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IZA DP No. 10556

Marriage Markets in Developing Countries

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ABSTRACT

Marriage Markets in Developing Countries[1]

This chapter reviews the literature on marriage in developing countries. We describe how marital matching occurs; the trends in age at marriage; assortative mating patterns; marriage payments; and spousal decision-making after a marriage has occurred. Lastly, we discuss trends and rationales for consanguineous and polygamous marriages – practices that are largely unique to the developing world.

JEL Classification: J1, J12

Keywords: marriage, developing countries, marriage markets

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[1] Prepared for inclusion in the Oxford Handbook on the Economics of Women, ed. Susan L. Averett, Laura M. Argys and Saul D. Hoffman. (New York: Oxford University Press. Forthcoming, 2018).

1. INTRODUCTION

The purpose of this chapter is to review the literature on marriage in developing countries. Marriage markets in developing countries differ from those in high-income countries in several crucial ways. First, there exist differences in the prevalence of marriage and cohabitation. Figure 1 reveals that marriage rates among adults aged 18-49 years generally tend to be lower in upper-middle-income and high-income countries, although considerable regional differences exist. Overall, the highest marriage rates are prevalent in Asia and the Middle East, as well as some African countries (Child Trends and Social Trends Institute, 2015). Latin America, on the other hand, has experienced a decline in marriage rates with concomitant increases in cohabitation levels (Child Trends and Social Trends Institute, 2015). Second, the process of mate selection often takes the form of matches arranged by family members and involves a transfer of resources between families at the time of marriage. Third, the laws governing marital dissolution are typically not as well established and cultural norms about gender roles are strong determinants of spousal interactions in low-income countries that are also characterized by underdeveloped and missing markets. For these reasons, the study of marriage in developing countries is distinct from the research on family economics in high-income societies, warranting a separate review of the literature.

This chapter is divided into the following sections. In Section 2, we describe how marital matching occurs. Specifically, we consider whether marriages are family-arranged or not; the geographical distribution of and other patterns in arranged marriages; the causes for the existence and the subsequent decline of arranged marriages; and ultimately, welfare implications of the type of matchmaking mechanism. In Section 3, we describe trends in age at marriage and similarity in spousal attributes. We summarize the theoretical and empirical literature on assortative mating patterns in physical assets and individual attributes. In Section 4, we review the research on marriage payments, i.e., dowry and bride price, the two mechanisms for transfer of assets between the groom's and the bride's families. In Section 5, we review the theoretical and the empirical literatures on spousal decision-making after a marriage has occurred. Section 6 is devoted to trends and rationales for consanguineous and polygamous marriages—practices that are largely unique to the developing world. Finally, Section 7 concludes.

2. HOW DO PEOPLE GET MARRIED?

Put simply, we observe variants of two modes of mate selection in societies—self-choice marriages or "love" matches and arranged marriages—which vary with respect to the locus of decision-making. In the modern system of love marriages, young people choose their own spouse based on mutual compatibility, romantic love, and affection. On the contrary, parents and extended families exert significant control and influence over the mate choice of the prospective bride or groom in arranged marriages. The distinction, however, is not strictly dichotomous due to considerable variation in the extent of parental involvement. For example, the parents or the matchmaker often seek the input and consent of the young adult after shortlisting potential matches.

Historically, arranged marriages were the norm in most pre-industrialized societies (Goody, 1983; Apostolou, 2010). The rise of the Catholic Church and the steady pace of industrialization led to the gradual decline and the eventual disappearance of arranged marriages, thus paving the way for autonomous love matches in contemporary Western societies (Goode, 1970; Goody, 1983). In contrast, family-arranged marriages continue to be the dominant form of matchmaking in Asia, Africa, and the Middle East (Hamon and Ingoldsby, 2003).

Drawing on micro-data and on estimates from previous studies, Rubio (2014) examines the trends in arranged marriages by cohort for eighteen countries. The salient features which emerge from her study are: (a) approximately three-quarters or more of the marriages taking place in Asia and Africa at the beginning of the twentieth century were arranged; (b) younger cohorts are more likely to choose their own spouses and this movement away from arranged marriages, albeit at different rates, is apparent in East and Southeast Asia, Africa, and the Middle East; and (c) in South Asia (India, Pakistan, and Bangladesh), 95% or more of all marriages continue to be family-arranged.

With this background on the geographical distribution of marriage types, we proceed to examine who selects into arranged marriages and why. Lee and Stone (1980) analyzed cross-cultural data from a sample of 117 societies and found love matches to be more common in nuclear families relative to extended families and in societies with neolocal residence customs (newly-married couple establishing a separate household)

rather than non-neolocal residence customs. Using data from Ankara, Turkey, Hortaçsu (1999) finds couple-initiated marriages to be more prevalent among husbands and wives with higher educational levels and among working women. Similar patterns are reported by Mathur (2007) who finds that living in a joint family, owning a family business, lower educational attainment, lower levels of labor force participation, and traditional values and lifestyle are positively correlated with the probability of women having arranged marriages in Mumbai, India. Emran *et al*. (2014) use war disruptions and spatial indicators of schooling supply in Vietnam as instruments for education and find a negative relation between schooling and arranged marriages: the effect is stronger for women compared to men. In general, Rubio (2014) contends that the worldwide decline in arranged marriages is positively correlated with education, urbanization, female employment outside the household, and decline in the importance of agriculture.

But what determines selection into arranged marriage? One primary factor is insurance gains from marrying within the social (caste, clan, or kinship) network. Using data from rural India, Rosenzweig and Stark (1989) and Munshi and Rosenzweig (2009) show that marriage is used as a device for consumption smoothing and risk-sharing across households. Along with strengthening social ties, the marital matches allow families to enter into implicit contractual arrangements that are able to reduce problems of information asymmetry, particularly with regard to spatially covariant risks prevalent in the agricultural sector. Marriages between geographically distant but kinship-related households provide income insurance benefits since the risks associated with the various sources of income across the regions in which these households are located are not as highly correlated. Again, caste networks serve as an important source of informal loans for households. Consequently, high levels of cooperation can be sustained since exclusion from these networks serves as a credible source of threat.

However, there exists a trade-off since arranged marriage restricts social and geographical mobility of young adults. Rubio (2014) formalizes this argument: her model predicts that arranged marriages would disappear when the returns to this informal insurance mechanism decline relative to the returns from moving to a different geographical location and finding a partner with higher earning potential. In exogamous marriage systems, which require individuals to marry outside the group that they are born

into, this trade-off may be weaker since marriages could be used to strengthen and extend network ties and create new ones (Luke and Munshi, 2006).

