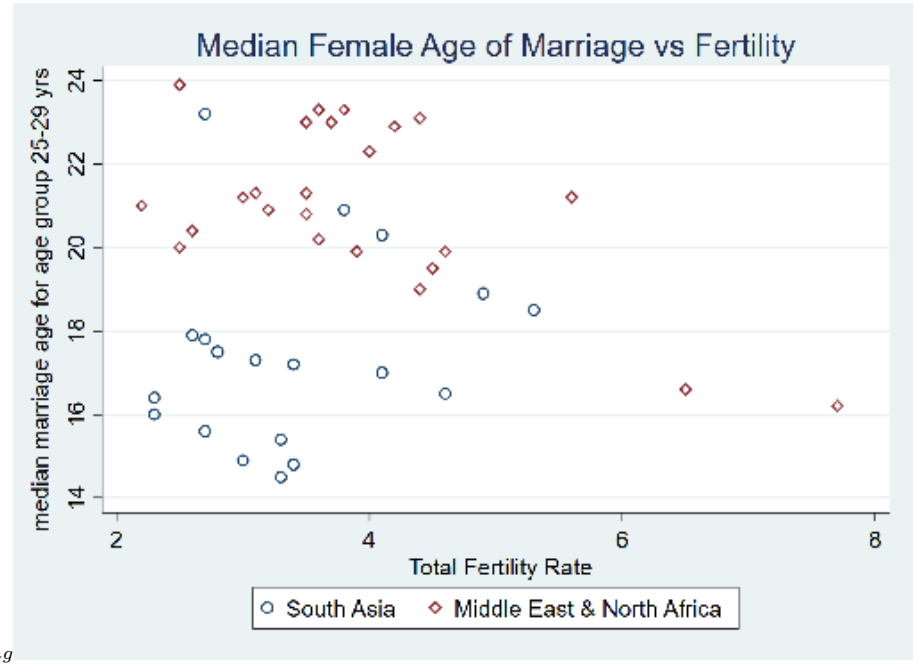

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Note: Each point represents a country-year observation. Source: Demographic and Health Surveys 1987-2015.

An important stylised fact is that, at least in some societies, marriages with older brides involve higher dowry payments. Field and Ambrus (2008) establish, in the case of Bangladesh, that there is a causal relationship between the age of the bride and dowry payment in the sense that women who marry at an older age due to exogenous reasons have larger dowry payments (typically transfers from her parents to the groom or his family). This occurs in spite of the fact that the characteristics of the grooms in these marriages are not significantly different from those of younger brides, and women who marry at an older age have more schooling (the study is discussed in further detail in Section 3.2).

Another important stylised fact is that, in spite of the wide prevalence of female early marriage across a range of societies today as discussed in the introduction, there have been episodes of rapid and substantial declines in the practice in different countries in the recent past. For example, in his account of changing marriage patterns in Asia, Jones (2017) observes that the proportion of ever-married among female adolescents (15-19 year olds) declined from 33.5% in 1986 to 18.6% in 1996 in Iran; from 30% in 1980 to 8.7% in 2000 in Indonesia; from 44.2% in 1980 to 24.9% in 2000 India; and from 48.6% in in 1980 to 11.5% in 2000 among Muslims in Southern Thailand. On the hand, the demographic data also reveals extended periods during which, despite rapid economic change, there has been little change in early marriage patterns, for example in Bangladesh during the 1990s and early to mid-2000s (Raj et al., 2012). An understanding of the

drivers behind the episodic declines in female early marriage requires further research.

Adams and Andrew (2018) develop – and implement in rural Rajasthan, India – a discrete choice methodology involving hypothetical vignettes to elicit parental preferences regarding the marriage and educational outcomes of their daughters. They find that parents prefer to postpone their daughters' marriage till the age of 18 but not beyond this age. On the other hand, parents believe that their daughters' marriage market prospects begin to decline with age immediately after leaving school. They also uncover evidence of perceived positive returns to education on the marriage market: daughters with more schooling are believed to have better marriage prospects.

Corno, Hildebrandt and Voena (2020) test their theoretical predictions regarding the effects of weather shocks on female marriage age (see Section 2.1) using Demographic and Health Survey (DHS) data from India and 31 countries in sub-Saharan Africa. They find that, in line with the theoretical predictions, droughts increase the risk of early marriage in brideprice regions (sub-Saharan Africa) but reduces it in regions where dowry is prevalent (India). Given the absence of information on marriage transfers in the DHS, they investigate the theoretical predictions regarding the effects of droughts on marriage transfers using the Indian Rural Economic and Demographic Survey (REDS) and the Indonesian Family Life Surveys (IFLS). In line with their predictions, they find that droughts negatively affect the absolute value of the marriage transfers in both settings; in India where dowry is practised, as well as in Indonesia which has traditionally practised brideprice.

Trinh and Zhang (2020) obtain similar results to Corno, Hildebrandt and Voena (2020) using data for India and Vietnam – where the practice of brideprice is common – from the *Young Lives* project. The *Young Lives* data has the advantage over DHS data of including information on pre-martial household expenditures. This information allows the authors to estimate, using an IV approach, how changes in per capital expenditures due to rainfall shocks, affect the incidence of early marriage.

