The Effects of Civil War and Forced Migration on Intimate Partner Violence among Syrian Refugee Women in Jordan

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Abstract

This study investigates the impact of the Syrian civil war and refugee status on the risk of physical intimate partner violence (IPV) among Syrian women in Jordan, a country hosting a significant refugee population. We analyze data from the 2017-18 Jordan Population and Family Health Survey, which includes a nationally representative sample of Syrian refugees. Using the information *on the timing of first violence after marriage* within a discrete-time duration analysis, we examine the hazard rates of IPV exposure across different periods: prewar Syria, postwar Syria, and refugee status. Our findings demonstrate that war and refugee status increase the risk of IPV, with the most substantial impact observed in the initial years after marriage. Furthermore, the rise in IPV after the refugees' arrival in Jordan diminishes over time. The study identifies the economic strain resulting from lower household wealth and refugee husbands' employment losses as a driver of the rise in IPV. In addition, we explore whether the civil war and refugee status alter marriage patterns, which could contribute to the observed effects on IPV. Both the civil war and forced migration lower the marriage age and increase the incidence of non-cousin marriages at the expense of cousin marriages—both of which are associated with a higher risk of IPV. However, we observe no changes in age and education gaps between spouses or in polygamous marriages, which could also contribute to the observed increase in IPV.

Keywords: Syrian refugees, forced migration, intimate partner violence, physical violence, war and displacement, Jordan.

1. Introduction

Intimate partner violence (IPV) against women is a major public health problem and a violation of women's human rights. IPV causes physical and emotional traumas strongly correlated with poorer physical, mental, sexual, and reproductive health outcomes throughout women's lives (WHO, 2012). Worldwide, almost 27% of women aged 15-49 in a relationship report that they have been subjected to physical and/or sexual violence by their intimate partner in their lifetime (WHO, 2018). The prevalence of lifetime physical or sexual IPV is also high and more than the global average in developing countries and specifically in the Middle East (Sardinha et al., 2022).

The Middle East region has experienced wars and, as a result, a dramatic flood of refugees and forced migration over the past 15 years. Syria experienced the world's largest refugee crisis. The UN Refugee Agency reports that more than 6.8 million Syrians have been forced to flee their country since 2011. The vast majority, approximately 5.2 million people, have found refuge in neighboring countries, including Jordan. Jordan stands out as the country with the second highest proportion of refugees in relation to its population globally, with the refugee/native share reaching nearly 9%. Syrians who have resettled in Jordan have undergone substantial changes in their living conditions, similar to other refugee populations. Prior research has explored the effects of displacement on refugees' working conditions, education, and health outcomes. However, it has not been investigated whether women who experienced the civil war and subsequently became refugees are more susceptible to spousal violence in their new lives. This study aims to address this research gap by examining the impact of civil conflict and forced displacement on the likelihood of experiencing physical IPV among Syrian refugees in Jordan.

IPV rates have been observed to be higher in conflict-affected areas. Numerous studies have examined the impact of conflict on IPV and have consistently found a positive association.[1]

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[1] For instance, Saile et al. (2013) conducted a study in heavily war-affected communities in Northern Uganda, revealing a link between exposure to war and familial violence. Østby (2016) analyzed 17 Sub-Saharan African countries and argued that armed conflict has negative consequences for sexual violence in the private sphere. Eseosa Ekhator-Mobayode et al. (2022) utilized a quasi-experimental methodology to investigate the impact of the Boko Haram insurgency on IPV in Nigeria, finding a significant increase in the likelihood of women experiencing physical or sexual IPV in the presence of Boko Haram. Clark et al. (2010) demonstrated a significant association between political violence and higher odds of IPV in the occupied Palestinian territory. Falb et al. (2013) conducted a study in refugee camps along the Thai–Burma border, highlighting a strong association between conflict victimization and IPV among women. Gupta et al. (2009) identified a significant link between premigration political violence exposure and IPV perpetration among immigrant men in Boston. Gutierrez & Gallegos (2016) found that exposure to internal conflict during childhood and adolescence increased the likelihood of being a victim of domestic violence as an adult in Peru. Kelly et al. (2018) reported a connection between residing in conflict-affected districts and post-conflict IPV

Overall, these studies collectively illustrate that organized violence at the societal level can be transmitted to interpersonal relationships, impacting IPV rates. Another branch of the literature suggests that the prevalence of IPV is high among forcibly displaced communities (Rothkegel et al., 2008). Analyses conducted in both camp and non-camp settings investigated the odds of IPV and observed that the main causes behind high levels of IPV potentially include social isolation (the loss of support networks and restricted mobility), and financial stress.[2] In addition, several studies show that migrant communities are at a higher risk of IPV, even in cases where the people don't migrate as a result of a conflict, due to a change in the traditional gender roles and distribution of power within the migrant families (Hyman et al., 2008; Poteyeva & Wasileski, 2016).