Mathur (2007) makes use of a two-stage bargaining model to understand the choice of matchmaking mechanism. Her starting assumption is that parents and children differ with respect to their preferences for spousal attributes and that arranged marriages reflect parental preferences while love matches reflect the children's preferences. Particularly, parents would value characteristics in a daughter-in-law that would enable them to maintain control and authority over the extended household and its resources. These differences in preferences lead to conflict, which, if unresolved, could even culminate in the dissolution of the household. Within this framework, she finds, empirically, that arranged marriages are more common when financial and kinship ties between parents and sons are stronger. Related to this is the idea put forth in Edlund and Lagerlöf (2004) that the distribution of resources between the old (parent) and the young (child) determines who has the power to choose the child's spouse. They draw on previous research to show that this could be a potential explanation for why arranged marriages persisted in Asia relative to Europe. In Europe, the emphasis was on the nuclear family, which favored young adults, and thus the old were dependents rather than heads of households. In contrast, young men in Asia and Africa were dependent on the older generation to "buy" their partners.

Parental involvement in children's mate search is also likely high in societies where assets are transferred to children at the time of marriage (Fafchamps and Quisumbing, 2008). In addition to the choice of spouse, these transfers are expected to impact human capital investment, bequests, and even children's choice of post-marital residence (Fafchamps and Quisumbing, 2008 and the references therein; Vogl, 2013; Kedir and Oterová, 2017). The parents' utility maximizing solutions depend, *inter alia*, on the kinship and inheritance patterns (patrilineal, matrilineal, or bilateral), number and sex composition of children, and household wealth (Fafchamps and Quisumbing, 2008).

Finally, the demand for and desirability of female chastity in the marriage market could also explain why parents would want to limit individual search and exercise control over a daughter's spousal choices (Edlund and Lagerlöf, 2004).

If the type of matchmaking reflects the preferences of the parents and the young adult, and if different types of people select into arranged versus love marriages, we may expect differences in observable characteristics of the spouse across matchmaking types. This, in turn, would have variable welfare consequences for the partners and children in these marriages. The empirical evidence, however, is largely correlational and inconclusive. For example, Xiaohe and Whyte (1990) find that women in love matches in China report higher marital satisfaction and have greater decision-making power, while in Turkey, Hortaçsu (1999) reports greater decision-making power of women for housework-related decisions and less frequent interaction with wife's family in family-arranged marriages. Using data from Pakistan, Hamid *et al*. (2011) find that women who have a say in the selection of their spouse are more likely to communicate with their spouse and negotiate about their fertility. For India, Dasgupta (2014) finds that the women who chose their spouse together with their parents have the greatest autonomy in household decisions and decisions regarding children. In addition to influences on decision-making and autonomy, previous work has also revealed differences in total fertility, son preference, mental distress, suicide, domestic violence, and divorce rates between love and arranged marriages (Chung and Das Gupta 2007, 2011 and Rubio, 2014, and the references therein).

3. WHEN AND WHO DO MEN AND WOMEN MARRY?

In his 1973 seminal article, Gary Becker contends that individuals marry when their expected utility from being married exceeds their utility from remaining single. While his theory considers the determinants of the gains from marriage and the sorting of mates by individual traits and characteristics, it does not really focus on marriage timing. In this section, we first examine the trends in and the factors associated with age at marriage and then go on to detail Becker's theory and to review the empirical literature as it relates to assortative mating patterns.

3.1 AGE AT MARRIAGE

Much of the developing world is characterized by early onset of marriage. In fact, it is not uncommon for one or both spouses to enter into a marital union before the age of

eighteen. Data from the United Nations reveal that two out of every five girls are child brides in South Asia and in West and Central Africa; although, in absolute numbers, about half of the total child brides around the world live in Asia, excluding China (UNFPA, 2012). Figure 2 presents global patterns in the age of marriage among men and women. Overall, women's age at marriage is the lowest in South Asia and Sub-Saharan Africa, and the highest in East Asia and Western Europe (United Nations, 2015). On average, women tend to marry at earlier ages than men (United Nations, 2015).

Early and teenage marriage warrants attention as it is associated with poor educational outcomes, inferior child and maternal health, high rates of domestic violence, and high probability of marriage dissolution (Singh and Samara, 1996; Ambrus and Field, 2008). An examination of trends reveals that the age at marriage has been increasing for both men and women over time, although there remains considerable heterogeneity both across and within regions (World Marriage Data, 2015).

What factors determine the age at marriage? And what factors may have contributed to a reversal of the trend of early marriage? Jensen and Thornton (2003) allude to both supply and demand side causes of early marriage. On the supply side, households may want to marry off daughters at a young age because they are viewed as an economic burden either due to the high costs of providing their support or because of economic shocks, such as bad harvest or the illness or death of a primary earner. Increased wedding and dowry expenditures, on the other hand, may serve to increase female age at marriage as parents struggle to gather the necessary resources needed for their daughter's marriage (Caldwell *et al*. 1983). Corno *et al*. (2016) show that exogenous negative income shocks arising from droughts increase the probability of early marriage in Africa while it reduces the probability in India. They explain the regional differences in income risk coping mechanisms as resulting from differences in the tradition of marital payments: bride price in Africa and dowry in India. An additional incentive for early marriage is that lower dowry amounts suffice for parents to get relatively higher-status husbands for their daughters when they marry young (Ambrus and Field, 2008). Parents also view early marriage as a way to preserve female virginity, to prevent sexual advances from men, and to avoid premarital pregnancies (Jensen and Thornton, 2003).

On the demand side, men prefer younger brides because they have less autonomy and are more likely to conform to the wishes of the husband and his family (Caldwell *et al*., 1983; Jensen and Thornton, 2003). In addition, younger brides also have a longer reproductive life, which may be important in regions that have high desired fertility coupled with high infant mortality rates (Jensen and Thornton, 2003).

Familial and cultural factors are also important determinants of marriage timing. Women with multiple older female siblings are likely to marry later due to the family preference of marrying daughters in birth order (Malhotra and Tsui, 1996; Ambrus and Field, 2008; Vogl, 2013). Desai and Andrist (2010) find that the practice of *purdah* or *ghunghat*[2], male-female segregation in the household, and restricted female mobility are all associated with early age at marriage.

An examination of the global trends in age at marriage reveals that the delay in the onset of marriage is most notable among younger cohorts of women. Several studies have speculated on the role of urbanization, female labor force participation, and increase in female educational attainment as possible factors associated with this change (Singh and Samara, 1996; Garenne, 2004; Gyimah, 2009; Carmichael, 2011; Yu and Xie, 2015). Esteve *et al*. (2013), however, found that women's age at union formation was not affected by educational expansion in Latin American countries. Their result was driven by women in the lesser educated group who engaged in earlier union formation through non-marital cohabitation.