Muchomba (2021) provides evidence on the causal effect of parental asset ownership on the early marriage of daughters using data from two waves of the Ethiopian Socioeconomic Survey. Given the endogeneity of asset ownership, they use information on wealth obtained through inheritance, lotteries and gambling to construct instrumental variables for individual asset ownership. The author estimates that a one-standard deviation increase in assets owned by the mother is associated with 37-53% lower odds ratio of early marriage, and a one-standard deviation increase in assets owned by the father is associated with 0-37% higher odds

ratio of early marriage. Furthermore, the estimated effects are strongest in regions where brideprice, as opposed to dowry, is the dominant form of marriage-related transfers. This evidence is consistent with the theoretical arguments provided by the author (summarised in Section 2.1) and also highlights that it is not just (parental) household wealth but also the distribution of this wealth within the household that determines the marriage timing of daughters. Moreover, consistent with Corno, Hildebrandt and Voena (2020) and Trinh and Zhang (2020), the study shows that the customary direction of marriage payments is a key factor in determining how parental household weath affects the marriage timing of daughters.

Jensen's (2012) study on whether major life choices and aspirations of young women in a traditional setting are affected by labour market opportunities also provides important evidence about the underlying causes behind early marriage. The study looks at the effects of a three-year intervention providing recruitment services for the business process outsourcing (BPO) industry to women in randomly selected rural villages. At the time of the intervention, the industry was relatively new and there was limited awareness in rural areas about the high-paying job opportunities that it offered to women. The study finds increased uptake of BPO jobs by women in treatment areas compared to control areas, and increased investment in the human capital of young women (enrolment in computer and English language training courses) and school-aged girls (school enrolment and health and nutritional investments reflected in BMI). Moreover, young women and adolescent girls (aged 15 to 21) from treated villages were 5-6% points less likely to be married or to give birth during the period of the intervention compared to control villages.

Heath and Mobarak (2015) exploit the rapid growth of the ready-made garments (RMG) industry in Bangladesh since the early 1990s to provide related evidence. The industry is a major source of manufacturing jobs for women and one of the few in the country to offer such jobs. Making use of the differential access to RMG factories across rural villages (i.e. whether or not there is an RMG factory within commuting distance of the village) and over time, they find that exposure to RMG jobs during adolescence and early adulthood – when women are making critical choices relating to education, work, marriage and childbirth – increased their probability of working outside of the home. They also find that exposure to RMG factory jobs sharply reduced women's hazard of early marriage and early childbirth, and increased their educational attainment.

What are the theoretical implications of the evidence presented above? Figure 1 shows that the incidence of early marriage practice varies across countries with similar levels of TFR. If we can take TFR to be rough proxy for economic development (given that TFR generally declines with economic development), the pattern

in Figure 1 suggests that current level of economic development may not be sufficient to account for the practice of early marriage. The theoretical model developed by Corno, Hildebrandt and Voena (2020) shows that households may respond to adverse shocks by altering the marriage timing decisions of daughters to smooth consumption. Wahhaj (2018) shows that, if there are informational problems on the marriage market, then changes in marriage timing decisions in response to transient shocks may have persistent effects; thus, societies which are otherwise identical today may vary in terms of the incidence of early marriage due to past shocks.

The model in Wahhaj (2018) also predicts the higher dowry payments made in marriages involving older brides that is empirically established by Field and Ambrus (2008). In the theoretical model, this occurs as girls who remain on the marriage market for a longer period are perceived to be of worse quality. If girls effectively enter the marriage market when they leave education, this theoretical result would also account for the empirical finding by Adams and Andrew (2018) that parents believe that their daughters' marriage market prospects begin to decline with age immediately after leaving school.

The results obtained by Jensen (2012) and Heath and Mobarak (2015) show that the marriage timing decisions are intimately tied to their current and future employment prospects. More precisely, it suggests parents (or the brides themselves) take into account how early marriage would impact upon their future earnings when making marriage timing decisions and points to the lack of employment or income earning opportunities as a significant factor behind early marriage practices. This is also consistent with the finding in the empirical literature that early marriage leads to early childbirth and, in some contexts, exit from the labour market (the evidence on the consequences of early marriage is discussed in Section 3.2).

As documented by Jones (2017), a number of developing countries have experienced rapid declines in female early marriage in the recent past, and these episodes have arguably overlapped with periods of economic growth and growing economic opportunities for women. But there are other instances where economic growth and declines in poverty have not been accompanied by declines in early marriage. For example, as noted above, in Bangladesh early marriage patterns have changed little between 1990 and the mid-2000s (Raj et al., 2012) despite an extended period of economic growth and declining poverty. Therefore, economic growth may not be a sufficient condition for triggering declines in early marriage.

3 Consequences of Early Marriage

3.1 Theory

The practice of early marriage is significant, of course, because it is an issue of child rights. But there is also growing evidence that early marriage has adverse consequences not only for the women who experience it but also for the next generation in terms of a range of outcomes. The empirical evidence is reviewed in the next subsection. The following discussion highlights the theoretical channels through which early marriage can potentially affect subsequent outcomes.

Chari et al. (2017) posit three distinct channels through which early marriage can affect subsequent outcomes: (i) cohabitation with spouse from an early age; (ii) adverse effects on spousal choice; (iii) early disruption of education. A bride who enters the groom household at a young age may have weaker bargaining power vis-a-vis her spouse and in-laws compared to one who starts cohabitating at an older age. Additionally, early start of cohabitation may imply a different fertility choice set and lead to early childbirth. Marriage at an early age may also imply a different choice set in terms of potential marriage partners and thus, a spousal choice (e.g. larger marriage age gap) that leads to worse outcomes in the future. Finally, if early marriage means lower human capital for the bride, then this would affect her future earning ability, and thus her bargaining power within the household as well the choice set of the household. Each of these channels can potentially affect health and education investments in the next generation and Chari et al. (2017) implement an empirical strategy (discussed in the next subsection) that attempts to identify the distinct effects of these channels on child-related outcomes.

