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Evidence from Ethiopia**

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ABSTRACT

The Economics of Abduction Marriage: Evidence from Ethiopia*

A sizable share of marriages in several Asian and African countries are initiated by the man abducting the woman he wishes to wed. In this paper, we use quantitative and qualitative methods to characterize the practice of abduction marriage in Ethiopia. We first present the results from in-depth qualitative surveys with community leaders and abducted women in the Gambella region of Ethiopia to gain a deeper understanding of how the practice functions in these communities. These interviews suggest that abduction is typically used to overcome the refusal of the woman's family. Second, we use Demographic and Health Survey along with ethnographic data to characterize women and ethnic groups affected by this practice in Ethiopia. Finally, we empirically examine the central hypothesis about the persistence of this practice and find evidence consistent with the hypothesis that men often use abduction to improve bargaining power in marriage negotiations and reduce the size of the bride price payment. Specifically, we demonstrate that droughts—a proxy for income shocks in this setting— increase the probability of abduction marriage only for women from ethnic groups that traditionally exchange a bride price.

JEL Classification: D1, D7, I3, J1, O1, Z1

Keywords: abduction marriage, marriage markets, social norms, bride price

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1 Introduction

Abduction marriage, also known as bride kidnapping or marriage by capture, is a form of marriage initiated when a man abducts a woman with the intent of making her his wife (MoWCYA, 2013). Bride abduction occurs without the consent of the bride’s family and with varying levels of consent from the bride. The practice is prevalent in the Caucasus region (Azerbaijan, Georgia and Dagestan), some Central Asian countries (Kyrgyzstan, Kazakhstan and Uzbekistan), and some sub-Saharan African countries (Ethiopia, Kenya, Somalia, South Sudan, Rwanda, South Africa), affecting millions of women worldwide (Werner et al., 2018; MoWCYA, 2013; Nkosi, 2009). Despite the prevalence of bride abduction across continents and laws banning the practice, there is a lack of systematic data and empirical research about abduction marriage. Much evidence is qualitative, and information disproportionately comes from Kyrgyzstan (Werner et al., 2018).

This paper combines qualitative and quantitative data from Ethiopia to characterize bride abduction. First, we describe how abduction marriage is implemented, whether brides typically ‘consent’ to the abduction, which women are most likely to be affected, and the ethnographic characteristics correlated with a higher prevalence of abduction. Then, we conduct the first empirical test of two central hypotheses, proposed by anthropologists, about the existence and persistence of abduction marriage: (1) the practice of abduction is closely tied to the practice of bride price, and (2) grooms strategically use abduction to increase their bargaining power in marriage negotiations.

First, we synthesize existing evidence from anthropology and demography. Then, we use in-depth qualitative interviews of Nuer and Anuak people in Ethiopia—among whom bride abduction is prevalent—to better understand the practice and why it exists in this context. The surveys were conducted by one of the authors in the Gambella region and included male and

female community leaders, as well as young women married by abduction and their mothers. While the parents of the bride oppose the marriage, we find that, in the majority of cases in this setting, the bride and groom are in an existing relationship, and brides cooperate in the abduction. Upon abduction, the community then assumes that the abducted woman is no longer a virgin, which severely decreases her value on the marriage market due to the existing premarital sex stigma. Consequently, the abduction improves the groom's bargaining power in marriage negotiations. The bride's parents have final decision-making power about the marriage, but the vast majority of abductions result in marriage and a reduced bride price. Our qualitative interviews suggest that, in ethnic groups with a bride price custom, abduction is most often used by men who are unable to pay the expected bride price. While abduction is more prevalent within ethnic groups with a bride price custom, it also exists in ethnic groups that have not historically practiced bride price. In these groups, abduction is used to overcome the refusal of the bride's parents for reasons other than an inability to pay the bride price.

Second, we use individual and ethnic-level data from the Ethiopian Demographic and Health Survey (DHS) and Murdock's *Ethnographic Atlas* to analyze how individual and ethnic group characteristics are related to the likelihood of abduction marriage. We find that relative to other married women, abducted women are less educated, marry less educated husbands, and are slightly younger at the time of the birth of their first child. They are similar to other married women, however, in terms of age at marriage, labor force participation, health and anthropometric outcomes, and most measures of bargaining power within the marriage. We also find that ethnic groups that exchange bride price payments, are patrilineal, practice polygamy, are organized in nuclear families, and those with higher expected economic contributions of women have a higher prevalence of abduction marriage.

Finally, we use DHS data, Murdock's *Ethnographic Atlas* data, and pre-

precipitation data from the Climate Research Unit at the University of East Anglia (CRU TS) to explore the effect of droughts—that meaningfully decrease household income in this setting (Burke et al., 2014; Corno et al., 2020)—on the prevalence of abduction. We find that droughts increase the probability of abduction only for women from ethnic groups that exchange bride price payments. This supports the hypothesis that men strategically use abduction to lower the bride price, especially during droughts when they struggle to afford the payment. Consistent with this hypothesis, we find no evidence that droughts have an impact on the incidence of abductions among women belonging to ethnic groups that do not exchange a bride price. Two implicit conditions for this interpretation are that (a) droughts do not decrease the size of the bride’s family’s expected bride price to an extent that offsets the reduction in the groom’s income and (b) a woman’s value on the marriage market decreases if she is abducted (due to the existing premarital sex stigma), limiting her marriage options if she chooses not to marry her abductor. Our qualitative interviews, along with existing anthropological work discussed in section 2, support these assumptions.

We examine and rule out multiple alternative hypotheses for our observed results, including that other ethnographic characteristics drive our results. We then conduct a series of tests to ensure that our results are robust to changes in our specifications. First, we test the robustness of the results to alternative definitions of rainfall shocks. Second, we examine whether the results change when we make slight variations to the range of ages at which we consider girls to be at the highest risk of abduction. Third, we conduct a placebo test showing that rainfall shocks that occurred during a woman’s twenties (by which age most women are already married) do not affect the likelihood of marriage by abduction. Fourth, we test the robustness of the results to the exclusion of women who report having changed their place of residence during their lifetime since droughts based on their current place of residence might not be a valid measure of droughts experienced during their

teenage years. Fifth, we estimate the results with the inclusion of nomadic groups in the analytical sample (these groups are excluded from our primary analysis due to the infeasibility of determining their location and exposure to rainfall shocks during teenage years with the available data). Finally, we test the robustness of the results to various regression specifications. The results of each of these robustness checks support the main conclusions of our study.

We contribute to the existing literature on abduction marriage, which has primarily been studied through qualitative methods within anthropology. In this paper, we combine quantitative and qualitative data to characterize the practice in Ethiopia. We conduct the first empirical test of the main hypothesis to explain the existence and persistence of abduction marriage: that abduction is used strategically to improve a groom’s bargaining position in marriage negotiations and to reduce the size of the bride price. In doing so, our results also contribute to the economics literature regarding how weather shocks affect marriage market outcomes and traditional practices (Corno et al., 2020; McGavock and Novak, 2023; Dessy et al., 2021; Tapsoba, 2023). We also document that premarital sex stigma is an important prerequisite for this practice to exist, contributing to the economics literature on how premarital and extramarital sex stigma affects marriage outcomes and creates harmful gender-based practices (Becker, 2023; Fan and Wu, 2020). Lastly, this paper contributes more generally to the understanding of how culture and economic conditions are related (Guiso et al., 2006; Enke, 2019; Galor and Özak, 2016; Galor and Savitskiy, 2018; Bahrami-Rad, 2019; Alesina et al., 2013).

Section 2 discusses existing literature about bride abduction to provide context to our analyses, and section 3 describes the data sources we use. In section 4, we report the results of the qualitative data analysis to describe the practice of abduction marriage in Ethiopia. We then use individual survey data along with ethnic-level data in section 5 to investigate which women are at a higher risk of abduction and which cultural traits are associated with this

practice. Section 6 examines the effect of droughts on the prevalence of abduction marriage and tests whether abduction is used to increase the groom’s bargaining power in marriage negotiations and reduce the bride price. The final section summarizes our findings and puts them in conversation with existing literature.

2 Ethnographic context

The academic literature on abduction marriage consists mainly of anthropological and demographic studies, primarily conducted in Kyrgyzstan. In this section, we discuss that literature and the limited literature from other countries, including Ethiopia, along with a broader discussion of marriage norms in Ethiopia.

2.1 Abduction marriage in other countries

Most research on abduction marriage uses Kyrgyzstan as a case study, where nearly 23 percent of married women were married by abduction (Becker et al., 2017). Abduction in Kyrgyzstan typically occurs without the consent of the bride’s family and with varying levels of consent from the bride (Werner et al., 2018; Kleinbach and Salimjanova, 2007; Kim and Karioris, 2021). While in some cases, brides actively cooperate in the abduction, the share of non-consensual abductions is significant and has grown substantially over the last 50 years (Kleinbach and Salimjanova, 2007; Kim and Karioris, 2021).¹ Strong premarital sex stigma, along with the assumption that the abducted woman has sex with her abductor, makes it difficult for abducted women to find another husband. This helps explain why abductions often end in marriage

¹Kim and Karioris (2021) assert that one reason non-consensual bride abduction has become more common is the erosion of traditional livelihoods—specifically, pastoralism—which has resulted in reduced economic independence, harming a man’s ability to find a wife. Previously, abduction was primarily used by young adults who were in love and wanted to avoid arranged marriages or avoid the need to obtain consent from parents.