The phenomenon of "marriage squeeze," i.e., an excess supply of women or men on the marriage market, also has implications for age at marriage. In fact, a deficit in the number of eligible grooms has been cited as a reason for the observed increase in women's age at marriage in twentieth century India. High population growth rates and declines in child and infant mortality levels together with the fact that women marry at younger ages than men possibly led to an excess supply of women since matches would have to be drawn from older men in smaller birth cohorts (Caldwell *et al*., 1983; Bhat and Halli, 1999). In the case of China, Jiang *et al*. (2014) project population data to show that the highly masculine sex ratio and the ensuing surplus of males will result in an increase

[2] *Purdah* is practiced by Muslim women and *ghunghat* by Hindu women. Both refer to covering of the head and/or face in order to stay out of the sight of men (Desai and Andrist, 2010).

in the proportion of never-married males and the mean age at marriage for males will first rise and then decrease.

Finally, laws and government programs also have the potential to influence age at marriage. Minimum legal age at marriage is one such means. In 2010, the minimum legal age at marriage without parental consent was 18 years or higher in 150 countries for women and in 180 countries for men (United Nations, 2011). However, the wide prevalence of adolescent marriage among women in many countries is suggestive of weak enforcement of the minimum age laws (United Nations, 2011). Kirdar *et al*. (2016) use a regression discontinuity design to estimate the causal impact of an increase in the number of compulsory schooling years in Turkey from five to eight and find that it delays the marriage of teenage women by a few years. More generally, Lee-Rife *et al*. (2012) provide a review of 23 child marriage prevention programs implemented in various low-income countries. A preliminary evaluation of these programs leads them to contend that programs offering incentives and attempting to empower girls are a quick and effective means of reducing the probability of child marriage.

3.2 ASSORTATIVE MATING

In a marriage market, individuals have a range of potential partners to choose from and it is this competition that leads to the sorting of individuals by different traits, including physical assets, human capital, and biological and psychological characteristics. The gains from marriage and the market forces of competition are instrumental in determining which traits are subject to positive (matching of likes) or negative (matching of unlikes) sorting.

Here we outline a simple framework (based on Becker 1973; 1974; 1981) which can be used to understand marriage market matching. Let us consider a marriage market with an equal number of men and women who differ in their individual endowment of characteristics (or assets). Suppose also that participants have common preferences for higher rankings of characteristics over lower rankings. Marriage leads to household formation and we can envision a household production function that relates its single aggregate output to market goods and services and time inputs of the individual household members. The gains from marriage depend on the complementarity in inputs:

time versus market goods, availability of labor market opportunities, and traits such as physical beauty and intelligence that affect non-market productivity and even market productivity. The marriage market maximizes the sum of outputs over all marriages, not for any single marriage. That is, it seeks to maximize the gains over all marriages. With this backdrop it follows that positive matching (homogamy) would occur when characteristics of men and women are complements and the individuals' traits reinforce each other. When characteristics are substitutes, individuals offset each other and they would be better off if each person specializes according to their comparative advantage. Negative matching or heterogamy would result in this case. The above means of sorting maximizes the gains from marriage and is Pareto-optimal: no individual can improve her marriage outcome without making someone worse off.

Of course, this is a rather simplistic characterization of a complicated dynamic problem. Numerous individual and external factors can affect the rankings and the matching process, a discussion of which is beyond the scope of this chapter[3].

Empirically, matching on education has received a great deal of attention. Boulier and Rosenzweig (1984) used an instrumental variables estimation strategy to confirm the existence of payoffs to spousal search and positive assortative mating with respect to schooling in the Philippines. They also found that more educated women married later which they explained by noting that even though additional schooling attracted better quality spouses, it reduced the gains from marriage. In an attempt to examine trends in educational homogamy in East Asian societies, Smits and Park (2009) analyzed data for more than 100,000 couples from ten countries who married between 1950 and 2000. They found that educational homogamy generally increased with the level of education. They also report substantial variation across societies with the highest levels of homogamy in Korea and Indonesia and the lowest levels in Malaysia and Singapore. Averaging across countries, they found a trend towards decreasing homogamy with the exception of groups with little or no education. The last finding is crucial because the tendency of homogamy among the least educated will have a propensity to perpetuate intergenerational inequality. However, Permanyer *et al*. (2013) use micro-data from 73

[3] We refer readers Browning *et al*. (2014) for an excellent and detailed review of the burgeoning theoretical literature on marriage market matching.

countries and find that the positive effect of education expansion outweighs the negative effect of increased educational homogamy on couples' isolated illiteracy rates (i.e., the proportion of illiterates in union married to an illiterate individual). In certain Latin American countries, however, educational homogamy has increased over time (Ganguli *et al*., 2014).

In heterogamous marriages, educational hypergamy (a less educated woman marrying a more educated man) has usually been more prevalent than educational hypogamy (a more educated woman marrying a less educated man) (Esteve *et al*., 2012). However, due to expansion of education, particularly a gender-gap reversal in education, several studies have noted a decline in hypergamy and an increase in hypogamy as well as projected increases in non-marriage (Esteve *et al*., 2012; Ganguli *et al*., 2014; Kashyap *et al*., 2015; Piotrowski *et al*., 2016; Borkotoky and Gupta, 2016). Heterogamy with respect to education is also observed as a means of exchanging educational status for racial status (Gullickson and Torche, 2014).

Assortative patterns have also been examined with respect to other attributes. Zhang and Liu (2003) find weak evidence of a negative correlation between spousal wages using data from Taiwan. In rural Ethiopia, Fafchamps and Quisumbing (2005) find strong evidence of positive matching when examining the assets brought to marriage. Caste homogamy characterizes the marriage market in India not only in arranged marriages but also in love marriages (Banerjee *et al*., 2013; Allendorf and Pandian, 2016). Dugar *et al*. (2012), however, find that the probability of a higher-caste female considering a lower-caste match increases with an increase in the monthly income of a low-caste male. This suggests the existence of a tradeoff between income and caste status.

4. MARRIAGE PAYMENTS

A key feature of marriages in contemporary low-income countries is bride-to-groom (*dowry*) or groom-to-bride (*bride-price*) transfer of resources—monetary or in-kind—at the time of marriage. These transfers can be substantial, often amounting to several years of household income, and thus have the potential to affect the distribution of wealth in a society. Anderson (2007a) describes the cross-sectional and temporal patterns in the

prevalence and magnitudes of dowry and bride price, and is a useful starting point for reviewing the early literature in economics on marriage payments.