Sekhri and Debnath (2014) argue that female early marriage has two potentially opposing effects on subsequent outcomes for children born within the marriage. First, early marriage lowers maternal education as well as decision-making authority within the marital household, which can adversely affect educational outcomes for children. On the other hand, "better marriage prospects of young brides may compensate and improve children's educational outcomes by way of resource provision."

Asadullah and Wahhaj (2019) argue that female early marriage is, potentially, "a conduit for the transmission of social norms ... relating to gender roles and rights within the household ... [that] ... play an important role in perpetuating gender inequalities in child survival, education, control over assets and economic participation in a wide range of developing countries". They postulate four potential pathways through which

delayed marriage among women can affect gender norms: (i) increased schooling and exposure to a school curriculum presenting alternative views to traditional gender norms; (ii) stronger bonds with schoolmates and access to school teachers, who serve as alternative role models and provide alternative perspectives; (iii) different spousal choice, specifically marrying into a family with different (e.g. more progressive) attitudes towards traditional norms; (iv) delayed exposure to marital responsibilities, including childbearing: experiences that may have direct effect on beliefs and attitudes, with younger brides being more susceptible to them. Asadullah and Wahhaj (2019) implement an empirical strategy (discussed in the next subsection) to estimate the overall effects of early marriage on attitudes towards traditional gender norms and identify the distinct effects from each potential pathway.

Both Chari et al. (2017) and Asadullah and Wahhaj (2019) postulate that early marriage leads to disruption in female education, more generally, marks the end of investment in her human capital. Indeed, there is widespread evidence (discussed in the following subsection) to support this hypothesis. However, it is important to note that this reasoning does not explain *why* early marriage causes disruption in the accumulation of the bride's human capital. To the extent that the marital household reaps the returns to this human capital, it is in the interest of the groom or his household to continue investing in the human capital of the bride after marriage up to the optimal level. If the disruption is due to the bride's relocation to the groom household – obliging her to quit her previous educational institution, and undertaking new responsibilities in her new role as a married women – it is not clear why this event would not be postponed to ensure the optimal level of investment in her human capital. Indeed, Aldashev and Wahhaj (2019), in their review of traditional marriage practices around the world, show that 'forward contracts' in marriage – involving a significant time lapse between the arrangement of a marriage and the start of cohabitation and the groom – have been common in the past, in a variety of social settings. Therefore, the question as to why female education does not continue after marriage – in the groom household or during an extended stay in the parental household while the start of cohabitation is delayed – requires better understanding.

3.2 Empirical Evidence

The hypothesized consequences of female early marriage, discussed in the previous subsection, are often strongly correlated with the bride's socioeconomic background, which is itself an important predictor of marriage timing. For example, in countries where the practice is prevalent, household poverty, low parental

education, and rural residence all increase the risk of female early marriage, but these factors are also likely to lead to early school dropout, early childbirth, lower investments in the next generation, etc. These confounding factors present a challenge for assessing the consequences of early marriage using observational data. However, there is a sizeable and growing literature that has done so using the age of onset of puberty as a source of exogenous variation in marriage timing among women. An alternative approach to generating evidence on the consequences of early marriage is to exploit exogenous policy changes or interventions that have successfully brought about a change in female marriage age. But there is, as yet, limited evidence on the long-term consequences of early marriage based on this approach. This subsection reviews both of these strands of the literature. Compared to the review by Wodon et al. (2017), we give specific attention to methodological innovations within this literature to address the issue of confounding factors.

The use of age of onset of puberty as an instrumental variable for female age of marriage was pioneered by Field and Ambrus (2008). The rationale for this approach is that, in a broad range of societies with patriarchal norms, girls face strong social pressures to marry from the onset of puberty (Ortner 1978; Dube 1997). Using data on marriages from the 1996 Matlab Health and Socioeconomic Survey (MHSS) in Bangladesh, Field and Ambrus (2008) show that over 70% of women in their sample were married within two years of menarche, while only 18% had experienced pre-pubescent marriages, typically during the year preceding onset of menarche. On the other hand, "the transition from childhood to reproductive age in normal, healthy adolescents occurs across a wide range of ages in any population". Field and Ambrus conclude, on the basis of a review of the relevant medical literature, that "genetic factors are by far the strongest predictors of adolescent development" and that "random genetic variation is a significant component of timing". Thus, the age of onset of menarche provides plausibly exogenous variation in the age of menarche.

Using the age of onset of menarche as an instrumental variable for age of marriage, and a sample of ever-married women aged 25 to 44 years from the MHSS, Field and Ambrus estimate that each year of marriage postponement leads to 0.22 years of additional schooling. Field and Ambrus also find evidence that delayed marriage affects behaviour within the household independently of its effect on the bride's education. Using the subsample of women who were out of school at age 9, Field and Ambrus estimate – using their IV approach – that marriage at an older age increased the probability that a woman sought prenatal care, and the number of antenatal care visits. The authors also present some evidence that marriage postponement leads to higher dowry payments although there is no effect on spousal quality.