(Werner, 2009; Kim and Karioris, 2021). Indeed, many of the cultures in which bride abduction is practiced place a high value on a woman's chastity before marriage (Ayres, 1974). Abduction is often used to reduce the cost of marriages, as these marriages often require fewer gifts or lower marriage payments than traditional marriages (Kleinbach and Salimjanova, 2007). In a context with strong social and familial pressure to find a wife, scholars believe abduction marriage in Kyrgyzstan is likely a result of men having poor social skills for attracting a wife or persuading the potential bride's parents or the man's inability to pay the bride price (Werner et al., 2018; Kim and Karioris, 2021).

In Kyrgyzstan, abducted women are more likely to experience intimate partner violence (Shields, 2006), and marriages that are initiated by abduction are twice as likely to end in divorce than marriages initiated by other methods (Becker and Steiner, 2018). Children born to abducted women have lower birth weights, likely due to the increased stress levels in the mother (Becker et al., 2017). Additionally, women married by abduction often marry at younger ages (Werner et al., 2018), which can result in lower educational attainment and earlier childbearing. Consistent with this finding, abducted women have lower labor force participation rates in Kyrgyzstan relative to non-abducted women (Arabsheibani et al., 2021).

Additional studies have examined abduction marriage in communities in a diverse set of countries, including China, Kazakhstan, Mexico, and India (McLaren, 2001; Werner, 2009; Stross, 1974; Das, 1992). In China, Kazakhstan, and among the Tzeltal in Mexico, bride abduction is generally performed by poor men who cannot afford a bride price (McLaren, 2001; Werner, 2009; Stross, 1974). In India, where dowry payments (a payment from the bride's family to the groom's family) are common, there is evidence that *groom* abductions occur when dowry prices reach an unusually high level (Das, 1992, p.70).

While these studies highlight contextual and cultural differences in how

abduction marriage is carried out and the degree of the bride’s consent, they all suggest that the inability to pay the expected marriage payments is a primary driving motivation for abduction. This is the central hypothesis for the persistence of abduction marriage, and our study provides the first empirical test of this hypothesis.

2.2 Existing evidence about abduction marriage in Ethiopia

Information about abduction marriage in Ethiopia is limited, even though eliminating abduction marriage is a goal of Ethiopia’s Ministry of Women, Child, and Youth Affairs (MoWCYA, 2013), and the practice was formally banned in Ethiopia in 2005. Using survey data collected in 15 Ethiopian villages, Dito (2015) finds that women who are married by abduction typically have larger age gaps with their partners than non-abducted married women. Large age gaps are associated with worse health outcomes for women; however, after controlling for socioeconomic characteristics, no statistically significant relationship between abduction and health outcomes was found (Dito, 2015). Finally, Lackovich-Van Gorp (2014) finds that there is historically little conversation about bride abduction within families, but some mothers are beginning to converse with their daughters about how to avoid abduction.

Existing studies of abduction marriage in Ethiopia leave fundamental questions about the practice unanswered, such as the extent of the bride’s participation in the abduction, its causes, and its links to other traditional norms such as bride price. This study addresses these central questions in Ethiopia using both qualitative and quantitative analyses.

2.3 Marriage norms in Ethiopia

Ethiopia is religiously and economically diverse, and it is home to individuals from 86 different ethnic groups (Agency, 2007). Its marriage traditions vary accordingly. The bride price tradition is a major marriage custom among

many ethnic groups in Ethiopia, including the Oromo (Murdock et al., 1999), the most prevalent ethnic group. In bride-price marriages, the groom and his family make a payment, in cash or livestock, to the family of the bride. The amount of the bride price varies substantially between ethnic groups, but there is typically a standard range of payments considered acceptable within a localized ethnic group (Mago, 2019; Kelly, 1985; Evans-Pritchard, 1947). Bride price is most commonly practiced in patrilocal ethnic groups that hold the belief that the bride’s family should be compensated for the loss of a productive household member when the bride becomes part of the groom’s family (Ashraf et al., 2020; Mago, 2019; Vroklage, 1952). Marriage in other ethnic groups in Ethiopia, such as the Amhara (the second most prevalent ethnic group) does not involve any payment between families (Murdock et al., 1999). Finally, dowry—a transfer from the bride’s family to the groom or his family at the time of marriage—is a marriage custom among the Tigray (Murdock et al., 1999), the third largest ethnic group in Ethiopia.

While love marriages are increasingly common in Ethiopia, parents still play an important role in marriage decisions, particularly for their daughters (Chuta, 2017; Boyden et al., 2013). It is also important to note that pre-marital sex is strongly stigmatized among all ethnic groups in Ethiopia that are identifiable in the *Ethnographic Atlas*. In these communities, women suspected of not being virgins have difficulty finding a husband, and if a bride price is customary, the bride price received by their families is often substantially lower (Mago, 2019).²

3 Data

We pair quantitative and qualitative data to address our research questions. Quantitative data are limited and dated (the only quantitative data are from

²The community leaders interviewed for the qualitative surveys also highlighted the idea that non-virgin women receive lower bride prices and experience difficulties finding a husband.

2005). To complement the relatively old quantitative data and to gain a better understanding of the practice of abduction marriage, one of the authors collected qualitative data in December 2022.

3.1 Qualitative interviews

The authors conducted in-depth structured interviews in December 2022 in the Ethiopian region of Gambella (close to the border with South Sudan) where, according to the 2005 DHS, 11 percent of ever-married women were married by abduction. The respondents to this survey were in two districts—Lare and Itang—and are community leaders and women from the Nuer and Anuak ethnic groups, the two largest ethnic groups in Gambella Region. Community leaders (three male and two female) as well as one woman married by abduction and one mother of a currently abducted, but not yet married, girl were interviewed.³

Both ethnic groups are patrilocal, live in rural communities, and speak Nilotic languages. In both groups, bride price is a major marriage custom and premarital sex is strongly stigmatized. They differ in terms of primary economic activities as well as the role of women in economic production. While the Nuer are mostly pastoralists and men play a substantially larger role than women in the economy, among the Anuak people, agriculture is the main economic activity, and women participate equally in economic activity (Murdock, 1967).

The author also interviewed two female community leaders from Oromo communities in the villages of Melka-Jebdu and Shenele (near Dire Dawa

³Specifically, with the support of a local facilitator, we interviewed one male and one female leader of the Nuer ethnic group and one male leader of the Anouyak ethnic group in the village of Itang. In the town of Lare, we interviewed one male and one female Nuer community leader, one woman who was married by abduction, and the mother of a girl who was currently abducted but not yet married. Additionally, the author had the opportunity to informally discuss abduction marriage with more than a dozen men and women married by abduction from the Nuer, Anuak, and Mezhenger ethnic groups in the Gambella region.

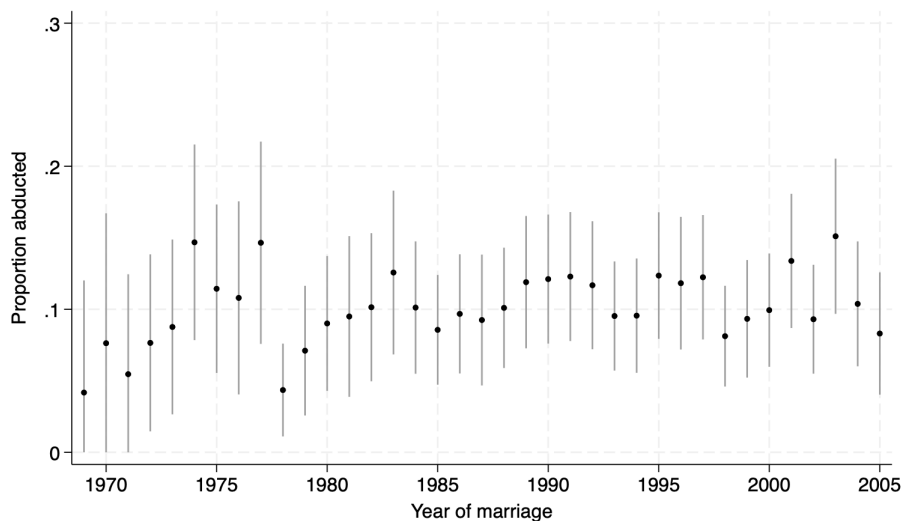
in Southeast Ethiopia). The prevalence of bride abduction among Oromo women aged 15-49 was approximately 11 percent in the 2005 DHS data. Oromo is the largest ethnic group in Ethiopia and, according to the Murdock *Ethnographic Atlas*, are patrilocal, and bride price is a major marriage custom. While there are both Christian and Muslim Oromo communities, those in South-East Ethiopia are predominantly Muslim. When the author visited these communities in December 2022, the community leaders reported that abduction was no longer practiced in these localities.