Marital payments have existed in most societies at some point in time, typically co-appearing with arranged marriages. Although marriage payments have disappeared in currently developed countries (e.g., in Western Europe), bride price and dowry are still widely prevalent in several contemporary low-income societies. Bride price occurs most commonly in sub-Saharan Africa, and has also been prevalent in rural China, Thailand, Egypt, Iran, and Turkey in recent times. Dowry, on the other hand, is mostly found in South Asian countries, i.e., Bangladesh, India, Pakistan, and Sri Lanka. In some cases, both dowry and bride price have co-existed (e.g., in China and in Taiwan) and in other instances a society has transformed from one type of marriage payment to another—e.g., in Bangladesh the bride price system has been fully replaced by dowry, making it the only Muslim country where dowry is almost universally practiced.

Following the framework in Becker (1981), marriage payments can be considered compensatory transfers that ensure an efficient division of marital surplus between spouses when social norms and other factors create a rift between a spouse's share of household surplus and his or her shadow price in the marriage market. In fact, Becker's marriage market matching framework can explain several patterns in the data, such as bride-price being more prevalent in societies where women are economically more productive and dowry being more common in socially stratified societies where relatively homogenous women compete for heterogeneous grooms who differ in their earning potential. This framework also predicts that changes in the relative supply of men and women on the marriage market should lead to inflation or deflation in the amounts of dowry or bride price. Ambrus *et al*. (2010) find that the switch from bride price to dowry in Bangladesh coincided with the emergence of *mehr*—a payment from the husband to the wife in case of a husband-initiated divorce—that is negotiated as a part of the prenuptial marital contract. Since *mehr* imposes a cost on the husband, dowry emerged as a compensatory transfer. In their theoretical model, this compensation justification for dowry is in addition to the role of dowry as a marriage market price that equilibrates the supply of brides and grooms.

Dowry and bride price are not necessarily flip-sides of each other, however. In

part this is due to the fact that dowry may be more than just a "groom price." Historically, when daughters did not inherit property, dowry (known as *stridhan* in India) was considered a pre-mortem bequest to the daughter who would leave the natal home upon marriage. However, the process of development can erode brides' property rights over dowry and shift them to grooms, transforming it into a groom price rather than a bequest for daughters. Anderson and Bidner (2015) show, theoretically, that as the quality of grooms improves with economic development and the return to investment in human capital of females remains low, the increased competition for grooms causes a bride's parents to offer the groom greater property rights over dowry to make their daughter more attractive on the marriage market. This leads to a socially inefficient outcome, as the total marital surplus would be higher if parents instead directly invested in their daughters, leading to higher bride quality. The only empirical evidence on the relative importance of the bequest motive of dowries comes from Arunachalam and Logan (2016), who find that, in Bangladesh, bequest dowries have declined in prevalence and in amount over time.

The twin motives of dowry also appear in an interesting setup in Roy (2015), who examines the impact of legal reforms that improved women's inheritance rights in India on girls' education and dowry payments. She finds that the inheritance reforms did not increase daughters' likelihood of inheriting any land. Instead, after the reforms, fathers were more likely to strategically "gift" their land to the sons so as to circumvent these new laws. Daughters, however, were "compensated." Younger daughters were given more education and girls about to get married received higher dowries as a substitute for their share in ancestral property. These findings demonstrate the bequest motive of dowries and that parents perceive investment in daughter's human capital as a substitute for dowry.

Given that marriage payments are still widely prevalent in several countries, a natural next step is to examine the consequences of marital payments on various socioeconomic outcomes. Unfortunately, the lack of data on dowries and bride price has meant that this literature is quite limited. Nevertheless, a few recent studies have attempted to utilize newly available data to test how marriage payments impact fertility, investments in children's health and education, and household financial decisions. Ashraf

et al. (2016), for instance, show that ethnic groups that engage in bride price payments in Zambia and Indonesia increase female enrollment in response to expansions in school supply, whereas non-bride price groups do not exhibit a significant effect. This is because a more educated bride commands a higher bride price in these societies, providing a greater incentive for parents to invest in girls' education and to take advantage of the increased supply of schools.

Similarly, Bhalotra *et al*. (2016) show that the custom of dowry motivates son-preferring behaviors in India. Specifically, they find that a sharp increase in the price of gold, which has traditionally been an important component of dowry, led to an increase in mortality of girls relative to boys. Moreover, their results suggest that the sex ratio at birth and excess female mortality tend to vary cyclically with gold prices, implying that dowry costs are an underlying reason for Indian parents' preference for sons. Alfano (2015) also finds that an amendment that made the Indian anti-dowry law stricter led to decreases in male-biased fertility behaviors as it potentially made the dowry cost of daughters smaller.

However, both Alfano (2015) and Bhalotra *et al*. (2016) do not directly estimate the effect of dowries on excess female child mortality, male-biased fertility, and the sex ratio at birth. Anukriti *et al*. (2016) instead utilize self-reported retrospective information on gifts given and received at the time of marriage in rural India to examine how expected future dowry for a child affects households' financial and childbearing decisions, and investments in children several years before the child is actually married. They find that parents increase savings and fathers work more in anticipation of future dowry payments for their daughters, but parents of sons, who expect to receive dowry, are unable to adjust current consumption due to credit constraints. However, unlike Alfano (2015) and Bhalotra *et al*. (2016), dowry has no impact on fertility and sex-selection and the effects on expenditure on children's education are inconclusive according to their analysis.

Anukriti *et al*. (2016) also describe the trends in dowry payments in contemporary rural India, thereby informing the ongoing lively debate in the literature on whether South Asia has been experiencing dowry inflation in recent years, and, if so, whether it has been

caused by a marriage squeeze (e.g., Rao (1993), Edlund (2006), Anderson (2007b))[4]. Remarkably, this debate has been based on data from an extremely small sample that is not nationally representative. This is likely due to lack of better data on dowries during the time period examined by these studies, roughly 1923-1978. Other papers on this topic (e.g., Anderson (2007b)) have been theoretical and have assumed the presence of dowry inflation and have sought to test if the marriage squeeze is a credible explanation for it. Moreover, these studies do not inform us about trends in more recent years that have witnessed remarkable economic and social changes. Using data that is more recent, is larger in sample size, and is more representative, Anukriti *et al*. (2016) show that the average dowry has been remarkably stable over time, albeit there is considerable heterogeneity across castes, religions, and states in India.