Asadullah and Wahhaj (2019) adopt Field and Ambrus' empirical approach to investigate the effects of female marriage age on reported attitudes towards traditional gender norms. For this purpose they use a nationwide survey of women in Bangladesh aged between 20 and 39 years – the 2014 Women's Life Choices and Attitudes Survey (WiLCAS). This allows the authors to investigate whether the estimates obtained by Field and Ambrus hold for more recent cohorts and for a nationally representative sample (the MHSS was conducted in one subdistrict of Bangladesh). They also innovate on Field and Ambrus' empirical strategy by introducing sister fixed-effects, a method made possible by a distinctive feature of the WiLCAS data: it includes first-hand information from adult sister-pairs. Asadullah and Wahhaj argue that adding sister fixed-effects to the IV specification improves the identification strategy as "any variation in the timing of menarche due to differences in socioeconomic or environmental characteristics ought to be subsumed in these fixed effects given that sisters are—almost without exception—raised in the same household."

Using this approach, Asadullah and Wahhaj estimate that a one-year delay in marriage increases female schooling by 0.422 years which is about twice the effect obtained by Field and Ambrus. They argue that this is potentially due to the fact that more recent cohorts of women in Bangladesh have better access to schooling – if they remain unmarried – thanks to government initiatives aimed at improving female access to secondary education since the early 1990s. In addition, they estimate that a one-year delay in marriage increases the age of first childbirth by nearly a year. They also find that later marriage reduces the likelihood that a woman expresses views in line with traditional norms regarding gender roles, and allocation of resources within the household. To investigate potential pathways for these effects, they redo the estimation for subsamples of women who (i) have never attended school; (ii) have social connections exogenous to their marriage timing that would enable transmission of progressive norms (older sisters who have completed secondary school or engaged in work outside the home). For both subsamples, their original results persist. They also find that later marriage has no effect on spousal choice in terms of observable characteristics. On the basis of this evidence, they argue that female early marriage reproduces traditional attitudes towards gender norms not through its effect on schooling, social networks or spousal choice but by "the socialization and experiences of young brides within the marital household."

Sekhri and Debnath (2014) and Chari et al. (2017) use investigate the effects of mother's age at marriage on the human capital of the children, again using the age of menarche as an instrumental variable for age at marriage. Both studies use the 2005 Indian Human Development Survey (IHDS). To measure human capital

investments in children, Sekhri and Debnath use school enrolment status, education expenditures, study time, and test scores from short reading, writing and arithmetic tests administered during the survey. The IV estimates indicate that marriage at an older age increases the probability that a child is enrolled in school, expenditures on school fees and books, and time spent in school; and improves the child's performance on the arithmetic and reading tests. The authors also provide some suggestive evidence – by incrementally adding for controls for mothers' education and decision-making authority in OLS regressions of children's test scores on mother's age of marriage – that the effects on children's human capital are mediated through the mother's education but not her decision-making authority within the household.

Chari et al. (2017) take a different approach to investigate the pathways through which the mother's age of marriage affects children's human capital. They conduct their analysis using three different subsamples of the 2005 IHDS: (i) the sample of ever-married women; (ii) the subset of the first group who never attended school; (iii) the subset of the second group who married before the onset of puberty (in which case cohabitation is typically postponed till the age of menarche). The authors argue that while IV estimates using the first sample yield the overall effects of the mother's age at marriage on children's human capital, the estimates using the second sample yield corresponding effects when the pathway of maternal human capital is absent. In the case of the third sample, they replace age of marriage with the age of cohabitation in the estimation: given that the marriage and spousal choice occurs prior to the age of menarche in this subsample, the IV estimates capture the effects of the age at which the mother starts cohabitating with her spouse on children's human capital.

Chari et al. find that delayed marriage/start of cohabitation of the mother (due to later onset of menarche) improves children's educational outcomes as measured by current enrolment status, years of schooling and test scores. Crucially, these effects are present even in the sample of women who were married before the onset of menarche and had never enrolled in school, suggesting that the age at which she enters the marital household has, on its own, implications for her children's educational outcomes, independently of the effects of delayed married on education and spousal choice. They obtain similar patterns for child health investments (antenatal care, breast-feeding duration, vaccinations) and child health outcomes (size at birth, weight-for-height), albeit the estimates are in some instances statistically insignificant. They also find that delayed marriage/start of cohabitation increases the age of first birth, decreases the number of children born as well as desired fertility, and reduces the probability of contraception use, for all three subsamples. The last effect,

they suggest, could reflect attempts by older brides to "catch up" to the household's desired fertility.

Roychowdhury and Dhamija (2021) investigate the causal effect of marriage age on domestic violence using data from the 2015-16 National Family Health Survey (NFHS) of India. Similar to the studies discussed above, they use the age of menarche as an instrumental variable for marriage age. They estimate that a one-year delay in marriage decreases experience of more severe forms of physical violence by 4% points, and less severe forms of physical violence by 7% points, during the 12 months preceding the survey (compared to incidence levels of 5% and 21% for the full sample). On the other hand, they do not find statistically significant effects on sexual violence and emotional violence. Additional estimates indicate that female marriage postponement leads to increased education for both the women and their marriage partners. On the other hand, the authors do not find any evidence of causal effects on labour market outcomes. Although there is no direct evidence regarding potential causal mechanisms, the authors speculate that the effect of marriage age on physical violence may be due to the fact that older brides are more educated and have more educated marriage partners.

While the previous studies were all based on data from South Asia, Sunder (2019) uses a similar approach to investigate the effects of early marriage for women in Uganda using data from the 2001 Demographic and Health Survey. In addition to effects on the bride's schooling and health-related behaviour, and her children's health outcomes, Sunder looks at the effects on labour force participation. Sunder innovates on Field and Ambrus' empirical approach by controlling for the woman's adult height in the estimation as a way of capturing childhood shocks that may have affected both timing of onset of menarche and other outcomes. Similar to the previous studies, Sunder finds that delayed marriage translates into increased schooling, higher probability of using antenatal care and better child health (higher BMI and hemoglobin levels and lower probability of being anemic). In addition, the study finds that a one-year delay in marriage increases the probability of labour force participation by 8% points.