Our study makes several unique and innovative contributions to the existing literature. Firstly, while previous research on IPV among displaced communities has largely relied on qualitative research or small-scale case studies due to data limitations, our study utilizes a nationally representative dataset, providing a more robust and comprehensive analysis. Secondly, existing studies have primarily focused on establishing associations between displacement and IPV, lacking empirical evidence to support causal relationships. 2017-18 Jordan Population and Family Health Survey provides an ideal basis for measuring the impact of civil war and forced migration on the frequency of IPV, especially since it includes a domestic violence module consisting of information on the timing of the first violent act. To the best of our knowledge, our study is first incorporating information on the timing of violence to address the effect of forced displacement on IPV. Third, the existing studies on this topic do not focus on the experiences of refugees in the Middle East context. In contrast, our study specifically investigates the impact of Syrian conflict-induced displacement, which represents the largest refugee crisis in the modern world. Lastly, a notable gap in the existing literature is the lack of focus on potential mechanisms that contribute to the change in IPV rates. In our study, we uncover the underlying mechanisms that may drive the observed changes in IPV rates by examining factors such as economic distress resulting from employment loss and changes in marriage patterns.

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experienced by women in Liberia. Kiss et al. (2012) explored the link between community-based violence and IPV, indicating a higher likelihood of IPV among women whose partners were involved in male-to-male violence.

[2] For instance, some papers report that spousal violence hazard rate increases during and after armed conflicts, such as those in Kenya (Horn, 2010), Colombia (Wirtz et al., 2014), Ecuador (Keating et al., 2021), Ethiopia, (Sharma et al., 2020), and the Czech Republic (Szczepanikova, 2005)

We utilize data from the 2017-18 Jordan Population and Family Health Survey (JPFHS), which provides a representative sample of Syrian refugees in Jordan. This survey offers comprehensive information on women's experiences of IPV as well as detailed background characteristics of both the women and their husbands, including nationality, age, education, employment, age at marriage, and place of residence. The key and interesting piece of information in the JPFHS is the timing of the first physical violence episode women faced from their husbands (in the number of years since marriage). This information allows us—using duration analysis—to investigate how refugee women's IPV exposure are impacted by two critical junctures in their life: (i) the civil war in Syria and (ii) refugee status in Jordan. In particular, we employ a discrete-time duration analysis, tracking refugee women's IPV exposure after marriage across different periods in their lives, including prewar Syria, postwar Syria, and their time in Jordan as refugees.

We find that both the civil war and refugee status increase the risk of IPV among Syrian women. The IPV hazard rate, on average during the years of marriage, is 0.8 percentage points (pp) higher in postwar Syria and 0.5 pp higher in Jordan compared to prewar Syria. Notably, focusing on the younger sample below the age of 30 provides more precise estimates with larger effects. Specifically, refugee status increases the IPV hazard rate by 2.3 pp, and experiencing the civil war elevates it by 1.9 pp. Moreover, by narrowing our focus to events experienced by women in relatively recent years at the time of survey, we reduce the impact of recall bias and obtain more accurate estimates, which show slightly larger effects.

We also examine how the impact of refugee status on IPV varies over the years spent in Jordan. We find that refugee status raises the risk of IPV; however, this rise diminishes over duration in Jordan. In fact, the hazard rate of IPV is higher in the first two years of residence in Jordan than in prewar Syria but not during the later years of residence in Jordan.

We investigate the potential channels that could lead to the observed increase in IPV among refugees. Using data for prewar Syria, as well as the JPFHS, we show that the rise in IPV is likely to result from the deteriorating household economic conditions after forced migration—evident from the loss of asset holdings and declining employment rates. In addition, we show the increase in IPV hazard rates is more pronounced for subpopulations for which the decline in household economic conditions are more acute. In particular, refugee men with lower educational attainment experience a more significant loss of employment compared to those with higher educational backgrounds, and the rise in IPV hazard rates is particularly evident among women whose

husbands have lower educational qualifications. These findings support the role of employment loss and economic hardships in contributing to the observed rise in IPV.

The estimated increase in IPV rates may partly results from compositional effects if marriages formed after the war or migration to Jordan are different from those formed earlier in important ways. Marriages taking place after the civil war and in refugee status might carry higher risks of violence due to factors like age at marriage, marriage type, or husband characteristics. To investigate this issue, we restrict the sample to women i) married in Syria and ii) married before the civil war. The coefficients regarding the impact of the civil war and refugee status remain positive and large but are overall somewhat smaller in magnitude, and the statistical significance is lower. However, it is important to note that with the sample restricted to women married in Syria or married before the civil war, few observations remain for which the time since marriage takes low values—when the impact of the civil war and refugee status on IPV is much higher.