5. MARRIAGE QUALITY AND DIVORCE

Once a marriage has taken place, what determines how the couple interacts with each other? The traditional unitary model of the household treats the couple as a single decision-maker. A key implication of this framework is that potential "distribution factors," such as the sex ratio, relative income, gender of a benefit's recipient, and divorce laws, do not impact the intra-household resource allocation. However, there is substantial empirical evidence from low- and high-income countries that rejects "income pooling," in the real world (Bruce, 1989; Thomas, 1990; Strauss *et al*., 2000; Duflo, 2003; Qian, 2008).

The non-unitary models treat spouses as separate decision-makers; these models are broadly of two types: cooperative and non-cooperative. The cooperative models—referred to as "collective models"—assume that the household decision-making process leads to Pareto efficient outcomes. Typically, spousal interaction is modeled as a bargaining game where distribution factors affect the final allocation by altering the *threat point*,[5] which influences the Pareto weight or the intra-household distribution of

[4] Logan and Arunachalam (2014) provide a detailed and comprehensive discussion of this debate.
[5] The *threat point* is the utility level that could be reached in the absence of an agreement with the partner.

power, and ultimately changes spousal behavior. In non-cooperative frameworks, on the other hand, the optimal decisions need not be Pareto efficient.

Several papers have demonstrated that households are, in fact, not always Pareto efficient. For instance, Udry (1996) shows that households in Burkina Faso fail to efficiently allocate agricultural inputs, such as labor and fertilizer, across plots controlled by men and women, resulting in a loss of 6% of potential output. On the other hand, Bobonis (2009) utilizes exogenous variation in two distribution factors in rural Mexico —generated by randomized variation in women's income due to the PROGRESA program and household variation in income due to rainfall shocks—to empirically test the collective model and finds evidence in support of Pareto efficiency.

One of the key gains from marriage is the ability of spouses to share risk and insure each other and smooth consumption. Couples may be unable to reap these benefits, however, due to the lack of commitment, resulting in inefficient outcomes, both *ex ante* and *ex post*. Pre-marital contracts are one way to achieve commitment and lower inefficiencies within marriage. An interesting example is the custom of *watta satta*, a system of bride exchange that is widely prevalent in rural Pakistan, wherein a brother-sister pair from two families is simultaneously married. Jacoby and Mansuri (2010) argue that *watta satta* is essentially a system that promotes credible commitment within marriage, thereby preventing inefficient outcomes, such as spousal violence. In rural Pakistan, women's formal legal rights are weak, divorce is stigmatized, and female virginity is prized. Consequently, upon marriage, the bargaining power shifts in favor of the husband, as the wife's outside option is quite weak. The mutual threat of reciprocity inherent in *watta satta* marriages—a husband who 'mistreats' his wife can expect his brother-in-law to retaliate against his sister—thus serves as a commitment device or as an enforcement mechanism.

Marriages are also often characterized by asymmetric information and limited communication. Decision-making in a key marital domain, family planning, is likely to suffer from moral hazard since spouses typically have different preferences over the number of children and wives can easily hide contraceptive use from their husbands. Using a randomized experiment, Ashraf *et al*. (2014) find that improving access to a concealable method of contraception in Zambia has differential impact on its take-up and

on fertility depending on whether spousal consent is required to obtain contraceptives. Spousal consent reduces the scope of moral hazard or hidden action from the wife, but also lowers the wife's ability to meet her fertility objectives that differ from those of her husband's. The authors also find evidence of dynamic inefficiencies in bargaining over fertility: even among couples whose short-run fertility preferences are *aligned*, men discourage their wives from using contraception. Similarly, Ashraf (2009) shows that asymmetric information can also lead to inefficient intra-household financial decisions. She conducted a randomized experiment in the Philippines that created variation in the ability of spouses to bargain with each other and to hide information and found that husbands are willing to pay to hide additional income from their wives.

Marriages in low-income countries are also characterized by high rates of spousal violence against women. While domestic violence is non-negligible even in high-income countries, annual prevalence rates tend to be substantially higher in the developing world. Theoretically, violence against the wife can be modeled as strategic, wherein the husband uses it as an instrument of control, or as a mode of expression. Bloch and Rao (2002), for example, model a household with asymmetric information where violence against the wife is interpreted as a signal sent by the husband to the wife's family about his contentment with the marriage in order to extract additional transfers. Empirical evidence on the causal determinants of spousal violence in developing country settings is limited and mixed. Heath (2014) documents a positive correlation between women's work and domestic violence in Bangladesh, but only among women with low education or young age at marriage, suggesting that a woman's bargaining power before entering the labor force is an important determinant of whether she faces domestic violence upon entering the labor force. Erten and Keskin (2016) find similar evidence of "male backlash" to increased educational attainment of women in Turkey. On the other hand, targeting cash, voucher, or food transfers towards female heads of household led to a significant decrease in the prevalence of intimate partner violence in Ecuador (Hidrobo *et al*., 2016).

Couples that do not wish to stay married separate or divorce. While there is substantial research on divorce trends and the impact of changes in divorce laws and other distribution factors on the likelihood of divorce and intra-household bargaining in high-income countries, there is extremely limited work on marital dissolution in low-

income countries. One reason for this is that divorce is not as common in developing countries and accurate data on marriage breakdowns is hard to come by.

The crude annual divorce rate per 1,000 marriages (CDR) exhibits substantial variation within the developing world. The 2008 World Marriage Data reveals the following patterns. In Africa, the CDR was 0.01 in Mozambique (1970), 2.4 in Ethiopia (1999), 3.4 in Côte d'Ivoire (1998), and 6.9 in Botswana (2001). In comparison, in 2006, the CDR was 3.5 in the United States, 2.4 in the United Kingdom, and 2.2 in France. Dommaraju and Jones (2011) examine divorce trends in Asia and conclude that divorce rates have been steadily increasing in East Asia since the 1980s with China continuing to display the lowest CDR in the region. In 2007, the CDR was 2.6 in South Korea, 2.9 in Taiwan, and 1.6 in China. Islamic Southeast Asia had high divorce rates until the 1980s, with a decline during the 1990s, and recent rise during the mid-late 20th century. In Southeast Asia, divorce rates have been lower among non-Muslims than for Muslims. South Asian countries have steadily displayed low divorce rates. Comparable data on CDR is not available for South Asia as divorce is still a relatively rare event in this part of the world. The number of ever-married women currently divorced or separated (though not legally) ranges from 3.2% in Bangladesh (2007), 1.8% in India (2005–06), 1.7% in Nepal (2006) and 1.5% in Pakistan in 2006–07 to 1.2% in Sri Lanka (2001). South American countries also tend to have low CDRs, presumable due to the influence of Catholicism. In 2006, the CDR was 0.1 - 0.2 in Chile, Colombia, and Guatemala, 0.7-0.9 in Mexico, Nicaragua, Brazil, El Salvador, and Venezuela.