3.2 Demographic and Health Survey

We use data from the 2005 Ethiopian Demographic and Health Survey (DHS), which is the only dataset that includes sufficient information for the empirical analyses presented in this study.⁴ The sample is a nationally representative sample of Ethiopian women aged 15 to 49 at the time of survey and includes detailed information on demographic and socioeconomic characteristics, fertility, health, marriage market outcomes, bargaining power, and whether a woman was married by abduction. Because the vast majority (75 percent) of abductions occur before the age of 19, we restrict the sample used in the analyses to women aged 19 to 49 years at the time of survey.

⁴Young Lives is the only other known source of data from Ethiopia that includes information on marriage type, including marriage by abduction. By the most recent round of released data (Round 5, collected in 2016), less than 16 percent of the sample was married, and only 65 percent of those (10 percent of the full sample and only 85 observations) reported the type of marriage rendering this dataset unusable for our analyses. Additionally, although abduction marriage is prevalent in many other countries, including Azerbaijan, Georgia, Dagestan, Kazakhstan, Uzbekistan, Rwanda, Kenya, Somalia, and South Sudan, we are only aware of one additional publicly available survey that includes information on abduction marriage which is “Life in Kyrgyzstan” (LIK) survey and has been used by Becker et al. (2017). The LIK survey, however, does not provide the geographic location of respondents, and therefore, it is not possible to construct standard measures of exposure to droughts as we do in this study.

Figure 1: Abduction by year of marriage with 95% confidence intervals



At the time of data collection, 10.5 percent of ever-married women in Ethiopia are married by abduction. Figure 1 shows that the rate of abduction marriage remained relatively stable for years of marriage between 1970 and 2005.

3.3 Climate Research Unit precipitation data

We use precipitation data from the Climate Research Unit of the University of East Anglia: the CRU TS Version 4.07 dataset⁵ referred to as “CRU” throughout. This is a gridded times series dataset that provides monthly precipitation data in 0.5 degree x 0.5 degree (approximately 55 kilometers at the equator) grid cells. We match this data to the geospatial coordinates of the DHS cluster (typically a village or neighborhood) of each respondent. Following Burke et al. (2014), Corno et al. (2020), and McGavock and Novak (2023), we sum the monthly rainfall to find total annual rainfall in a given

⁵Data can be found at: https://crudata.uea.ac.uk/cru/data/hrg/cru_ts_4.07/cruts.2304141047.v4.07/pre/.

grid cell. We then fit a gamma distribution for each grid cell’s annual rainfall between 1965 and 2005 to establish the baseline level of rainfall relative to which rainfall shocks are defined. We define a cluster as experiencing a “rainfall shock” or “drought” in a given year if the precipitation in that year is below the 15th percentile of that grid cell’s 1965 to 2005 gamma distribution. Figure A.1 displays the number of rainfall shocks experienced by respondents during their teenage years (ages 13 to 18) for all respondents (panel a), respondents from ethnic groups that practice bride price (panel b), and respondents from ethnic groups that do not exchange bride price payments (panel c).

In section 6.4, we test the robustness of the results to the use of alternative definitions of rainfall shocks and find consistent results.

3.4 Murdock’s *Ethnographic Atlas*

In Ethiopia, some ethnic groups experience a higher rate of abduction than others. To understand which ethnographic characteristics are linked to a higher prevalence of abduction marriage, we match the data from the DHS survey with ethnic-level data from Murdock’s *Ethnographic Atlas*. The *Atlas* includes information about ethnic groups across the globe.⁶ We matched the ethnicity reported in the DHS to the ethnic groups included in the *Atlas* and were able to match nearly 93 percent of the DHS respondents, including the largest ethnic groups in the country.

We use data from the *Atlas* on whether the ethnic group has traditionally exchanged bride price payments at the time of marriage. More than 55

⁶The *Ethnographic Atlas* was published in 1967. While some traditional practices might have changed among some ethnic groups since the information was collected, the *Atlas* is commonly used as a source of current ethnographic information in the economics literature that explores the relation between ethnographic characteristics and economic outcomes (Ashraf et al., 2020; Bau, 2021; Alesina et al., 2013). Arguably, standard measurement error of ethnographic characteristics would cause attenuation bias, which, because we find significant results, does not affect the main conclusions of the study.

percent of our matched sample have a bride price custom, including the Oromo—the most prevalent ethnic group in Ethiopia.⁷

We also use data from the *Ethnographic Atlas* regarding whether ethnic groups have traditionally had a premarital sex stigma, been nomadic, practiced polygamy, been patrilocal or patrilineal,⁸ been organized into nuclear versus extended families, and the traditional participation of women in the economy.

4 How abduction marriage operates in Ethiopia: Findings from our qualitative analysis

The practice of abduction marriage in Ethiopia shares similarities with that in other countries yet notably diverges in several aspects. To characterize abduction marriage in Ethiopia, we first analyze the responses to the qualitative surveys conducted in the communities of Lare and Itang in the Gambella region in December 2022.

4.1 Core features of abduction marriage

Because the practice is widespread and there is no major stigma or shame for brides and grooms who marry through abduction, both women and men talk openly about the practice.⁹ All interviewed individuals stated that they

⁷The ethnic groups included in our sample that traditionally exchange bride prices are the Afar, Anuak, Arusi/Oromo, Bako, Banna, Basketo, Galab, Gurage, Janjero, Kafa, Male, Nuer, Shako, Sidamo, Somali, and Suri. Included ethnic groups that do not traditionally exchange bride prices are Amhara, Darasa, Koma, Konso, Mao, and Tigray.

⁸While patrilocality is the custom where a woman resides with or near her husband's family upon marriage, patrilineality is the norm where belonging to a family depends solely on male relatives. Although these practices often intersect, the overlap is far from perfect.

⁹Respondents did note, however, that a harmful stigma arises toward women for engaging in premarital sex when an abduction fails and the bride and groom do not marry.

are aware that bride abduction is illegal,¹⁰ although they also perceive that the law is not enforced. In fact, local councils actively mediate in the negotiations of abduction marriages. All interviewees acknowledged customary marriage as a preferred option as this is viewed as compliant with community norms, but only two of five community leaders outright objected to abduction marriage. The three remaining community leaders argued that abduction marriage is often the only way for a poor groom to marry.

All respondents, in both structured and unstructured conversations, described the central features of abduction marriage in a similar manner. In contrast to many other countries, respondents stated that the vast majority of abduction marriages in Ethiopia occur between men and women who are currently in a relationship and take place with the explicit consent of the bride. Four of the five community leaders interviewed stated that they are unaware of any abduction marriages that occurred without the bride's consent. The remaining community leader, interviewed in Lare, mentioned an abduction that occurred "many years ago" without the bride's consent. The interviewee described this incident, saying: "The community rescued the bride, burned the house of the groom's family, and forced the family to leave the district." All community leaders interviewed remarked that their communities would not allow an abduction marriage without the explicit consent of the bride. Respondents uniformly noted that abduction occurs most frequently in cases in which the family of the bride opposes the marriage of the couple, which is often the result of the groom's inability to pay the bride price.

The description of abduction by all interviewees was consistent and is nicely summarized by one female community leader:

"The woman typically moves to her partner's family's house. Then, the family of the groom reports to the *kebele* [local council] that the bride is living in their house. This communicates to the

¹⁰Abduction marriage was formally sanctioned in the 2005 Ethiopian Criminal Code.

community that she is willing to marry her boyfriend and that she is no longer a virgin. Then, the *kebele* approaches the groom's family and organizes a meeting between the families of the groom and bride to initiate the marriage negotiations. During the negotiations, the bride is treated as a member of the groom's family, and her family can visit her at the groom's house. Because the woman is no longer a virgin and her parents might struggle to find a new husband for her or even risk that she commits suicide,¹¹ her family usually accepts a reduced bride price. The local authorities often mediate to facilitate a marriage agreement with a reduced bride price. Nonetheless, the parents of the bride have the final say, and they can refuse to have their daughter married. In these cases, the family of the groom needs to pay a small amount known as a 'close the legs' fee to the family of the bride."

The mother of the currently abducted girl stated, "We would have preferred that our daughter be married the standard way, but what can we do? The boyfriend is poor and cannot pay the bride price. I prefer to receive fewer cows than force my daughter to marry someone she is not in love with."

Additionally, when asked directly, respondents stated that abduction marriages are not more likely to end in divorce, intimate partner violence is not more likely, and women are not worse off in the marriage.