To explore this further, we analyze changes in marriage outcomes resulting from the civil war and forced migration. Our results show a significant increase in the marriage hazard rate in Jordan (8.3 pp) and in postwar Syria (5.6 pp) compared to prewar Syria. Then, we seek to understand which types of marriages have experienced this increase and whether they are associated with higher IPV risk.

The existing literature suggests that spousal violence is less likely in cousin marriages, while higher rates of violence have been associated with polygamous marriages. Additionally, when there is a significant age or educational disparity between spouses, the likelihood of violence against women increases due to women's lower bargaining power. With this knowledge in mind, we proceed to examine the impact of war and forced migration on different types of marriages, including cousin and polygamous marriages, as well as marriages with significant age and educational disparities.

Our analysis reveals that the rise in non-cousin marriages is more substantial compared to cousin marriages, and the former is known to be associated with a higher risk of violence. This significant increase in non-cousin marriages may play a role in the observed rise in IPV rates among Syrian refugees in Jordan. However, we find no statistically significant effect of war and refugee status on the occurrence of polygamous marriages, nor do we observe a greater power imbalance in terms of age and education differences between spouses in marriages occurring in Jordan compared to pre-war Syria.

2. Background Information

After the protests against the government that started in March 2011 got out of hand and eventually transformed into a nationwide war in Syria, Syrians began fleeing to neighboring countries in order to save their lives. Since 2011, more than 14 million Syrians have been forced to leave their homes in search of safety. Currently, there are still over 6.8 million Syrians who are displaced within their own country. The majority of Syrians seeking refuge in other countries are hosted by neighboring countries, specifically Turkey, Jordan, and Lebanon, accounting for over 80% of the total number.

Most Syrian refugees in Jordan arrived in 2012 and 2013. UNHCR reports that the number of total registered Syrian refugees in Jordan was 656,722 as of January 2018, when the interviews for the Jordan Population and Family Health Survey (JPFHS) of 2018 were concluded. The number of refugees in Jordan amounts to approximately 9% of the native population, which is the second highest share of refugees in the world (*UNHCR*, 2018). On the other hand, the number of Syrian refugees registered with the UNHCR is lower than the actual figure due to difficulties in documentation and registration. According to the 2015 Jordanian Census, it was estimated that there are 1.3 million Syrians in the country, a majority of whom arrived after the Syrian civil war started (*Jordan Population and Housing Census*, 2015).

Merely one-fifth of the Syrian refugee population resides in camps, while the remaining majority resides in host communities. Approximately 90% of Syrian refugees reside in the governorates of Amman, Mafraq, Irbid, and Zarqa. The Syrian refugees in Jordan constitute a very young population; 48% of them are under the age of 17. When broken down by gender, the refugee population maintains a balanced distribution in terms of the number of males and females (*UNHCR*, 2023).

Due to the absence of official statistics, we rely on surveys to obtain insights into the education level and employment status of Syrian refugees in Jordan. Based on JPFHS 2017-18 data, Syrian refugees in Jordan possess significantly lower levels of education compared to the national average in Jordan. For individuals aged 18–65, the percentage of Jordanian males and females without any formal education stands at 1.9 and 4.0, respectively. In contrast, the respective figures for Syrian males and females are 5.1 and 12.0, indicating a higher percentage of individuals without any formal education among Syrians. Conversely, the percentage of Jordanian males and females with an education level of high school or above stands at 36.8 and 41.8, respectively, while the

corresponding figures for Syrian males and females are 12.3 and 10.0, suggesting a lower percentage of individuals with higher education among Syrians.

Looking at the labor market status of Syrian refugees, before 2016, a vast majority of Syrian refugees residing in Jordan were unable to acquire work permits. As part of the Jordan Compact, Syrian refugees gained the opportunity to acquire yearly work permits, enabling them to engage in legal employment within Jordan from the beginning of 2016 (European Commission, 2016). However, despite the implementation of the work permit program, the proportion of Syrian refugees actively participating in the labor force remains low. Calculations based on JLMPS 2016 reveal that the overwhelming majority of working-age Syrian refugee adults (aged 15-64) were out of the labor force. Specifically, only 45% of men and a mere 4% of women among Syrian refugees are currently part of the labor force (Krafft & Sieverding, 2018). In 2016, 55% of Jordanian men were working, and 38% of Syrian refugee men. Among women, just 11% of Jordanian women and 3% of Syrian refugee women were working (Krafft et al., 2018).