Changes in divorce rates tend to be correlated with women's education, female labor force participation rates, divorce laws, and cultural norms surrounding marriage. In the household model, these factors affect divorce rates by altering the type of new matches that are formed and by changing the outside option of existing matches. For example, Bobonis (2011) finds that PROGRESA conditional cash transfers targeted at women increased separation rates for intact families in Mexico, suggesting that the higher income improved some married women's outside option in the remarriage market.

In general, however, divorced and separated women in developing countries continue to face substantial stigma, making it costlier, especially for women who are financially dependent on their husbands, to leave an unhappy marriage. Additionally, the

legal and institutional environments in these countries create substantial barriers to divorce. For instance, unilateral divorce is not legally permitted in countries such as India and women often have limited rights to maintenance or alimony and rights over property and assets accumulated during the marriage. For these reasons, it is unsurprising that divorce is not a common occurrence in low-income countries. However, as these economies develop, and the economic status of women improves along with the legal environment, it is likely that divorce and remarriage rates will go up in the future.

6. SPECIAL TOPICS

6.1 CONSANGUINEOUS MARRIAGE

Consanguineous marriage is the marriage between close blood relatives. While largely uncommon in the contemporary Western world, consanguineous marriages occur at high rates in the Middle East, North Africa, Sub-Saharan Africa, and South Asia (Bittles and Black, 2010). Various civil and religious regulations dictate the legality and acceptability of such marital unions. For example, Islam permits first-cousin and double first-cousin[6] marriages but not uncle-niece unions, which are favored in Dravidian south India (Bittles and Black, 2010). On the other hand, first-cousin marriage has been deemed illegal in several states in the United States (Ottenheimer, 1996; New York Times, 2009).

Using data from several countries, studies have found high rates of consanguineous unions to be generally prevalent in poor traditional rural areas where women get married at younger ages, are less educated, and are less likely to be participate in economic activities (Bittles, 1994; Shah, 2004; Weinreb, 2008).

The contribution of consanguinity to risks of genetic disorders and other complex diseases has been acknowledged by the scientific community (Bittles and Black, 2010 and the references therein). Since this marriage practice persists despite these documented health risks, it must be the case that benefits accrue as well. Studies have speculated on social and economic benefits. Social benefits include lower spousal search costs, greater compatibility between spouses, a closer relationship between the bride and her in-laws, higher social status for the family, greater autonomy for women, as well as

[6] Children of two siblings who marry two siblings are double first-cousins (New York Times, 2009). Thus, while first-cousins share one set of grandparents, double first-cousins share both sets of grandparents.

the lower likelihood of divorce (Bittles, 1994; Hussain, 1999; Weinreb, 2008; Sandridge *et al*., 2010). On the other hand, economic factors include lower dowry or bride price payments at the time of marriage, greater control of financial assets for women, and larger female inheritance (Reddy, 1988; Bittles, 1994; Weinreb, 2008).

The correlation of consanguinity with the timing of wealth transfers (negative relation with dowry and positive relation with bequest or inheritance) lead Do *et al*. (2013) to argue that consanguinity is a rational response to marriage market failures in developing countries. They use a two-period model. In the first period, couples form and parents arrange for dowry or bride price. At this time, parents also commit to transfer bequests to the married couple in the second period. With incomplete marriage contracts, wealth commitments may not be credible. Here dowry and consanguinity emerge as two substitutable mitigating factors to the agency problem. In non-consanguineous marriages, contract incompleteness is more severe and parents pay dowry *ex ante* since they cannot credibly commit to transfer wealth *ex post* in the form of bequests. Conversely, contract incompleteness is less severe in consanguineous marriages and parents can credibly commit to *ex post* wealth transfers. This results in lower dowry levels. As a consequence, consanguinity would emerge as an attractive option for families with severe credit constraints. Do *et al*. (2013) go on to conduct an empirical analysis of data from Bangladesh and find the results to be consistent with their theoretical model predictions.

The relation between consanguinity and credit constraints has also been explored by Mobarak *et al*. (2013). The authors implement a difference-in-difference specification to examine the effect of a positive wealth shock from the construction of a flood protection embankment on marriage markets in Bangladesh. Specifically, they find higher levels of non-consanguineous marriages in protected households compared to non-protected households. This finding can be explained by the positive wealth shock in protected families which alleviates their liquidity constraints and enables them to search for spouses outside their kinship network since they are now able to afford higher dowries.

6.2 POLYGAMY

In several societies marriage occurs between multiple partners. When one man marries multiple women, it is known as polygyny while the marriage of one woman with multiple men is called polyandry. Polygamy has been widespread in sub-Saharan Africa, and although its prevalence has been declining over time, it remains substantial. As per Jacoby (1995), in the so-called "polygamy belt," an area between Senegal in the west and Tanzania in the east, between a third to half of all married women belonged to polygamous unions. Fenske (2015) uses data from the Demographic and Health Surveys (DHS) to show that in countries like Benin, Burkina Faso, Guinea, and Senegal, polygamy prevalence has declined from above 60% for women who were married in 1970 to below 40% for those who married in 2000. Polygyny is the relatively more common of the two polygamous marriage types. Increasingly, economists are paying more attention to understanding the causes and consequences of polygamy, although the literature is still quite limited.

Polygamy can be analyzed in the Beckerian framework, where the two primary determinants of polygyny are the relative economic contribution of women and inequality across men in the marriage market[7]. This model predicts that richer men have more wives both because they can afford the bride prices (*wealth effect*) but also because these wives are more productive on their farms than on a poor man's farm (*shadow price effect*). Jacoby (1995) constructs a structural model of the demand for wives and attempts to disentangle the wealth and the shadow price effects. He then estimates this model using data from Cote d'Ivoire, and finds that (a) the wealth effect is positive and (b) conditional on wealth, men with more productive farms have more wives. If the role of women in agriculture diminishes with modernization, polygyny can become less prevalent. Fenske (2015) analyzes the relationship between education and polygamy in Africa using DHS data from 34 countries. He distinguishes between colonial education and modern education, and finds that while colonial education reduced contemporary polygamy prevalence, there is no causal effect of modern education on polygamy.