Our interviews reveal that the reduction in bride price is often large since the bride's parents typically accept their weakened bargaining position. In the Nuer communities of Itang and Lare, the standard bride price is 15 cows and 17 cows, respectively. In the Anuak community of Itang, the standard bride price is 1 large cow and 10,000 birrs (approximately 183 USD in December 2022) plus another 3,000 birrs (approximately 55 USD) every time the woman delivers a new child. Respondents in both ethnic groups stated

¹¹The mother of the abducted girl also noted this concern stating that "... you cannot prevent your daughter from marrying her boyfriend. Some of them commit suicide."

that the bride price is typically fixed within a community and personal or physical traits do not affect the bride price. The only two characteristics that impact the bride price are the bride's level of education and her chastity (which also affects her ability to find a partner). Similarly, and importantly for our quantitative analysis, all community leaders interviewed in both communities remarked that the size of the bride price does not depend on crop yields; specifically, the bride price is not different in drought versus plentiful harvest years. Abduction, however, can reduce the size of the bride price payment by 5 to 7 cows among Nuers and, among the Anuak, can cut the cash payment in half and result in a smaller gifted cow. All interviewees highlighted that securing a reduced bride price is the main purpose of abduction marriage. This is consistent with the evidence discussed in section 2 for other countries, including Kyrgyzstan and China.

Some parents stated that they try to educate their daughters to avoid abduction, as was found by Lackovich-Van Gorp (2014) in Ethiopia, but no other measures or mobility restrictions are implemented to avoid abductions.

4.2 A profile of women at risk

The interviewees helped us develop an understanding of which women are most at risk of abduction:

- Abductions occur most frequently for girls between the ages of 15 and 18. In the past this practice occurred for younger girls.
- Abducted women typically marry at slightly, but not substantially, younger ages than those married by customary means.
- Both poor and wealthy girls can be abducted, but girls from poor households are more at risk.
- Abduction marriages in these communities are more likely to be *love* marriages than standard (arranged) marriages.

4.3 Resolving some economic questions

Respondents noted that the rate of abduction spikes in years with droughts, stating that in those years, the “majority” of marriages are abduction marriages. In many settings, including those studied in this paper, bride prices are sticky (Kelly, 1985; Evans-Pritchard, 1947; Bhalotra et al., 2020). A key economic question is why the bride price does not adjust in times of economic shocks. In standard marriage market models, this lack of adjustment could be interpreted as a market failure. Changing social norms is difficult because achieving the required level of coordination is often infeasible, especially in situations in which some individuals benefit from the existing norm, as is the case with the bride price custom. Abduction, then, can be viewed as an institution to overcome this market failure. We discuss further in section 7 the role of abduction marriage as a transitional institution that young couples use to assert control over marriage decisions in societies where such decisions are traditionally made by parents.

Given the non-negligible economic benefits of abduction for grooms and their families and the absence of significant stigma, an emerging question is why abduction is not the primary form of marriage at all times. When asked about this issue, the female Nuer community leader interviewed in Lare mentioned two reasons. First, although there is no major stigma for men and women married by abduction, marriages arranged through customary means are often regarded more favorably in the community as they are viewed as compliant with community norms. Second, because abduction inflicts economic damage to their natal families, many brides would not agree to abduction, which is key in these communities where abduction is only feasible when women consent. Abduction marriages can create conflict within the bride’s family. One woman married by abduction stated, “My mother was angry when I moved to my husband’s house. She was expecting to receive many more cows when I married, though she forgave me quickly. My two

older brothers, however, do not speak to me. They were waiting for me to get married so that they could use my bride price to get married. They will probably abduct their girlfriends.”

4.4 Abduction in other regions of Ethiopia

While these interviews highlighted the main features of abduction marriage in Gambella, one may wonder whether this practice is different in other Ethiopian regions. To address this question, in December 2022, the author visited Oromo communities in the villages of Melka-Jebdu and Shenele (near Dire Dawa in Southeast Ethiopia), where this practice was prevalent, according to the 2005 DHS data. The two female community leaders interviewed in these villages stated that the practice of abduction recently vanished quickly in their communities because, among the younger generations, girls decide who they marry, causing abduction to lose its function. These female leaders described how abduction marriage functioned two decades ago, and their description largely mirrored the characterization in Gambella. There are, however, two notable differences. First, the role of local institutions as mediators in marriage negotiations was weaker in Melka-Jebdu and Shenele, as interviewees described abduction marriage as a “family issue” rather than a “community issue.” Second, the explicit goal of abduction was to overcome a refusal from the bride’s parents; the focus was not on reducing the size of the bride price payment as was described in Gambella. This may be linked to the fact that in recent decades, the bride price custom has become increasingly symbolic in these communities.¹²

¹²The increasingly symbolic nature of the bride price tradition was highlighted by the community leaders interviewed in the Oromo region when asked about the presence of bride price in the community.

5 Who is at a higher risk of abduction?

To understand which women have a higher likelihood of being married by abduction, we examine the relationship between the probability of abduction, respondent characteristics, and ethnic group practices.

5.1 Individual-level characteristics

Table 1 reports summary statistics for women who were married by abduction (columns 1 and 2) and ever-married women, excluding those married by abduction (columns 3 and 4). We compare the socioeconomic and demographic characteristics as well as the marriage market outcomes of these two samples. We calculate raw differences between the samples (column 5) and the differences adjusted for ethnic group and year-of-birth fixed effects (column 6).

Table 1 reveals that women married by abduction are not a random sample of the female population in Ethiopia. When compared with other married women, women married by abduction are, on average, less educated and more likely to live in rural localities, which is consistent with the findings in Becker et al. (2018) from Kyrgyzstan. The raw differences show that the prevalence of abduction marriage is higher among Protestants and lower among Orthodox Christians.

Women married by abduction begin childbearing at a younger age and experience a higher probability of child mortality for their first-born. This outcome might be linked to earlier childbearing (Garcia-Hombrados, 2022) and is also consistent with Becker et al. (2018)'s findings in Kyrgyzstan that women married by abduction have babies with lower birth weight on average.¹³

Women married by abduction are also more likely to be in polygamous

¹³Unfortunately, the DHS data do not allow us to observe differences in birth weight since less than three percent of the sample provided this information.

Table 1: Summary statistics (DHS data):

	Women married by abduction (N=886)		Married women (N=8,667) (exc. abducted)		Abducted vs married women	
	Mean	N	Mean	N	Raw Diff	Age and ethnic FE Diff
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Demographic characteristics</i>						
Respondent age	31.67	886	32.00	8667	-0.330	0.000
Household size	5.70	886	5.64	8667	0.057	-0.057
Years of education	1.36	886	1.75	8667	-0.390***	-0.130***
Literate (0/1)	0.23	871	0.24	8582	-0.017	0.007
Labor force participation	0.66	879	0.65	8618	0.006	-0.004
Wealth index (1-5)	3.21	886	3.12	8667	0.092	0.046
Orthodox	0.39	886	0.47	8663	-0.075***	0.043***
Muslim	0.33	886	0.35	8663	-0.019	-0.028
Protestant	0.22	886	0.15	8663	0.065***	-0.024***
Rural residence (0/1)	0.79	886	0.76	8667	0.034*	-0.009*
Proportion female in DHS cluster	0.50	886	0.50	8667	-0.000	0.001
<i>Fertility and child outcomes</i>						
Age at 1st birth	18.44	833	18.69	8100	-0.241*	-0.235*
Number of children	4.21	886	4.11	8667	0.104	0.004
Number of children desired	4.53	886	4.62	8667	-0.087	-0.172
Mortality under age 5 of 1st born	0.18	833	0.15	8100	0.023*	0.020*
<i>Other marriage market outcomes</i>						
Divorced	0.08	886	0.09	8667	-0.009	0.012
Polygamous	0.15	742	0.12	7238	0.031**	0.007**
Age at marriage	16.55	886	16.39	8667	0.160	-0.088
Use contraceptive (0/1)	0.16	886	0.16	8667	-0.005	0.000
State IPV justified (0-5)	2.87	858	2.81	8291	0.051	-0.060
Age difference with husband	8.57	738	8.45	7273	0.119	0.335
Years of education husband	2.69	878	2.96	8602	-0.263*	-0.126*
<i>Health characteristics</i>						
Anemia (0/1)	0.28	413	0.30	3695	-0.019	-0.014
Weight (kilos)	50.66	450	51.14	4104	-0.472	-0.448
Height (centimeters)	1.57	449	1.58	4098	-0.002	0.000
Underwent FGC	0.85	878	0.77	8404	0.083***	0.034***
Experienced an obstetric fistula (0/1)	0.06	198	0.04	2204	0.020	0.011
<i>Bargaining power</i>						
Final say on own health care	0.64	746	0.67	7303	-0.031	-0.002
Final say on large household purchases	0.56	746	0.60	7302	-0.033	0.005
Final say on daily household purchases	0.83	746	0.82	7300	0.003	0.004
Final say on visits to relatives	0.74	746	0.79	7301	-0.051***	-0.021***

Note: The table presents summary statistics from the 2005 Ethiopian Demographic and Health Survey for two different samples of women: Women married by abduction in columns 1 and 2 and ever-married women excluding those abducted in columns 3 and 4. Columns 5 and 6 report the differences in mean between women married by abduction and the remainder of ever-married women. Column 5 reports raw differences using univariate regression models. Column 6 reports differences controlling for ethnic group and age fixed effects. Standard errors are clustered at the DHS cluster level.***p<0.01;**p<0.05;*p<0.1

marriages, consistent with Becker et al. (2018)’s Kyrgyzstan findings, and they marry less educated husbands. They are more likely to have undergone female genital cutting but are similar to other married women in terms of additional measured health and anthropometric outcomes (weight, height, incidence of anemia, and occurrence of obstetric fistula).