UNHCR estimates that over 85% of Syrian refugees in Jordan reside below the poverty line as of 2018 (*UNHCR*, 2018). Syrian refugees in Jordan face limited financial resources, high levels of debt, and limited employment opportunities. As a result, the majority heavily rely on humanitarian aid for their basic needs and livelihoods (*UNHCR*, 2022).

3. Data and Estimation

This study is based on the 2017-18 Jordan Population and Family Health Survey (JPFHS) implemented by the Jordan Department of Statistics from early October 2017 to January 2018. In JPFHS, a multi-stage stratified sampling is used in the selection of sample households. The sampling frame is based on the 2015 Jordan Population and Housing Census frame. JPFHS is designed to produce results representative of the country as a whole, of urban and rural areas separately, of 12 administrative governorates, and of three national groups: Jordanians, Syrians, and a group combined from various other nationalities. The data provides the first-ever nationally representative household-level demographic and health indicators of the Syrian refugees living in Jordan. JPFHS has a very high response rate at the national level (99% in women interviews). Tablets were used to collect data during interviews for the recording of responses and data transfer, which positively affected data quality. In addition, we use two complementary data sets to provide background information on Syrian women before arriving in Jordan: the 2009 Syria Family Health

Survey (SFHS) and the 2006 Syria Multiple Indicators Survey (SMICS). Also, we use information regarding the number of Syrian refugees in Jordan by governorates and the origins of Syrian refugees obtained from the official reports of the UNHCR.

JPFHS includes a module on women's safety to obtain data on ever-married women's experience of emotional, physical, and sexual violence. In a subsample of half of the households, a domestic violence module was applied to one ever-married woman aged 15-49 selected randomly from each household. The module was administered only if complete privacy could be obtained. In total, 6,852 women were asked questions about violence against women; less than 1% of eligible women could not be successfully interviewed, mainly due to lack of privacy. Specially constructed weights were used to adjust for the selection of only one woman per household and to ensure that the domestic violence subsample was nationally representative.

JPFHS covers rich information on the background characteristics of the woman and her husband, including nationality, age, education, employment, age at marriage, and place of residence. The survey also provides information on the number of years lived in the current place of residence, which is used to calculate Syrian refugees' year of arrival to Jordan. Because this study focuses on the effect of Syrian inflow caused by the civil war and armed conflict, which began in 2011, the sample is restricted to Syrian women who migrated to Jordan after 2011. After restriction, the sample includes 681 Syrian ever-married women who started living in Jordan as of 2011.[3]

For these women, we have the information on the violence committed by the current husband (for currently married women) or the most recent husband (for formerly married women).[4] Physical IPV is measured by asking women if their husbands ever did any physically violent actions to them.[5,6] Moreover, for the women who have ever been exposed to physical

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[3] Among these women, 18% reported experiencing physical violence by their husbands at some point in their lives. Among those who ever experienced physical violence, 16% reported experiencing sexual violence, 21% reported being injured by their husband's actions, 7% reported their husband hurting them during a pregnancy, and 18% disclosed the occurrence of physical violence to someone else.

[4] The World Health Organization states that IPV can include violence in non-married relationships. Since non-married relationships are very rare among Syrian refugees in Jordan, in this context, IPV refers to marital relationships where the husband is the abuser and the wife is the victim.

[5] The list of physical domestic violence events covered in the data are as follows: whether the husband pushes you, shakes you, or throws something at you; slaps you; twists your arm or pulls your hair; punches you with his fist or with something that could hurt you; kick you, drag you, or beat you up; try to choke you or burn you on purpose; or threaten or attack you with a knife, gun, or any other weapon.

[6] Online Appendix Table A1 compares different indicators between women who have been exposed to physical violence and those who have never experienced it among Syrian refugee women in Jordan. The findings reveal that

spousal violence, we know when the first physical violence event occurred in relation to the start of the marriage.[7] Based on the timing of the first experience of physical violence committed by the husband by specific exact years since marriage, we calculate the age when the women are first exposed[8].

Using this data, we construct retrospective event histories for ever-being exposed to physical IPV. In particular, we put the data into a discrete-time duration analysis format, in which each period is one year, and exposure to violence constitutes the event of interest. The event history starts at the year when the women got married.[9] The event history continues until the year of the first IPV exposure for ever-exposed women and until the survey year (2017-18) for never-exposed women. For ever-exposed women, the outcome variable takes the value of one at the year of first exposure and zero at all other years. For never-exposed women, the outcome variable is right-censored and takes the value of zero at all years. When the data are put into the person-age structure, there are 7,607 observations for 681 women.

We aim to measure the impact of two critical junctures in refugee women's life cycle: (i) the onset of the Syrian civil war and (ii) arrival in Jordan and the beginning of life as a refugee.[10] For this purpose, we generate a location indicator variable that takes three values: (i) prewar Syrian period, (ii) postwar Syrian period, and (iii) period in Jordan as a refugee. Online Appendix Table A2 provides an illustration of the data structure.