Polygyny has consequences for, among other things, fertility and savings. Rossi (2016) develops a theoretical model of polygynous households that has the following

[7] See Grossbard (1978) and Bergstorm (1994) for formal analyses of polygyny.

implications for fertility: (a) polygyny incentivizes co-wives to compete for more children since their status and control over resources depends on their relative number of children; (b) the ability of a co-wife to influence her fertility is limited by the fact that the husband has preferences over the *total* number of children he has; and (c) polygyny lengthens birth spacing since the frequency of intercourse is naturally limited with one husband and multiple wives. Using data from Senegal, Rossi (2016) finds evidence in support of reproductive rivalry between co-wives and concludes that polygamy can potentially explain the high fertility levels prevalent in Africa.

In a similar vein, Tertilt (2005) uses an overlapping-generations model to examine if polygyny can explain the low levels of development in sub-Saharan Africa. In her model, the return on daughters is positive due to bride price, while the return on sons is zero. This causes men to want many wives and children, leading to high fertility. The high level of fertility along with a large spousal age gap sustains multiple wives for all men in equilibrium. Buying wives and selling daughters crowds out investment in physical assets, thereby hampering economic development. She estimates that banning polygyny could decrease fertility by 40%, reduce the spousal age gap, reverse the direction of marriage payments, increase savings by 70%, and increase output per capita by 170%.

7. CONCLUSION

In this chapter, we have conducted a selective review of the literature in economics on marriage in developing countries. By highlighting the variety in the types of marriage market institutions and the modes of matchmaking in these countries, we hope to have convinced the reader that simply extending the literature on family economics in the developed world to low-income settings would fail to capture the complexity of spousal interactions in traditional societies. Instead, more rigorous theoretical and empirical work is needed to understand the implications of various cultural norms, customs, and practices for marital matching, intra-household decision-making, and macroeconomic outcomes. As Ashraf *et al*. (2014), Ashraf *et al*. (2016), and Rossi (2016), among others, persuasively demonstrate, such a focus is also extremely policy relevant, and can help us

understand the unique challenges and trade-offs involved with policymaking in developing countries.

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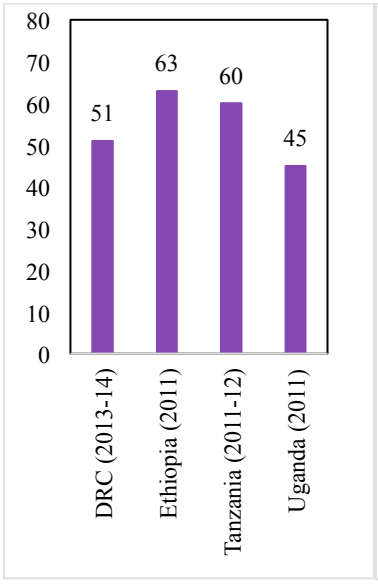
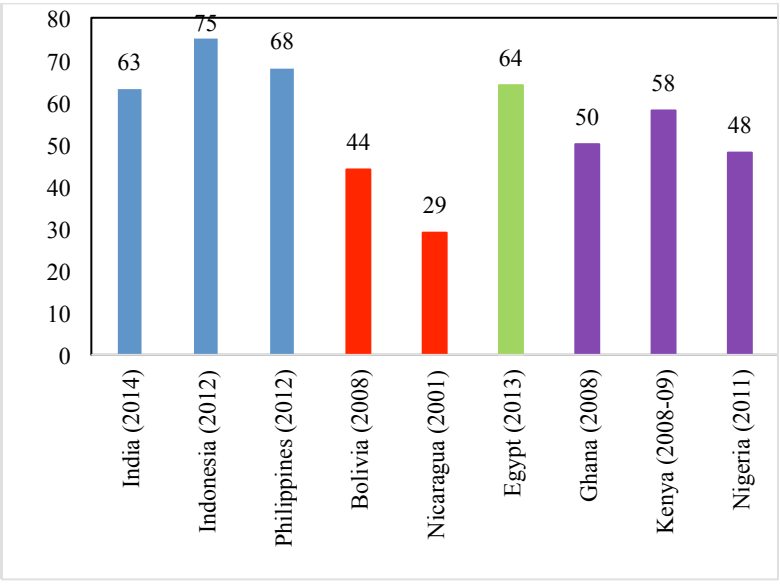
FIGURES

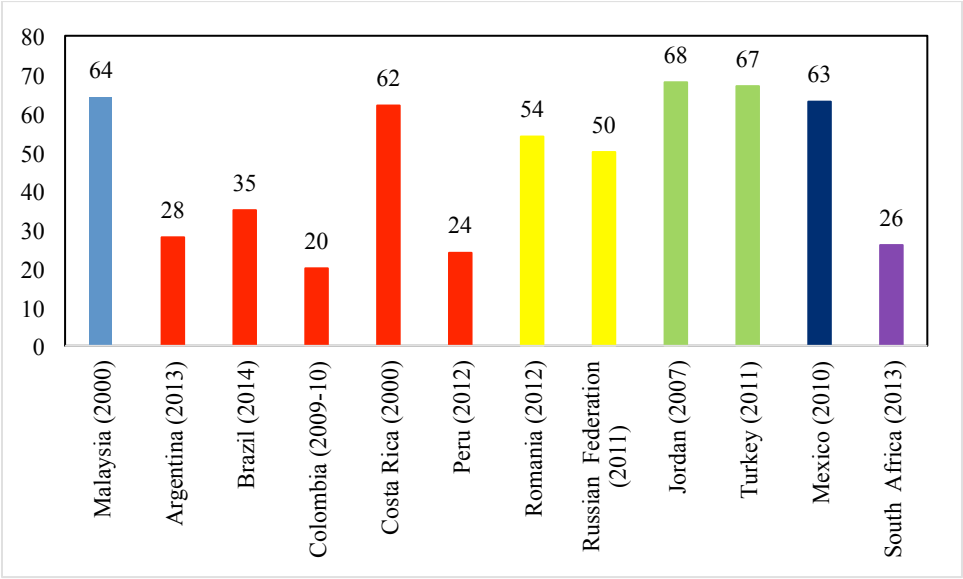
Figure 1: Prevalence of Marriage by Region and Income