Table 1 also shows that women married by abduction have, on average, less agency than other married women in terms of visiting relatives, which could be evidence of continued strife between the groom and wife’s natal family as was highlighted in our qualitative interviews. Women married by abduction are otherwise not statistically different from other married women in terms of all additional included measures of bargaining power—i.e., their role in making household purchases and healthcare decisions.

Women married by abduction also do not differ in terms of other marriage market outcomes, including use of contraception, age at marriage, age difference with their husband, and probability of divorce by the time of survey. Note that this is counter to some findings from Kyrgyzstan, which show that women married by abduction are more likely to be married at a younger age and experience a higher rate of divorce (Becker and Steiner, 2018; Werner et al., 2018; Arabsheibani et al., 2021). Women married by abduction also do not significantly differ in terms of current household wealth, labor force participation, household size, number of children at the time of survey, nor the number of children desired. These findings are also counter to the findings in Becker et al. (2017) from Kyrgyzstan.

Taken together, these results suggest that, while women married by abduction are likely from poorer natal households, they do not differ significantly from the rest of married women in terms of most health, labor market, and marriage outcomes. This is consistent with our qualitative findings that, unlike in other countries, abduction marriages in Ethiopia are mostly not coerced and might not cause significantly worse marriage outcomes, particularly in a context where non-abduction marriages are often arranged by

parents.

5.2 Ethnic group-level characteristics

Table 2 reports ethnic group characteristics sourced from Murdock’s *Ethnographic Atlas*. The sample in column 1 includes all DHS respondents for whom we were able to match their reported ethnic group with an ethnic group in the *Ethnographic Atlas* and reports the proportion of the sample with the ethnographic characteristic shown in the row. Column 2 reports the proportion of respondents from an ethnic group with the characteristic denoted in the row who were married by abduction. Column 3 reports the difference in the probability of abduction for respondents from ethnic groups with each ethnographic characteristic.

All individuals for whom we have data belong to ethnic groups with a stigma toward premarital sex and that practice patrilocality. Though our qualitative findings suggest that these two ethnographic features are linked to abduction marriage in Ethiopia, this is, unfortunately, not something that we can empirically test in this setting.

Although marriage by abduction exists among nearly all ethnic groups in our sample, the prevalence is significantly higher among ethnic groups that exchange a bride price. Table 2 also shows that abduction marriage is more prevalent among patrilineal ethnic groups and those in which extended families often reside together, women play a major role in economic activity, there is a custom of polygamy, and animal husbandry plays an important role in the economy. Abduction marriage is equally prevalent among nomadic and sedentary ethnic groups.

Table 2: Summary statistics at the ethnic group level (Murdock’s *Ethnographic Atlas*):

Ethnographic characteristic	(1) % in Ethiopia	(2) % abducted in these ethnicities	(3) Diff	(4) N
Pre-marital sex stigma	1.00	0.08		7,891
No pre-marital sex stigma	0.00			
Patrilocal	1.00	0.08		10,434
Not patrilocal	0.00			
Bride price exchanged	0.55	0.11	0.072***	10,434
No bride price exchanged	0.45	0.04		
Patrilineal	0.56	0.11	0.073***	10,434
Not patrilineal	0.44	0.04		
Nuclear families	0.11	0.02	-0.066***	10,434
Extended families	0.89	0.09		
Polygamy practiced	0.54	0.11	0.076***	9,820
Monogamy practiced	0.46	0.04		
Nomadic	0.11	0.05	-0.031	10,434
Sedentary	0.89	0.08		
Equal gender contributions in economy	0.48	0.11	0.067***	10,234
Male-dominated economies	0.52	0.04		
<i>Main form of economic activity</i>				
Animal husbandry	0.37	0.10		10,434
Agriculture	0.59	0.05		10,434
Multiple economic activities	0.04	0.21		10,434

Note: Data on abduction is from the 2005 Ethiopian Demographic and Health Survey (DHS), and data on ethnographic characteristics is from the *Ethnographic Atlas*. Column 1 reports the prevalence of each ethnographic characteristic in Ethiopia for the sample of DHS respondents that we could match with the *Atlas* and who are older than 18 years of age at the time of survey. Column 2 reports the proportion of respondents who are from an ethnic group with the ethnographic characteristic denoted in the row that were married by abduction. Column 3 reports differences in the probability of abduction between respondents from ethnic groups with each type of ethnographic characteristic. These differences are calculated with a univariate regression at the respondent level with standard errors clustered at the ethnic group level. Column 4 indicates the number of observations in the DHS dataset that were matched with the *Ethnographic Atlas* and for which information is available for that ethnographic characteristic. ***p<0.01; **p<0.05; *p<0.1

6 Testing for the strategic use of abduction to reduce the bride price

In this section, we use quantitative data to investigate the hypothesis—found in the anthropology literature and emphasized in our qualitative interviews—that bride abduction is used as a method of reducing the size of the bride price payment. To do so, we estimate the impact of droughts during a woman’s teenage years on the probability of being married by abduction. We compare the impact of droughts among ethnic groups that exchange a bride price to those that do not.

But what is the link between economic shocks and the prevalence of abduction, and how does examining this connection shed light on whether abduction is used to lower the bride price?

Our qualitative interviews and ethnographic studies conducted in several other countries consistently highlight a groom’s inability to pay the bride price as one of the strongest motivators for abduction (Werner et al., 2018; Stross, 1974; McLaren, 2001; Werner, 2009). Once a woman has been abducted, it is assumed that she is no longer a virgin. Across Ethiopia, pre-marital sex is heavily stigmatized and reduces the size of the bride price payment. In this context, economic shocks may lead some men to abduct a woman in order to improve their bargaining position and reduce the size of the marriage payment.

We use droughts as a proxy for economic shocks since households are largely agrarian or reliant on livestock (Dito, 2015). Importantly, our qualitative interviewees (in line with previous evidence—see, for example, Evans-Pritchard (1947), Kelly (1985) or Bhalotra et al. (2020)) emphasized that the size of the bride price does not change when harvest or livestock incomes are poor (see subsection 4.1 for more detail). This is crucial because if droughts decrease a bride’s family’s demanded bride price to an extent that offsets the reduction in the groom’s income, we should not observe any effect of

droughts on the probability of abduction.

Additionally, one may wonder whether the groom and the bride might react to a drought by postponing marriage until a year with better rainfall. It is possible that this occurs, and it does not invalidate our interpretation of these results. First, the economic consequences of droughts likely span periods longer than a year. Second, our empirical approach does not rely on estimating the effect of droughts on the probability of abduction within the same year but measures the effect of the number of droughts during teenage years on the probability of abduction.¹⁴

The practice of abduction marriage is typically used to overcome parents' or bride's refusal to marry (Ayres, 1974; Werner et al., 2018). This refusal could happen because of the groom's inability to pay the bride price or for many other reasons. Although less prevalent, abduction marriage does occur among ethnic groups that do not exchange bride price payments. In these groups, however, we do not expect economic shocks to affect the probability of abduction to the same extent as in groups that exchange a bride price.

6.1 Empirical methods

To assess the impact of droughts on the probability of being married by abduction, we employ a similar identification strategy that was used by Burke et al. (2014). Specifically, we estimate the impact of each additional year of drought during a respondent's teenage years (ages 13-18) on the probability that she was married by abduction. This age range is selected because these are the ages at which the vast majority of abductions occur in Ethiopia (MoWCYA, 2013). In our sample, 63 percent of marriages and 65 percent of marriages by abduction occur in this age range.¹⁵ The primary analysis

¹⁴The DHS database does not include information on the year of abduction, but only on the year of marriage. Our qualitative interviews revealed marriage negotiations following an abduction can range from a few months and more than a year.

¹⁵Appendix figure [A.2](#) displays the distribution of age at marriage in our sample.

focuses on women from non-nomadic ethnic groups, as the DHS does not include retrospective information on place of residence, making it impossible to confidently assign a level of exposure to droughts during teenage years for women from these groups.¹⁶ In section 6.4, we examine the robustness of the results to slight variations in the years of a respondent’s life in which she is considered at risk of abduction and to the inclusion of nomadic ethnic groups in the analysis.

We estimate the following equation using Ordinary Least Squares regression for three different samples: all women, women from ethnic groups that traditionally exchange a bride price, and women from ethnic groups that do not traditionally exchange a bride price. Recall that our sample includes respondents who were between 19 and 49 at the time of survey.

$$\begin{aligned}
 Abduct_{ibc} = & \delta_0 + \delta_1 N \text{ droughts}_{bc} + \lambda_b \\
 & + \gamma_i + \psi_c + Age \ x \ Village_{bc} + u_{ibc}
 \end{aligned}
 \tag{1}$$

where *Abduct* is a dummy variable equal to 1 if woman *i*, born in year *b* and living in DHS cluster (typically a village or neighborhood) *c* was married by abduction and 0 otherwise. *N droughts* is the number of years with a drought (droughts as defined in section 3.3) during the years in which the respondent *i* was aged 13 to 18.