Using this data structure, we estimate the following specification.

$$v_{it} = \beta_0 + \beta_1 \, (postwarSyria)_{it} + \beta_2 \, (inJordan)_{it} + \sum_{j=0}^{k} \tau_j T_j + X_i \Gamma + u_{it} \quad (1)$$

In equation (1), v_{it} takes the value of one if the woman i (who is never-exposed) gets exposed to violence at year t and zero otherwise, $(postwarSyria)_{it}$ takes the value of one for woman i after 2011, but before her arrival in Jordan and zero otherwise, and $(inJordan)_{it}$ takes

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women who have experienced physical violence are more likely to face controlling behaviors and higher rates of psychological or emotional violence. Additionally, these women have significantly less decision-making power within the household. These correlations suggest that women who have experienced physical violence encounter challenges in various aspects of their lives.

[7] The original question is as follows "How long after you first got married with your (last) husband did (this/any of these physical violence actions) first happen? (Write in number of years)"

[8] Although IPV often includes sexual, psychological (emotional) violence and control behaviors, we only focus on physical IPV in this study, because the survey question regarding the timing of the violence only accounts for the acts of physical violence.

[9] In this sample, the youngest age of marriage is 12.

[10] We assume the Syrian conflict began in 2011; because the first protests, civil uprisings, and defections occurred in March–July 2011.

the value one for woman i after her arrival in Jordan and zero otherwise. We control for years after marriage in the form of a dummy variable for each year, T_j. Finally, X_i stands for the set of individual control variables: dummies for marriage age categories, type of place of residence (urban, rural), region of place of residence (north, central, and south).[11] The key variables of interest are β_1 and β_2, showing the difference between the exposure probabilities in postwar Syria and prewar Syria and the difference between the exposure probabilities in Jordan and prewar Syria, respectively. We estimate equation (1) using a linear probability model (LPM), but also check the robustness of the estimates using Logit and Complementary Log-Log models.

3.1. Descriptive Statistics

Figure A1 presents the distribution of the time interval between marriage and the initial occurrence of the first physical IPV. The data suggests a higher likelihood of the first incident of violence occurring in the early years of marriage. Specifically, approximately 90% of the recorded IPV instances occurred within the initial five years following marriage.

Figure 1 illustrates the hazard rates of IPV for three periods: prewar Syria, postwar Syria, and Jordan, based on all the woman-year observations in the sample. The data reveals several key findings. Firstly, across all three periods, the hazard rate of IPV is highest during the initial years of marriage, gradually decreasing as the years progress. Secondly, examining the first five years in which 90% of the initial IPV events occurred, both the postwar Syria period and Jordan exhibit higher hazard rates compared to the prewar Syria period. Additionally, within the year of marriage, during which 40% of the first IPV cases took place, the hazard rates in Jordan are slightly elevated compared to those in postwar Syria.

4. Results

4.1. Main Results

Three columns of Table 1 present the results of estimating equation (1) using OLS, Logit, and Complementary Log-Log regressions, respectively. The analysis primarily concentrates on the

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[11] We do not include direct controls for education level, employment status, wealth, and husband characteristics because these characteristics are jointly determined by women's marriage and resulting IPV, and therefore, would be endogenous.

influence of two variables: "in Jordan" and "postwar Syria" dummies, where the omitted category is prewar Syria. The IPV hazard rate increases by 0.8 pp with the war. Next, looking at the comparison between the IPV hazard rates in prewar Syria and Jordan, the IPV hazard rate is 0.5 pp higher in Jordan than in prewar Syria. The result of the OLS estimation is very close to the statistical significance threshold, yet slightly falls below it. However, the logistic regression models provide a more precise capture of this effect. The logit estimation results reveal that having refugee status and experiencing the civil war are both statistically significant factors associated with an increase in the IPV hazard rate, with respective magnitudes of 0.6 and 0.9 percentage points. Although these effects may appear relatively small in percentage points, when considering the baseline values provided at the bottom of the table (the averaged IPV hazard rates across all ages), the percentage increase in the IPV hazard rate is substantial, amounting to 40%.

In an alternative specification, we extend equation (1) by interacting the "in Jordan" dummy with the years of residence in Jordan to examine how the change in the IPV hazard rate in Jordan varies over time. The results in Table 2 show that the IPV hazard rate is 1.3 pp higher in Jordan than in prewar Syria during the first year. However, the rise in IPV hazard rate diminishes over time in Jordan; in fact, almost no difference exists between the hazard rates in prewar Syria and Jordan after four years in Jordan.