To investigate pathways for these outcomes, Sunder also estimates the effect of delayed marriage on the characteristics of the spouse and the woman's decision-making authority within the household. Unlike Field and Ambrus (2008) and Asadullah and Wahhaj (2019) in the case of Bangladesh, Sunder finds that women in Uganda who marry at an older age are matched with husbands with higher education and a smaller age difference. In addition, later marriage increases the probability that the woman is the sole decision-maker for every measured decision category.

Hicks and Hicks (2019) use a similar approach to the previous studies to investigate the effect of early marriage for women in Western Kenya using the Kenya Life Panel Survey (KLPS). They find, like the previous studies, that later marriage leads to higher educational attainment, with each year of marriage postponement leading to 0.78 years of additional schooling. But the authors find no effect of later marriage on spousal choice or type of marriage (whether it involved a brideprice, whether formal or informal, whether it was polygamous). They also find no effect on child health outcomes (unlike Sekhri and Debnath, 2014 and Chari et al., 2017) or attitudes towards gender roles and norms (unlike Asadullah and Wahhaj, 2019). They do find that delayed marriage reduces actual and desired fertility (similar to Chari et al., 2017). The authors point out that their sample of women is selected in two ways which may affect their estimates: 30% of the women in their sample were still unmarried at the time of the survey and, therefore, excluded from the analysis; women who never attended school or have fewer than two years of primary school are also absent from the sample.

Garcia-Hombrados (2018) uses a different approach to the previous studies, exploiting a legal change in the minimum age of marriage in Ethiopia, to estimate the effects of starting conjugal cohabitation at an older age on infant mortality. The methodological approach is discussed in more detail in Section 4.2. The author finds that a one-year delay in the start of cohabitation decreases the probability of infant mortality among firstborn children by 3.8 to 5.2% points.

4 Policies to Tackle Early Marriage

In recent years, international development agencies, national governments and NGOs have increasingly focused efforts on lowering the incidence of female early marriage through a variety of programmes and policies including new legislation on child marriage, improved enforcement of existing laws, and interventions aimed at improving the opportunities of adolescent girls and young women. This section reviews the literature to assess to what extent it offers a clear conceptual framework for assessing these policies and programmes – including outcomes and measures that evaluations should focus on. Next, it provides a review the existing empirical evidence regarding their effectiveness in reducing the incidence of female early marriage and related outcomes. The section covers much of the same empirical literature as in Malhotra and Elnakib's (2020) systematic review, but its focus is on the specifics and variety of interventions and policies evaluated – and methods used – within this literature, to identify evidence gaps.

4.1 Conceptual Framework

Field and Ambrus (2008) explains how, and under what assumptions, reduced-form estimates of the effects of delayed onset of menarche on subsequent outcomes can be used to predict policy effects of potential legal bans on marriage below a minimum age threshold. The authors first note that such legal bans can potentially affect outcomes not only for those who would have married before reaching the minimum age in the absence of the law but also, in theory, those who would have married at an age *above* the minimum age threshold anyway. This is because a legal ban on early marriage would affect the supply and demand for brides for each legally permitted age and, consequently, the equilibrium marriage price at each age. But they show that, under reasonable assumptions about marriage age-related preferences, only those who would have engaged in early marriage in the absence of the law are affected by the legal change, leading them to simply postpone their marriage till they have reached the legal minimum age. In this case, assuming that marriage prior to the onset of menarche is restricted by social norms, the estimated effects of onset of menarche at a particular age can be interpreted as the effect of a legal ban on marriage below this age.

As mentioned above, besides legal reforms, in recent years national governments, local and international NGOs have explored a variety of alternative interventions to reduce the incidence of early marriage (discussed in more detail in the next subsection). To assess whether and to what extent different types of interventions are cost-effective, and enable a comparative analysis between them, Field et al. (2016) propose a method for evaluating benefits and costs associated with each intervention. Specifically, they propose calculating benefits in terms of the additional discounted lifetime earnings of a woman exposed to the intervention; and use a modified Mincer equation to calculate the earnings premium associated with the intervention, taking into account its effects on the targeted beneficiary's schooling and work experience. Importantly, they assume that the earnings premium is identical for women in and out of the workforce and that they begin to engage in productive activities – and thus generate earnings and accumulate experience – once they have reached the median age of marriage and have finished their studies. To calculate the cost of an intervention, they take into account actual programme costs, the opportunity cost of beneficiaries participating in the programme (e.g. forgone earnings) as well as monitoring costs if the programme benefits were conditional on the beneficiary's marital status.