The parameter of interest in the regression is δ_1 , which captures the effect of an additional year of drought during teenage years on the probability of being married by abduction. λ_b , γ_i and ψ_c are age-at-survey, ethnic group, and DHS cluster fixed effects. *Age x Village* are DHS cluster-specific time trends, and u_{ibc} is an error term with mean zero. Standard errors are clustered at the DHS cluster level.

¹⁶The nomadic ethnic groups in Ethiopia are the Affar, Somali, and Nuer. They represent approximately 10 percent of the sample. Recall from table 2 that abduction is equally prevalent in nomadic and sedentary groups.

6.2 Results

Table 3: Effect of droughts during teenage years on the probability of abduction:

Dependent variable:= 1 if respondent married by abduction, = 0 otherwise			
<i>Panel A: Main analysis</i>	(1)	(2)	(3)
Number of droughts 13-18	0.0053 (0.0048)	0.0206** (0.0096)	-0.0062 (0.0053)
Sample	All	Bride price ethnic groups	Non-bride price ethnic groups
Mean DV	0.080	0.124	0.038
Observations	9,187	4,516	4,623
R^2	0.1888	0.2016	0.2136
<i>Panel B: Placebo analysis</i>	(1)	(2)	(3)
Number of droughts 23-28	-0.0073 (0.0097)	-0.0133 (0.0198)	-0.0104 (0.0097)
Sample	All	Bride price ethnic groups	Non-bride price ethnic groups
Mean DV	0.090	0.142	0.041
Observations	4,720	2,237	2,440
R^2	0.2746	0.3098	0.3089

Note: All regressions include year-of-birth, DHS-cluster, and ethnic group fixed effects as well as DHS-cluster time trends. The treatment variable is the number of years of drought between ages of 13 and 18 (Panel A) and between ages 23 and 28 (Panel B). Standard errors clustered at the DHS cluster. ***p<0.01;**p<0.05;*p<0.1

Table 3 reports the results from estimating equation 1 on three different samples. Column 1 of Panel A reports the results for the full sample (as defined in section 6.1) and shows that droughts that occur during a respondent’s teenage years have a small, statistically insignificant effect on the probability of being married by abduction. This result, however, masks heterogeneity across ethnic groups that do and do not have a bride price custom. Column 2 of panel A includes only respondents from ethnic groups that traditionally exchange a bride price and shows that droughts during a respondent’s teenage years significantly increase the probability that she will be married by abduction. Specifically, one additional year with a drought during a female respondent’s teenage years increases the probability that she will be abducted by 2.06 percentage points. Relative to the outcome mean, this is nearly a 17 percent increase in the probability of marriage by abduction for each additional year of drought. Conversely, column (3), which includes respondents from ethnic groups that have not historically exchanged a bride price, shows no statistically significant effect of droughts on the probability of abduction. This is a precisely estimated null effect—the 95% confidence interval is -1.7 to 0.4 percentage points.

6.3 Ruling out alternative hypotheses

The results in table 3 are consistent with the hypothesis that abduction is used as a strategy to reduce the size of bride price payments during lean times. These results, however, could also be explained by other ethnic-group, economic, or marriage characteristics.

For example, the reader could be concerned that droughts lead to a rise in child marriages, as was found in Corno et al. (2020), which covered 31 Sub-Saharan African countries. If this is the case, the increase in abductions could be attributed to the uptick in marriages during drought periods. But, in contrast to Corno et al. (2020), our analysis in appendix table A.1, shows no statistically significant impact of droughts during teenage years on the

prevalence of child marriage in Ethiopia. This is true both for ethnic groups that traditionally exchange a bride price and those that do not.

Additionally, we show in table 2 that ethnic groups that are patrilineal, have extended family networks, practice polygamy, and those in which women contribute equally to economic activity (relative to male-dominated economies) experience higher rates of abduction. It could be the case that one of these characteristics drives the observed response to droughts among groups that exchange bride price payments.

We test these alternative hypotheses in two ways. We first follow Ashraf et al. (2020)¹⁷ and estimate equation 1 but include four additional controls of these ethnic group characteristics. The results are reported in table A.2 and show nearly identical estimates across the three estimation samples.

We then re-estimate equation 1 on subsamples based on each of these ethnographic characteristics (results in table A.3) and evaluate the plausibility of each hypothesis.

First, we can rule out the hypothesis that family structure (extended families vs nuclear families) is driving our results. Table A.3 shows that droughts do not statistically significantly alter the probability of being married by abduction for women from ethnic groups with either type of family structure.

Analyzing the other three ethnographic characteristics is more complex due to their high correlation with exchanging a bride price. The correlations are 0.973 with patrilineal structure, 0.971 with polygamous structure, and 0.835 with female economic contribution (see table A.3). Given that the purported purpose of the bride price is to compensate the bride's natal family for the loss of the economic and reproductive labor of the bride (Ashraf

¹⁷Ashraf et al. (2020) explores whether educational reforms in Zambia and Indonesia have heterogeneous effects depending on whether women belong to ethnic groups that practice bride price marriages or not. The authors include ethnic-level controls to ensure that the effects are not driven by other ethnic-level characteristics that might correlate with bride price.

et al., 2020; Mago, 2019; Vroklage, 1952), it is not feasible to statistically disentangle the effect of these characteristics and the bride price custom.¹⁸ However, we can assess the reasoning of the hypotheses that it is one of these three characteristics driving the observed relationship between droughts and abduction marriage.

If the concern is that patrilineal customs, rather than bride price, are driving the results, one would need to believe that droughts make men from patrilineal groups eager for a new wife, which seems unlikely. If polygamy is a concern, one would need to argue that droughts increase a polygamous man’s desire for additional wives. This desire is potentially due to an inability to afford the bride price for additional wives. However, this would still be a result of the bride price custom.

Finally, if the reader is concerned that women’s economic contribution is driving the observed relationship, one would need to believe that during droughts, men seek additional productive members in their households. However, during droughts, there is often less work to be done in agrarian and pastoral households (Afridi et al., 2022; Group, 2016), making this scenario unlikely.

Thus, while we cannot statistically rule out all alternative hypotheses, none offer a compelling explanation for the observed relationship between droughts and abduction marriage.

6.4 Robustness

We test the robustness of the result presented in panel A of table 3 to multiple empirical exercises. First, panel B of table 3 reports the results of a placebo test examining whether exposure to droughts a decade after a woman’s teenage years (ages 23 to 28) increases the probability of abduction marriage. Because the vast majority of abductions occur during teenage

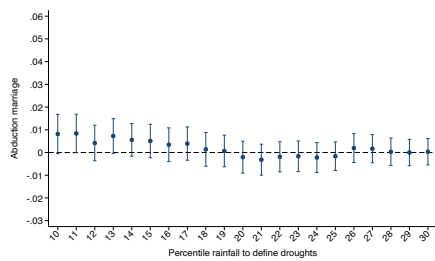
¹⁸For completeness, we do show the results in table A.3.

years, we expect no effect of droughts during this period of a respondent’s life on the probability of abduction. Confirming this, we observe small effects that are statistically indistinguishable from zero at conventional confidence levels in all three samples: all respondents and those from ethnic groups that do and do not exchange a bride price.

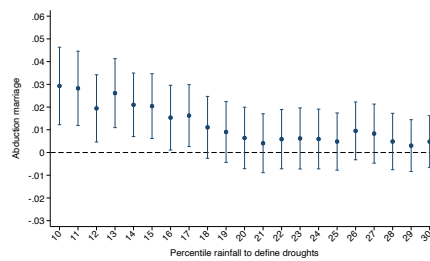
Then, while our primary results are estimated using a definition of drought commonly used in the economics literature (see for example Burke et al., 2014, Corno et al., 2020, and McGavock and Novak, 2023), figure 2 confirms that our results are not sensitive to the precise definition of drought. This figure displays the results from defining a drought as a rainfall realization below every percentile between 10 and 30 of the local annual rainfall distribution. The results confirm that droughts increase the probability of abduction only for those respondents from ethnic groups that exchange a bride price. Further, the estimated impact is largest at lower rainfall percentile cutoffs, suggesting that more intense droughts result in a larger increase in the probability of abduction.

Appendix figure A.3 reports the results of additional robustness exercises. All sub-figures include the results using percentiles 10 through 30 of annual rainfall to define a drought. First, to address possible concerns of overfitting, panels a through c report the results of estimating equation 1 without DHS cluster-specific time trends. The results of this exercise are consistent with those reported in the main analysis. Second, while both the literature and our qualitative interviews suggest that the majority of abductions occur when the girl is between 13 and 18 years old, we re-estimate equation 1, making slight variations to which ages we consider relevant for abduction. Specifically, we estimate the impact of droughts when the girl is aged 13 to 17 (panels d through f) and between 13 and 19 (panels g through i) on the probability of marriage by abduction. The results of the analysis are consistent with those obtained in the primary analysis in which we consider ages 13 through 18 as those at which girls are at risk of abduction.