We also conduct certain robustness checks of our main results in Table 1. First, we narrow down the sample to include only younger women, focusing on those below the age of 30 in the survey year, as shown in the right panel of Online Appendix Table A3, while the left panel utilizes the entire sample of women aged 15-49. This comparison reveals that the estimation using the younger sample yields larger coefficients. Specifically, having refugee status increases the hazard rate by 2.3 pp, while experiencing the civil war further elevates it by 1.9 pp. The older women, who were excluded from the sample, experienced the ages at which the marriage hazard rate was high prior to the war. Considering the higher probability of initial IPV exposures occurring in the early years of marriage, we find a greater impact on IPV hazard rates for the group who experienced war and forced migration during the ages characterized by a high marriage hazard rate.

Another factor potentially contributing to a significant increase in IPV hazard rates among younger women is the presence of recall bias. This bias arises due to a noticeably lower proportion of middle-aged women reporting instances of abuse that occurred during their younger years

compared to the proportion reported by younger women (Yoshihama & Gillespie, 2002). Recall bias presents a common challenge in IPV studies, as individuals are required to remember and report past incidents of violence. To address this concern and ensure robustness, we conduct an additional analysis by restricting the sample to IPV events experienced within the last 10 years, as depicted in the right panel of Online Appendix Table A4, while the left panel represents the entire sample of events spanning the past 30 years. This comparison allows us to examine the estimation results for more recent experiences, thereby minimizing the potential impact of recall bias. The findings indicate that focusing on more recent events yields more precise estimates with slightly larger effects, providing additional evidence for the mitigation of recall bias.

Until this point, the estimation results have provided findings that were obtained by aggregating data across all years after marriage. In contrast, now we examine the effects of being in Jordan or postwar Syria on the IPV hazard rate by years after marriage. Specifically, the upper panel of Online Appendix Figure A2 compares Jordan with prewar Syria, and the bottom panel compares postwar and prewar Syria. The upper panel indicates statistical evidence that the IPV hazard rate in Jordan is almost 3 pp higher than that in prewar Syria in the year of marriage and the subsequent year after marriage. The bottom panel indicates statistical evidence of a 6 pp difference during the second year of marriage, while the gap in the first year of marriage is marginally statistically insignificant.

4.2. Understanding the Rise in IPV Hazard Rates

4.2.1. The Effect of Worsening Economic Conditions

Poverty is identified as a key risk factor for violence against women (Jewkes, 2002; WHO, 2010). A growing body of literature highlights that economic distress and financial insecurity can contribute to tension and conflict within relationships, leading to a higher likelihood of violence (Benson et al., 2003; Buzawa & Buzawa, 2013; Clark et al., 2010; Lucero et al., 2016; Matjasko et al., 2013). Several studies causally examine the relationship between adverse labor market conditions and women's experiences of abusive behavior and find that male unemployment increases the likelihood of experiencing physical violence (Clerici & Tripodi, 2021; Schneider et al., 2016). In situations of conflict and forced migration, barriers to employment often arise, making it challenging for men to fulfill the traditional role of being the primary breadwinner and protector of the family (Tur-Prats, 2017). These difficulties can pose a threat to masculinity and

are commonly linked to an increase in the use of violence by men. Work and income play a central role in men's identities, and the loss of either has significant implications for their mental health. Both men and women report that the absence of work and income can serve as a trigger for men's engagement in violent behavior (Henny et al., 2012).

To investigate whether deteriorating economic conditions could be a driving force behind the rise in IPV hazard rates, we compare both the employment outcomes of Syrian refugees and asset holdings of Syrian households in Jordan with those in prewar Syria. Here, the prewar Syria data on employment outcomes come from 2009-SFHS, and the prewar Syria data for asset holdings come from the 2009-SFHS and 2006-SMICS. Since Syrian refugees are more likely to originate from the southern part of the country and regional differences are important in Syria, we weight the governorate-specific averages by the fraction of Syrian refugees originating from each governorate based on related UNHCR data (UNHCR, 2017).

Table 3 compares Jordan and prewar Syria in employment outcomes and asset holdings. Panel A shows that men's employment rate is much lower in Jordan than in prewar Syria (70.5% in Jordan vs. 93.2% in Syria for married men). Among women, employment rates are lower in Jordan than in prewar Syria (3.0% in Jordan vs. 16.3% in Syria for married women). These patterns suggest that refugees' household labor income is significantly lower in Jordan than in prewar Syria.

Panel B of Table 3 shows that ownership of specific assets is much lower for Syrians in Jordan than in prewar Syria. For instance, among Syrian refugee households in Jordan, 8% own a car, whereas 17% of households in Syria own a car. In addition, the ownership rate of housing items, such as washing machines, air conditioners, and computers, is lower in Jordan and prewar Syria. Therefore, considering the decrease in employment rates and asset holdings, poverty may be a valid explanation for the increased IPV hazard rates among Syrian refugees.