Amin et al. (2017) argue that, in evaluating policies and programmes aimed at tackling the issue of

female early marriage, it is important to focus not just on marriage age but a wider set of outcomes that accurately capture the wellbeing of the intended beneficiaries, such as the improved agency of adolescent girls in their own marriage decisions. In this context, they note that some important outcomes – such as the agency of a young bride in her sexual relations following marriage – may be difficult to measure and are typically "invisible in standard evaluation exercises". Relatedly, they argue that "adolescent empowerment programmes – which aim to improve the agency of adolescent girls in their marriage decisions – may have intrinsic value beyond any material change in the timing of marriage they may bring about." (p. 21)

The theoretical model in Wahhaj (2018) described in Section 2.1 provides a framework for considering dynamic effects of policies that raise the opportunity cost of early marriage. In particular, Wahhaj argues that if a policy expands alternatives to early marriage for adolescent girls – for example by improving access to education or employment – and induces some of them to postpone marriage, this would make older brides in the marriage market more common in the future, and thus reduce the negative association between the quality and age of prospective brides (see the discussion in Section 2.1 on how the model generates such a negative association in equilibrium). This change in the perception would cause a shift in demand towards older brides – and away from young brides – in the future, further reducing the incidence of early marriage in the next cohort and improving the perception of older brides in the future. Thus, a policy that expands non-marriage related opportunities for adolescent girls can trigger a virtuous cycle of marriage postponement. As a result, "the long-term impact of such interventions on marriage and subsequent life choices may well exceed the impact on the first cohort which is exposed to it" (p. 148). As such, evaluations based on outcomes of initial cohorts exposed to an intervention may underestimate the full effects on later cohorts.

The theoretical model by Buchmann et al. (2021), described in Section 2.1, highlights how different interventions aimed at reducing the practice of female early marriage may have contrasting – and potentially perverse – effects on actual marriage outcomes. Recall that the key assumption in the model is that women with stronger adherence to traditional gender norms have lower returns to human capital investments but are more desirable on the marriage market. This results in an early marriage pooling equilibrium and, as in Wahhaj (2018), a perceived negative association between the age of a prospective bride and her expected 'quality'. The authors show how a programme providing financial incentives for marriage postponement can break an early marriage pooling equilibrium by inducing girls with stronger adherence to traditional gender norms to delay marriage. Their decision to postpone marriage reduces the negative association between

the bride's age and 'quality' and, consequently, also encourage girls who are not directly targeted in the programme to postpone marriage.

Buchmann et al. (2021) argue that empowerment programmes targeted at adolescent girls could have the opposite effect. In particular, if these programmes reduce adherence to traditional gender norms among adolescent girls, they effectively *reduce* the average quality of prospective brides and thus *increase* the negative association between marriage age and bride quality. This will increase the incentive to marry early to avoid being perceived as a bride of low 'quality'. However, it is important to note that this reasoning may not hold if the empowerment programme also lowers the expected utility of early marriage for programme participants. It also highlights the importance of adolescent empowerment programmes to include the wider community to change perceptions about what bride qualities are most beneficial.

4.2 Evidence

Next, we review the existing empirical evidence on policies and interventions aimed at tackling female early marriage. In the following discussion, we group studies by the type of intervention or policy they investigate: empowerment programmes, labour market interventions, cash transfer programmes, and legal reforms.

Empowerment Programmes: Bandiera et al. (2020) evaluate the effects of the ELA (Empowerment and Livelihood for Adolescents) programme in Uganda on early marriage and related outcomes. The programme, established by BRAC Uganda in 2008, provided life skills and vocational training to girls aged between 14 and 20 years in 'adolescent development clubs' after school hours five times a week. The vocational training included courses on a range of income-generating activities as well as financial literacy. The life skills training covered topics such as sexual and reproductive health, legal knowledge on gender rights, and negotiation and conflict resolution. In addition, the club hosted recreational activities for the programme participants. A randomised design allows the authors to estimate the effects of the programme relative to a comparable control communities where the programme was not available. Following two years of the programme, girls in the treated communities were 6.9 percentage points less likely to be married or cohabitating with a partner compared to girls in control communities (where the marriage rate in the targeted age group rose from 12 percent to 18 percent during the programme period).

Amin et al. (2018) address the question whether particular types of skills training for adolescent girls and young women are more effective than others in reducing early marriage. They evaluate, using a randomised

design, a programme implemented by a consortium led by Population Council (called BALIKA) in southern Bangladesh in 2014-15 in which three different types of skills training was offered to girls aged 12-18 in three different treatment arms: (i) training in mathematics and English, with a focus on the school curriculum for school-going girls, and practical skills for out-of-school girls; (ii) training in gender rights awareness, as well as communication skills for negotiating with parents and guardians on sensitive issues such as marriage and dowry; (iii) training and information related to non-traditional female occupations covering computing, mobile phones applications, photography, health screening and entrepreneurship. The training was provided in sessions conducted once a week by a part-time school teacher and a locally recruited female mentor over a period of 18 months. The authors find significant effects on early marriage in all three arms. Using hazard models, they estimate that the training reduced the hazard of marriage among the targeted girls (intention-to-treat effects) by 25-30% relative to a control arm, and differences in effects across arms are not statistically significant. The magnitudes of the intention-to-treat effects are noteworthy given that the participating girls attended, on average, just one-third of the sessions offered, and the participation rate ranged from 67 to 70% across the three arms.

Cash Transfer Programmes: Baird et al. (2011) investigate the comparative effects of providing conditional and unconditional cash transfers over a two-year period to adolescent girls and young women in southern Malawi (aged 13-22 at the start of the intervention) on school enrolment, marriage and adolescent pregnancies. Different enumeration areas in Zomba district were randomly assigned to one of two treatment arms or a control arm. In the first treatment arm, never married girls in the targeted age group presently enrolled in school were invited to join a programme that would make monthly cash transfers to the beneficiary and her parents conditional on regular school attendance. In the second arm, girls were invited to join a similar programme but the cash transfers were unconditional. Two years after the start of the programme, school enrolment rates were significantly higher in the case of conditional transfers compared to unconditional transfers (and higher in both arms compared to the control arms). However, unconditional transfers had a large negative effect on the likelihood of getting married or becoming pregnant (respectively 7.9 and 6.7% points lower than in the control arm) while no significant effects were obtained in the case of conditional transfers. The effects on marriages and pregnancies in the unconditional transfers arm were driven entirely by adolescent girls who had dropped out of school since the beginning of the programme, while effects on girls still in school were negligible.