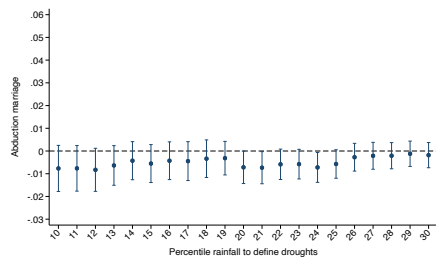
Figure 2: Effect of economic shocks (by percentile of effect) during teenage years on abduction marriage



(a) All women



(b) Bride price ethnic groups



(c) Non-bride price ethnic groups

Note: All regressions include year-of-birth, DHS-cluster, and ethnic group fixed effects as well as DHS-cluster time trends. The treatment variable is the number of years of drought between ages of 13 and 18. The figure shows 90% confidence intervals.

Further, migration could create bias in our estimates if a respondent lived in a location during her teenage years that experienced sufficiently different weather patterns than the location where she lived at the time of survey. The variable of interest—the number of droughts during teenage years—is constructed based on the respondent’s location at the time of survey. Migration would cause measurement error in the independent variable, which would cause attenuation bias. While we exclude nomadic groups from the main analysis to minimize this concern, the estimates reported should, nonetheless, be interpreted as conservative estimates of the true effect of droughts due to potential migration. While this would not affect the main conclusions of the study, we examine the extent to which our main estimates are affected by measurement error by estimating equation 1 and excluding respondents who reported that they changed their place of residence. As expected, the results of this analysis, reported in panel A of appendix table A.4, show slightly larger estimated effects of droughts.

Additionally, we test the robustness of the main estimations to the inclusion of nomadic groups (which are excluded from our primary results). The results of this analysis are reported in panel B of appendix table A.4. Given the larger measurement error in the variable measuring exposure to droughts during teenage years for nomadic ethnic groups, the coefficients have the expected smaller magnitude. Indeed, the effect for the bride price ethnicities has the expected positive sign, but the coefficient is marginally statistically insignificant at conventional confidence levels (p-value=0.116) when nomad groups are included.

Finally, given the possible existence of spatial dependence in drought exposure, we examine whether the main conclusions are robust to the use of the Spatial HAC estimator described in Conley (1999). The results are reported in panel C of appendix table A.4 and show results consistent with our main findings.

7 Discussion and concluding remarks

The results of our quantitative analysis provide the first statistical evidence in favor of the hypothesis present in the anthropology literature and our qualitative findings that abduction is used most frequently to improve the groom's bargaining position in marriage negotiations and reduce the size of the bride price payment. This finding not only contributes to a better understanding of the factors leading to abduction but also provides a better understanding of marriage markets more generally.

Our qualitative analysis suggests that unlike in other areas of the world (with evidence coming primarily from former Soviet republics), bride abduction in the communities we examined is typically not a forceful act. Instead, abduction most often occurs within existing relationships and is used to pressure the bride's family in instances when her family does not approve of the marriage.

Both existing literature and our qualitative interviews suggest that three cultural traits are related to the prevalence of bride abduction in Ethiopian communities. The first is the existence of a strong premarital sex stigma. This practice is a powerful method of increasing the groom's bargaining power only in contexts in which premarital sex, or the assumption of it, harms women's marriage market prospects. Second, bride abduction is powerful only in communities in which parents play an important role in the marriage decisions of their offspring. In the words of a female leader in an Oromo community where this practice disappeared in recent decades, "abduction vanished when the decision about who to marry started to be made by girls rather than by their parents." The third cultural trait is the bride price custom. Abduction is approximately three times more prevalent in Ethiopian ethnic groups in which bride price is the primary marriage custom. In line with studies conducted in other countries (Stross, 1974; Bates, 1974), the community leaders interviewed in the qualitative work consis-

tently highlighted the difficulty of paying the bride price as the primary reason for abduction. Our quantitative findings that, among these ethnic groups, abductions increase during droughts corroborate this logic. Qualitative evidence, gleaned from settings with varying degrees of women's consent in abductions, consistently underscores the important role of the bride price custom in shaping the practice of abduction in communities in Mexico, China, Turkey, and Kyrgyzstan (Stross, 1974; McLaren, 2001; Bates, 1974; Werner et al., 2018).

Our work shows that women married by abduction are not a random sample of the population. On average, they initiate childbearing slightly earlier, have less education, marry less educated husbands, and experience less autonomy in visiting their natal families. On the other hand, we do not find differences in terms of most marriage market or health outcomes between abducted and non-abducted married women, suggesting they are not worse off in their marriage.

The results of the qualitative work portray abduction marriage as an institution through which grooms and brides can take ownership of marriage decisions in societies where these decisions are primarily made by parents. The ongoing loosening and evolution of connected social norms, including the bride price custom, premarital sex stigma, or arranged marriages, could reduce the prevalence of abduction. Interventions with the potential to alter these social norms might accelerate the abandonment of the practice.

This study marks the first empirical investigation of the anthropological hypotheses, derived from qualitative analyses, of the rationale for the practice of bride abduction. Our findings show that reducing bride price payments is a central reason for abduction in many Ethiopian communities, raising numerous questions that require additional data to address. Understanding the impact of abduction on extended familial relations, the cultural evolution of this practice, the effects of cultural shocks such as the expansion of fast-internet or tourism, and the stickiness of bride prices during economic

downturns remain important avenues for future research.

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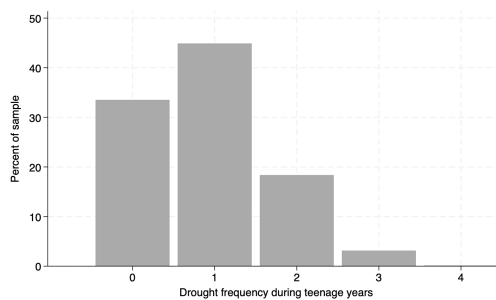
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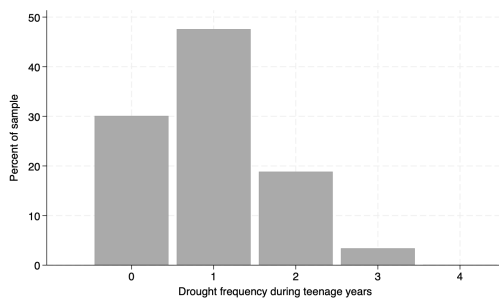
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A Appendix

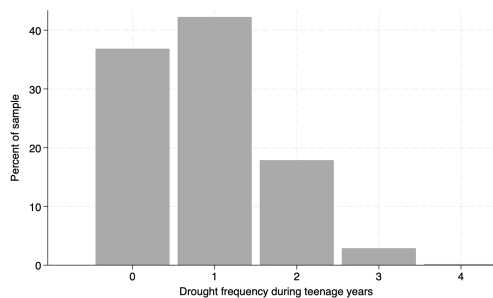
Figure A.1: Distribution of rainfall shocks