To better understand Syrian refugees' wealth status, we generate a wealth index and compare the Jordanian native and Syrian refugee populations regarding this index. JPFHS data includes a wealth score variable, where households are given scores based on the number and kinds of consumer goods they own.[12] We use these wealth scores to rank households. Online Appendix Figure A3 highlights a stark contrast between natives and Syrian refugees regarding wealth

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[12] The household assets considered for the wealth index range from a television to a bicycle or car, and housing characteristics such as source of drinking water, toilet facilities, and flooring materials. These scores are derived using principal component analysis.

distribution. Regarding wealth deciles, the graph reveals that approximately 73.2% of Syrian households are clustered in the lowest decile, followed by 12.9% in the second lowest decile and 5.5% in the third lowest decile. This means that approximately 92% of the Syrian population is concentrated in the lowest three deciles. In contrast, among Jordanian households, only 10.1% are in the lowest decile, 12% in the second lowest decile, and 13.2% in the third lowest decile. In other words, the total percentage of Jordanian households in the bottom three deciles is almost 35%. Furthermore, the figure indicates that less than 2% of Syrian households are found in deciles seven and above. The figure shows significantly lower levels of wealth for Syrian households compared to their Jordanian counterparts.

The evidence provided in this section reveals that the observed rise in IPV hazard rates can be attributed to an increase in poverty among refugee families, as evidenced by declining employment rates of family members and a decrease in family assets.

If the hypothesis suggesting a positive association between increasing poverty and IPV rates holds true in this case, we anticipate observing a more pronounced rise in IPV rates within subgroups that experience higher levels of impoverishment. To test this hypothesis, we divide the married male sample into two groups based on their educational attainment and compare their employment rates. Panel A of Table 4 compares employment rates, with the first group comprising married men with less than a secondary school education and the second group comprising those with at least a secondary school education. This comparison shows that for both low-educated and high-educated men in all age groups, employment rates are much lower in Jordan compared to Syria. Notably, less educated Syrian men, across all age groups, experience more substantial employment losses in Jordan. This disparity is particularly striking among the 20-24 age group, where men face high marriage hazard rates. In this age group, the employment rate of low-educated men in Syria was 0.91, but it decreases to 0.56 in Jordan (38% employment loss), while the employment rate of high-educated men in Syria was 0.87, and it declines to 0.79 in Jordan (9% employment loss). This pattern persists across all age groups, with consistently wider gaps in employment rates observed among low-educated men. Consequently, refugee husbands with lower educational attainment suffer a more significant loss of employment compared to husbands with higher educational attainment.

Suppose the rise in IPV hazard rates results from worsening economic conditions. In that case, IPV rates will increase more among wives of men with lower educational attainment, who

experience a stronger loss of employment. To investigate this hypothesis, we divide the women's sample based on their husband's education level and examine the effect on IPV hazard rates. The estimation results in panel B of Table 4 show that the increase in IPV hazard rates is more significant among women with lower-educated husbands. In contrast, the effect on IPV hazard rates is small and statistically insignificant for women with high-educated husbands. This indicates that the rise in IPV hazard rates is more pronounced for the group of wives whose husbands experience more significant employment losses, namely, low-educated husbands. These findings support the idea that employment loss and resulting economic difficulties contribute to the rise in IPV.

Another possible explanation for the increased IPV rates among the wives of low-educated husbands is that women who migrated to Jordan and married there may have married men with lower educational attainment (and therefore lower employment prospects). To test this hypothesis, we conducted an analysis reducing the sample to include only women who got married before the start of the war (pre-2011). The estimation results in Online Appendix Table A5, once again, indicate a significant effect among wives of low-educated men, while we found no effect among wives of high-educated men. This finding points to the significance of the economic strain resulting from husbands' employment loss on the IPV rates among women who were already married prior to the war. It suggests that the observed impact of employment loss is disentangled from the effect of potential changes in marriage patterns resulting from migration.

4.2.2. The Effect of Changing Marriage Patterns

This section further investigates the underlying factors contributing to the observed rise in IPV. Within the sample, there are women who got married in pre-war Syria, as well as those who married in post-war Syria and after migrating to Jordan. One plausible explanation for the increase in IPV rates is that marriages formed after the war or migration to Jordan may differ from previous unions. Specifically, women who marry as refugees in Jordan might enter into marriages with higher inherent risks of violence, which can be attributed to factors such as the age at which they get married, the type of marriage, or the characteristics of their husbands. In order to mitigate potential compositional effects resulting from the evolving structure of marriages, we employed sample restrictions. Firstly, we narrowed down the sample to women who married in Syria and then further refined it to include only those who married prior to the onset of the war in Syria. As demonstrated in columns 4-6 of Table 5, excluding women who married in Jordan results in

smaller effects, implying the presence of certain compositional effects. However, when the sample is further constrained to women married before the war, as shown in columns 8-9 of Table 5, the magnitudes of the effects exhibit a slight increase. These findings suggest the possibility of mixed effects, combining both compositional factors related to changing marriage structures and other underlying influences discussed in the previous section.