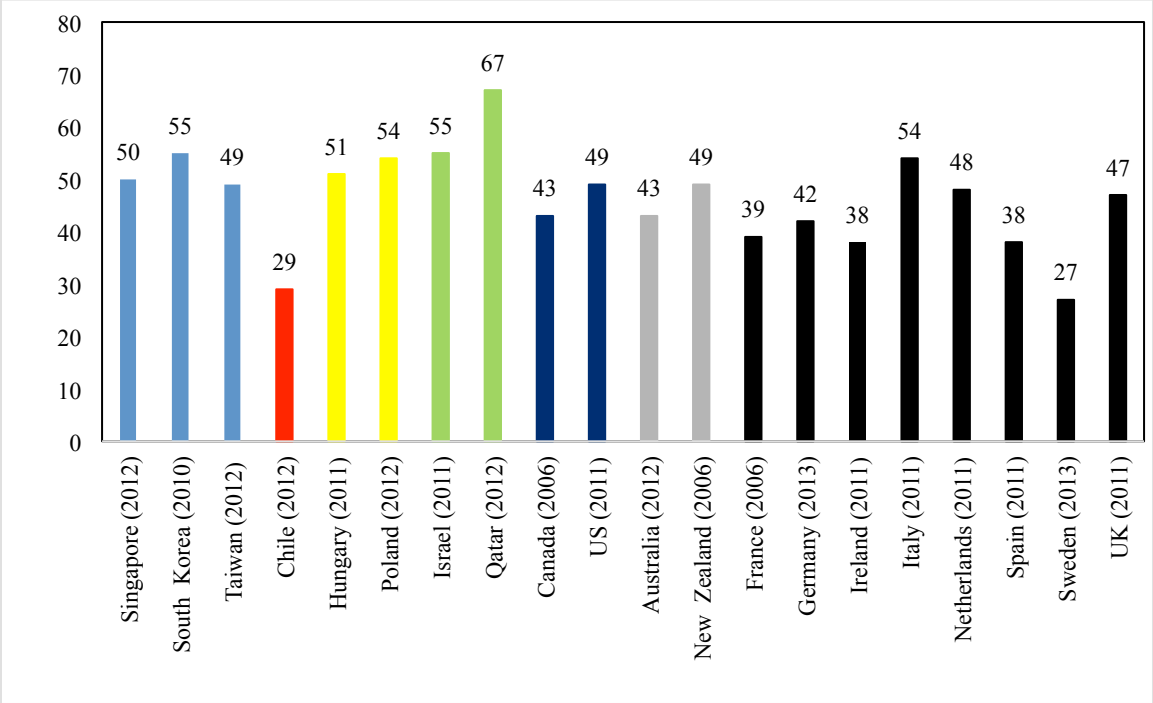
(a) Low-income countries



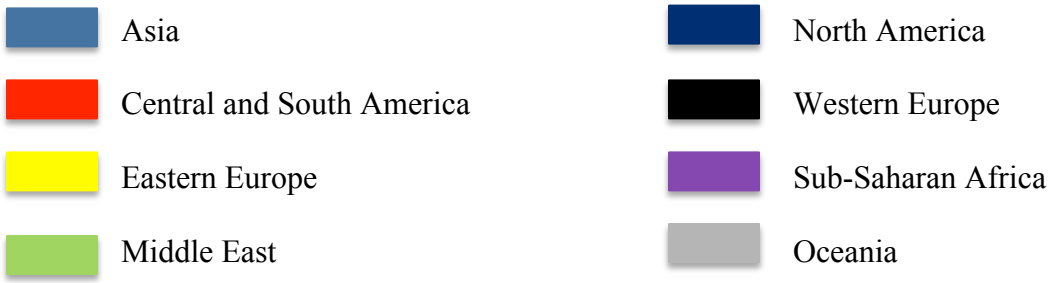
(b) Lower-middle-income countries



(c) Upper-middle-income countries

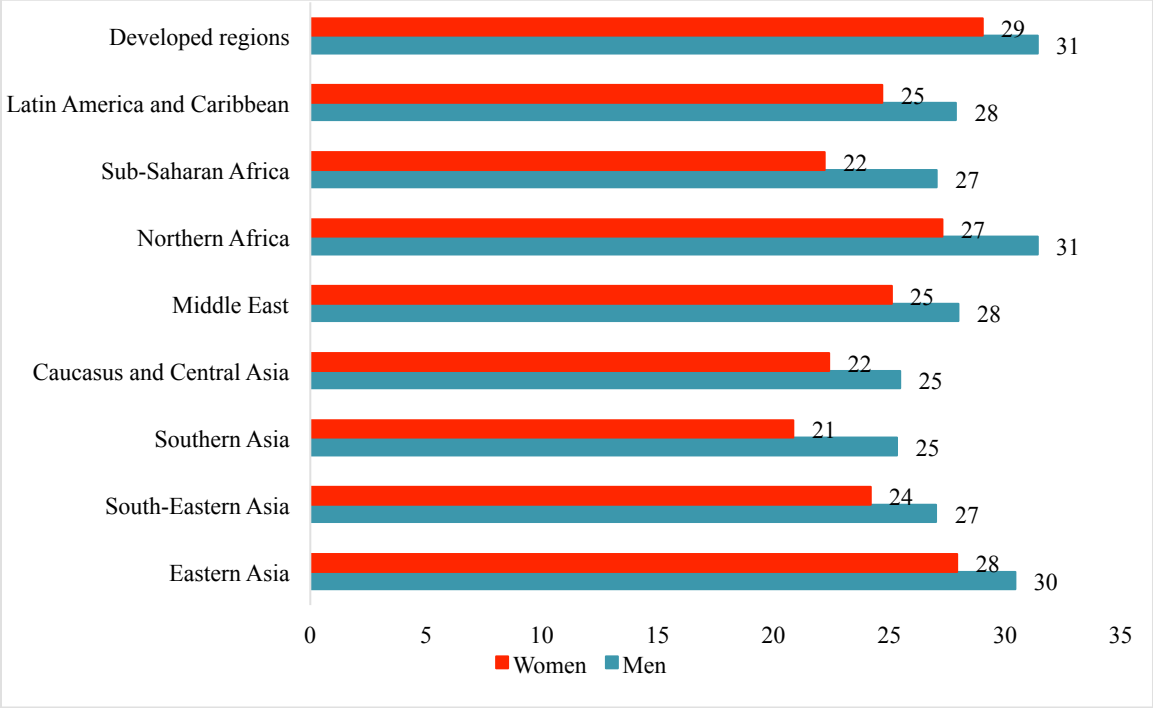


(d) High-income countries



Notes: These figures give the percentage of adults aged 18-49 years who are married. Survey or Census year is provided in parenthesis. Countries are divided according to the 2017 World Bank income classification. Adapted from data used in Figure 4, Child Trends and Social Trends Institute (2015).

Figure 2: Singulate Mean Age at Marriage by Region



Notes: This figure presents the singulate mean age at marriage (SMAM) for men and women. SMAM is the average length of single life expressed in years among those who marry before age 50, calculated from marital status categories of men and women aged 15 to 54 at the census or survey date. Adapted from data used in United Nations (2015).