(a) All respondents



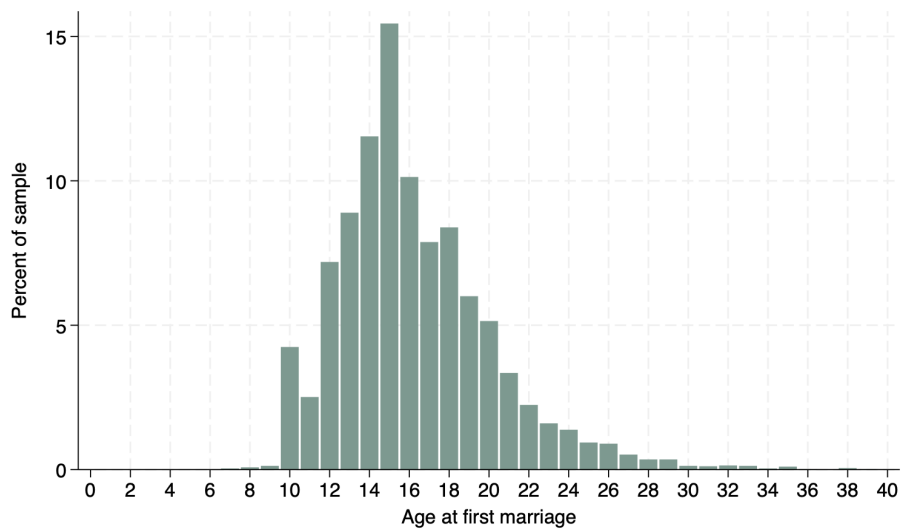
(b) Bride price group



(c) Non-bride price group

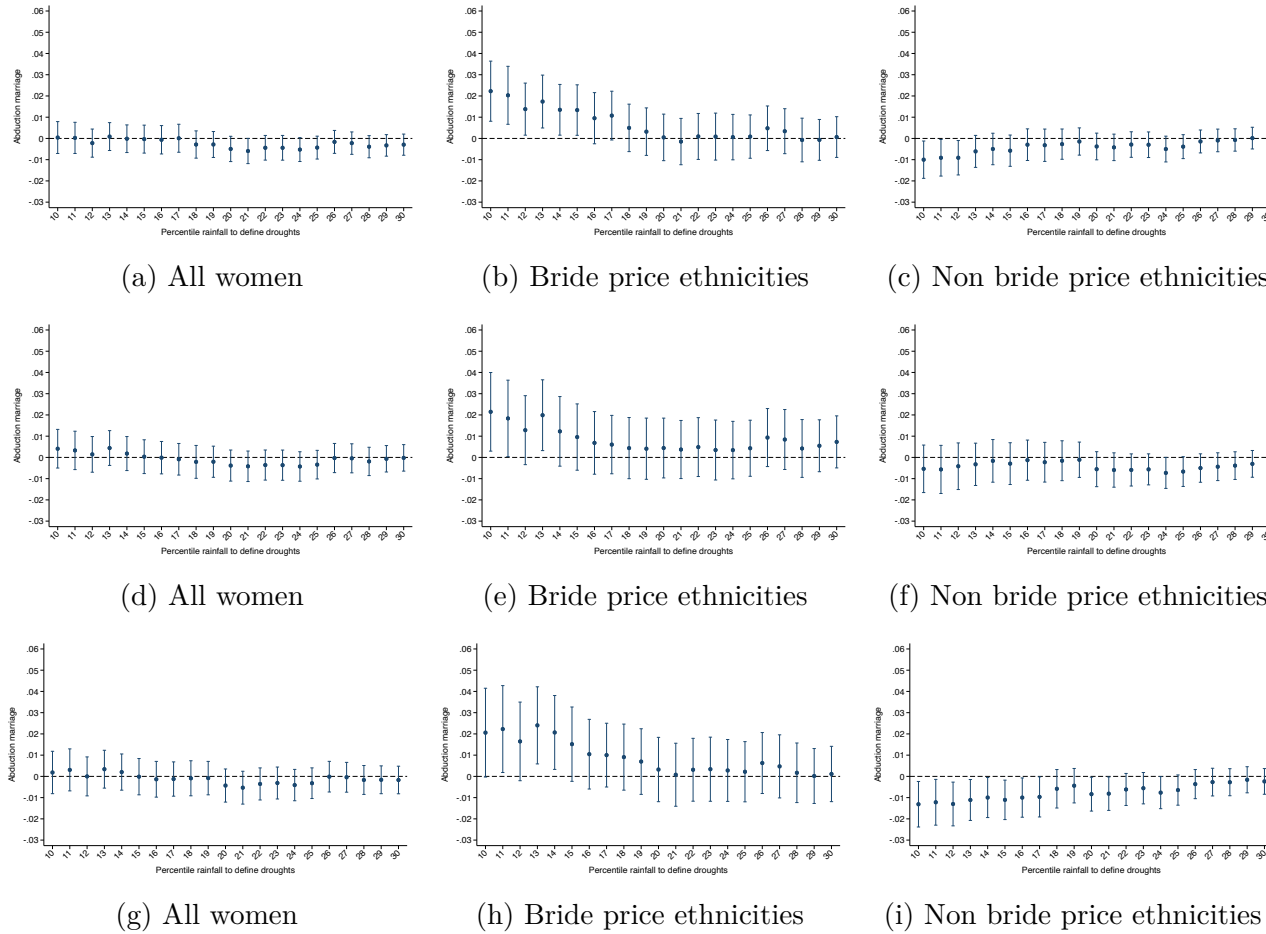
Note: The figure shows the distribution of the number of rainfall shocks—defined as an annual rainfall realization below the 15th percentile of the local historic rainfall distribution—during respondents' teenage years (ages 13 to 18).

Figure A.2: Distribution of age at marriage in the analytical sample



Note: The figure shows the percentage of respondents included in our main analysis who were married at each age.

Figure A.3: Effect of economic shocks (by percentile of effect) during teenage years on abduction marriage



Note: All graphs show the results of estimating a version of equation 1 with droughts defined as a rainfall realization below each percentile (specified on the x-axis). The equation is estimated separately for the full sample, women from bride price ethnic groups, and women from non-bride price ethnic groups. Graphs (a), (b), and (c) show the effects and 90% CI of an additional year of drought during the age period 13-18 on the probability of abduction estimated using equation 1 but removing DHS cluster specific time trends. Graphs (d), (e) and (f) show the estimated effects and 90% CI of an additional year of drought during the age period 13-19. Graphs (g), (h) and (i) show the estimated effects and 90% CI of an additional year of drought during the age period 13-17. Standard errors are clustered at the DHS cluster level.

Table A.1: Effect of drought during teenage years on the probability of child marriage:

Dependent variable:= 1 if respondent married before age 18, = 0 otherwise

	(1) Full Sample	(2) Bride price ethnic groups	(3) Non-bride price ethnic groups
Number of droughts 13-18	-0.0100 (0.0085)	-0.0209 (0.0143)	0.0062 (0.0125)
Mean DV	0.681	0.623	0.740
Observations	7,696	3,779	3,868
R^2	0.2347	0.2125	0.3269

Note: All regressions include year-of-birth, DHS-cluster, and ethnic group fixed effects as well as DHS-cluster time trends. The treatment variable is the number of years of drought between ages of 13 and 18. Standard errors clustered at the DHS cluster level. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$

Table A.2: Effect of droughts during teenage years on the probability of abduction (with ethnic level controls):

Dependent variable:= 1 if respondent married by abduction, = 0 otherwise			
	(1)	(2)	(3)
Number of droughts 13-18	0.0050 (0.0050)	0.0204* (0.0106)	-0.0061 (0.0053)
Ethnic level controls	Yes	Yes	Yes
Sample	All	Bride price ethnic groups	Non-bride price ethnic groups
Mean DV	0.080	0.124	0.038
Observations	8,379	3,706	4,620
R^2	0.1941	0.2105	0.2125

Note: All regressions include year-of-birth, DHS-cluster, DHS-cluster time trends, and the following ethnic group-level controls: Equal gender contributions in the economy, patrilineal group, nuclear (vs extended) families, polygamy practice, animal husbandry practiced, and agriculture practiced. No ethnic-level fixed effects are included in these estimations. The treatment variable is the number of years of drought between ages of 13 and 18. Standard errors clustered at the DHS cluster. ***p<0.01;**p<0.05;*p<0.1

Table A.3: Exploring alternative hypotheses: Effect of drought during teenage years on the probability of marriage by abduction

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Patrilineal	Not patrilineal	Extended families	Nuclear families	Poly-gamous	Mono-gamous	Equal contributions	Male-dominated
Number of droughts 13-18	0.0214** (0.0095)	-0.0072 (0.0054)	0.0072 (0.0054)	0.0239 (0.0171)	0.0220** (0.0105)	-0.0072 (0.0054)	0.0214** (0.0105)	-0.0053 (0.0048)
Observations	4,644	4,496	8,081	1,068	4,027	4,496	3,818	5,121
R^2	0.2013	0.2162	0.1866	0.2222	0.1980	0.2162	0.2121	0.2079
Correlation with bride price	0.9729		0.3574		0.9709		0.8354	

Note: All regressions include year-of-birth, DHS-cluster, and ethnic group fixed effects as well as DHS-cluster time trends. The treatment variable is the number of years with a drought between the ages of 13 and 18. Standard errors clustered at the DHS cluster. ***p<0.01; **p<0.05; *p<0.1

Table A.4: Different robustness checks: Excluding individuals reporting having changed their type of residence, including nomads, and calculating Spatial HAC estimation of standard errors:

Dependent variable:= 1 if respondent married by abduction, = 0 otherwise

	(1) Full Sample	(2) Bride price ethnic groups	(3) Non-bride price ethnic groups
<hr/>			
<i>Panel A: Sample excludes women who reported a change in their type of residence</i>			
Number of droughts 13-18	0.0084 (0.0068)	0.0250* (0.0132)	0.0033 (0.0082)
Observations	4,807	2,497	2,254
R^2	0.2877	0.2933	0.3224
<hr/>			
<i>Panel B: Sample includes nomadic ethnic groups</i>			
Number of droughts 13-18	0.0015 (0.0043)	0.0119 (0.0075)	-0.0062 (0.0053)
Observations	11,102	5,654	4,623
R^2	0.1786	0.2011	0.2136
<hr/>			
<i>Panel C: Spatial HAC estimation of standard errors</i>			
Number of droughts 13-18	0.0053 (0.0043)	0.0206** (0.0086)	-0.0062 (0.0046)
Observations	9,205	4,546	4,659
R^2	0.0621	0.0804	0.0939

Note: All regressions include year-of-birth, DHS-cluster, and ethnic-group fixed effects along with DHS cluster time trends. In panel A, we report the results of estimating equation 1 but exclude respondents who reported that they had changed their type of residence. In panel B, we estimate the same equation but include respondents from nomadic groups in the sample. Panel C reports the main estimates of the spatial HAC estimator developed in Conley (1999) to account for spatial dependence. Standard errors, reported in parentheses, are clustered at the DHS cluster level.***p<0.01;**p<0.05;*p<0.1