Baird et al. (2019) evaluate the effects of the same programme after the cash transfers had ceased. They detect a sharp rise in marriage and fertility in the unconditional cash transfers arm immediately after the end of the programme. Two years after the cessation of transfers, there is no difference in marriage and pregnancies between either treatment arm and the control arm, with the exception of girls who were out of school at the start of the programme. In the latter case, the conditional cash transfers arm induced a significant portion to *re-enroll* in school and they were significantly less likely to marry or become pregnant compared to their counterparts in the control arm even after cash transfers had ceased.

Buchmann et al. (2016) report on the effects of a conditional transfers programme conducted by Save the Children USA in southern Bangladesh. The programme distributed 4 litres of cooking oil every 4 months to girls aged 15 to 17 on the condition that they remain unmarried. The rationale for providing cooking oil (rather than cash as in other conditional transfer programmes) was that it is an item used regularly by all households but is "less susceptible to theft and graft because of its bulk". In a separate treatment arm, adolescent girls were given the opportunity to enrol in an empowerment programme which provided education support (literacy, numeracy, oral communication) as well as life skills training. The empowerment programme had a six-month curriculum delivered through meetings held five or six times a week, and two hours per day. A third treatment arm combined the conditional transfers and the empowerment programme. The study randomised the three treatment arms alongside a control arm at the community-level in 460 communities. Buchmann et al. (2016) estimate intention-to-treat effects that show an effect on early marriage and related outcomes in the conditional transfers arm (5.8% points decline in the likelihood of marriage among those aged 15-17 at the start of the programme) but not in the empowerment programme arm or in the arm that combined the two programmes. As discussed in Section 4.1, Buchmann et al. (2021) uses a signalling model to provide an explanation for the contrasting effects of the conditional transfers programme and the empowerment programme.

Child Marriage Laws: Field and Ambrus (2008) calculate the effects of enacting a legal minimum age of marriage on female education based on reduced-form estimates of the effects of the age of menarche on schooling in Bangladesh, as per the procedure described in Section 4.1. Their calculations indicate that, assuming full legal enforcement, most of the positive effects on female education are achieved from setting the legal minimum marriage age at 16 (an increase in 0.745 years of schooling), and additional gains from raising the legal age beyond 16 are very limited. They argue that, since the cost of legal enforcement will

increase with the age threshold, a legal age of 16 is likely to be optimal for their empirical setting.

In countries with weak institutions, minimum age of marriage laws typically have weak enforcement (see, for example, UNFPA 2012). Therefore, it is important to assess the potential effects of such laws in developing countries on the basis of using actual legislative changes. To date, there have been relatively few studies of this kind. Garcia-Hombrados (2018) exploits a legal change in Ethiopia, which increased the minimum age of marriage for women from 15 to 18 years, for this purpose. The new law was introduced by the Ethiopian federal government in 2000, but the date on which the new law came into effect varies across regions in the country. Whether and to what extent such a legislative change would affect women is a priori unclear as legal enforcement may not be perfect and the population may substitute away from formal marriages towards informal unions to circumvent the new law. To identify the effect of the legal reform, Garcia-Hombrados uses a regression discontinuity design based on the idea that women who were just above 15 years of age when the new law was implemented had the opportunity to marry legally at 15 while those were just below 15 years of age on that date could not get legally married before 18. RDD estimates obtained using the 2011 Ethiopian Demographic and Health Survey indicate that the legal change increased the age of start of conjugal cohabitation for women by about 2 years and decreased the probability of infant mortality among firstborn children by 7.3 to 8.2% points. In addition, second-stage estimates based on the RDD framework indicate that a one-year delay in the start of cohabitation decreases the probability of infant mortality among firstborn children by 3.8 to 5.2% points.

Bellés-Obrero and Lombardi (2020) investigate the effects of a similar legal change in Mexico on the incidence of early marriage, school dropout and early motherhood. For the purposes of identification, authors exploit the fact that different states in Mexico raised the minimum age of marriage to 18 years on different dates during the period 2008-2018. Difference-in-difference estimates indicate that the increase in the legal minimum age of marriage reduced the incidence of formal marriage among 16 and 17 year-old girls by 49%. However, they find no effects on school attendance and early motherhood. They also find that the legal change reduced the share of births due to mothers who are married and younger than 18 but there is an equivalent rise among mothers who are in informal unions and younger than 18. They argue that the change in the civil status of young mothers can potentially have adverse consequences for themselves and their children. More generally, "in places where cohabitation is socially acceptable, minimum-age-of-marriage laws are ineffective at avoiding the detrimental consequences of early unions."

Amirapu et al. (2020) investigate the effects of a change in the minimum-age-of-marriage law in Bangladesh on social attitudes and practice relating to female early marriage. Prior to a change in the law in 2017, the legal minimum age of marriage for women in Bangladesh was 18 years. But the penalties for violating the law were nominal (a modest fine and/or a prison term of up to 30 days for any adult engaging in or facilitating a child marriage) and, in any case, rarely enforced. The new law introduced harsher punishments for violating the minimum-age law but also introduced an "exception clause" that permitted marriage below the legal minimum age with parental consent if a court ruled that this was "in the best interest of the child". In 2018, prior to the implementation of the law, the authors conducted an information intervention in which adult men and women were individually informed about the law. Specifically, individuals were randomly assigned to be shown on video one of three versions of a short drama on child marriage that made reference either (i) to the pre-2017 law (the control group) only, (ii) the harsher punishments in the post-2017 law only, or (iii) the harsher punishments as well as the exceptions clause in the post-2017 law. Participants were asked about their attitudes towards early marriage immediately after the intervention. Follow-up surveys conducted 5 months and 10 months later obtained information about the marriage status of adolescent girls in the study households including any steps towards marriage (responses to marriage proposals, engagements, etc.)

The authors find that information about the new law had limited effects on reported attitudes. However, informing participants about the harsher punishments *increases* the risk of early marriage and marriage-related steps among adolescent girls in the same household (relative to the control group). The effects are more muted when participants are additionally informed about the exceptions clause and absent if the information is provided to mothers only and not to other household members. They suggest that this backlash effect may be due "a perception [among family elders] of an increase in future enforcement of the law" and efforts to marry them off before these changes come into effect.

Other Programmes and Policies: Next, we turn to programmes and policies that do not specifically target early marriage but may, nevertheless, affect the practice. First, if poverty is an important driver of female early marriage, then a range of economic policies that lead to poverty reduction could also affect the marriage timing of daughters. Similarly, if early marriage of daughters is a risk-coping strategy adopted by poor families, then better protection against adverse shocks should affect marriage timing. But the theoretical model developed by Corno et al. (2020) implies that the impact of these policies depends very much on prevailing marriage institutions, specifically the direcion of marriage transfers. Direct evidence of

the effects of poverty reduction or insurance programmes on early marriage practices in developing countries, which is presently lacking, would help to shed light on this issue.

Relatedly, policies that expand labour market opportunities for women could also have an indirect effect on early marriage practices. Improved labour market opportunities would provide an economic rationale for adolescent girls and young women to delay marriage and childbearing so that they are able to receive the appropriate education and training and participate in the labour market. As discussed in 2.2, Heath and Mobarak (2015) evaluated the effects of the expansion of the RMG (ready-made garments) industry on female early marriage in Bangladesh; and Jensen (2012) evalued the effects of an intervention that provided recruitment services for young women in the expanding BPO (business process outsourcing) industry in India. Neither study is specifically about policies aimed at improving labour market opportunities for women but they highlight, nevertheless, the potential of policies that sucessfully do so to reduce the incidence of early marriage.

5 Summary

In recent years, the issue of female early marriage has received growing attention among researchers, policymakers and other stakeholders for its potentially adverse effects on women, their families and the wider population in developing countries. At the same time, there is growing urgency about developing effective policies and programmes to stem the practice particularly in situations of weak legal protection of minors and acute poverty. The aim of this chapter was to provide a review of the existing body of knowledge about the economic causes and consequences of early marriage, as well as the effectiveness of alternative policies, within a coherent theoretical framework.

The review of the theoretical literature on early marriage showed that the existing work on the economic causes of female early marriage consists of disparate models to highlight different mechanisms and explain different phenomona (Section 2.1). Although the theoretical literature is, collectively, able to account for a broad range of stylised facts relating to female early marriage (Section 2.2) there is a need to better articulate different causes and consequences within a single conceptual framework to better guide policy-related work. For example, the existing literature provides limited theoretical insight as to why female early marriage leads to a disruption in her human capital (Section 3); better understanding on this issue can shed light on the scope of sustaining human capital accumulation among the millions of young women around the world today

who have already experienced early marriage.

The review of the empirical literature identified a sizeable body of evidence on the consequences of female early marriage from studies that make use of rigorous and innovative methods to isolate the effects of marriage timing from confounding factors (Section 3.1). This literature sheds light on both the types of outcomes affected and the magnitudes of these effects. In particular, there is evidence of sizeable adverse effects on female schooling, access to prenatal care, early childbirth, domestic violence, and the health and education of the next generation, However, it is important to note that most of this literature uses exogenous variation in marriage timing due to variation in the age of menarche. As such, the LATE (local average treatment effect) estimates they provide may not be directly applicable to programmes and policies that affect behaviour at a different point in the marriage age distribution. Therefore, it is important to complement the existing literature on the consequences of early marriage with experimental evidence or estimates derived from other natural experiments. The existing experimental evidence (discussed in Section 4.2) provides good insight about the effectiveness of different types of policies in prevening early marriage, but there is potential to exploit further this type of research design to understand better the *consequences* of preventing early marriage.

On the question of the effects of female early marriage from various programmes and policies, there is a dearth of conceptual work. The limited theoretical literature suggests that measuring efficacy of programmes and policies based on indicators of marriage timing alone may lead to misleading conclusions and that more work on measurement is required. Additionally, this literature highlights the importance of investigating the dynamic effects of policies and shocks that influence marriage timing (Section 4.1).

There is a rich and growing literature on the efficacy of different types of interventions to discourage the practice of female early marriage, most notably empowerment and cash transfer programmes (Section 4.2). The evidence indicates that these types of programmes can be effective reducing the incidence of early marriage. However, understanding to what extent these programmatic effects translate into improved agency for beneficiaries or changes in social norms require further advances in measurement. The limited evidence regarding the effectiveness of legal reforms suggests that this is a blunt instrument with the potential for unintended, adverse consequences.

Finally, existing theoretical models imply that policies and programmes aimed at poverty reduction, improving strategies for coping with risk, and improving labour market opportunities for women, should also

affect marriage timing decisions within poor families. But there is limited evidence about whether, and to what extent, these types of economic programmes and policies affect early marriage practices.

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