Consequently, our analysis shifts towards investigating potential changes in marriage outcomes resulting from the civil war in Syria and forced migration. Using JPFHS, this time, we construct retrospective event histories for marriage.[13] In particular, we put the data into a discrete-time duration analysis format, in which each period is one age, and marriage constitutes the event of interest.[14] After transforming the data into this format, we plot the marriage hazard rates for the three periods of interest. Figure 2 shows that marriage hazard rates in Jordan are higher than the rates in pre-war Syria and also higher than those in post-war Syria. Next, using marriage hazard rates as the dependent variable, we estimated the effect of war and migration. Estimation results in Table 6 show very precise and substantial positive effects. The marriage hazard rate is significantly higher in Jordan, with an increase of 8.3 percentage points compared to prewar Syria. Similarly, in postwar Syria, the marriage hazard rate exhibits a substantial rise of 5.6 percentage points. This prompts us to inquire about the specific types of marriages that have experienced an increase and whether these are the marriages associated with higher IPV risk.

Previous studies find a strong association between the child and early marriage and increased IPV rates (Ahinkorah et al., 2022; Coll et al., 2023; Hayes & Protas, 2022; Kidman, 2017). Marrying at a young age often entails limited agency and decision-making power, leaving women with little choice but to enter into potentially violent partnerships. Furthermore, these

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[13] The Women Dataset (IR) of the JPFHS is limited to ever-married women, so we rely on the Person Dataset (PR) to obtain information about single women. However, the Person Data does not include "arrival year" data, which is essential for determining the start of refugee life. To address this issue, we use the "arrival year" of the married woman residing in the same household as a substitute, assuming that both of them arrived in Jordan in the same year. However, for 27% of single women who do not have a married woman in their household, we predict the likelihood of living in the same household with a married woman, using covariates such as age, education, wealth, and region. We then use these predictions to weight the data, thus adjusting for potential underrepresentation or overrepresentation of certain groups of women in our analysis.

[14] The event history starts at age 12, the age of the youngest marriage in the sample, for all women. The event history continues until the age of the first marriage for ever-married women and until the age of the survey year (2017-18) for never-married women. For ever-married women, the outcome variable takes the value of one at the age of marriage and zero at all other ages. For never-married women, the outcome variable is right-censored and takes the value of zero at all age values. When the data are put into the person-age structure, there are 14,584 observations for 1,786 women.

women may find themselves trapped in these marriages with limited options for seeking alternatives or leaving the abusive relationship. To examine whether a possible decrease in marriage age resulting from migration contributes to the increase in IPV, we investigate how the effects on marriage hazard rates vary across different age groups. By analyzing the effects at each age individually, the bottom panel of Figure A4 indicates statistical evidence that the marriage hazard rate in Jordan is higher than that in prewar Syria for ages 15 to 26. It is evident that not only have early-age marriages increased, but, in fact, the positive effect in percentage points appears to be even greater in marriages occurring in the 20s. In addition, considering the baseline levels given in Figure 2, we cannot conclude that the increase in relative terms (as percent changes) is concentrated specifically in early-age marriages. Therefore, in this case, we cannot make an inference that the rise in IPV is attributed to the rise in early-age marriages.

According to the literature, there are findings suggesting a lower likelihood of IPV in cousin marriages.[15] This can be attributed to the presence of stronger familial and community support systems, including mediation and conflict resolution mechanisms, which contribute to a reduced incidence of IPV.[16] If women in first-cousin marriages are protected against IPV, a potential change in the ratio of such marriages may impact the IPV hazard rates. Hence, we proceed to examine how the rates of cousin and non-cousin marriages are affected by war and refugee status. The estimation results in Table 7 – Panel A indicate that both cousin and non-cousin marriage hazard rates are higher in Jordan than in prewar Syria. However, the rise in the non-cousin marriage hazard rate in Jordan (7.4 pp) is higher than the rise in the cousin marriage hazard rate (0.8 pp). Considering that the baseline level of cousin marriages is half of the baseline level of non-cousin marriages (0.033 vs. 0.066), the rise in non-cousin marriages is higher in both percentage-point and percentage terms. Consequently, the relatively lower increase observed in the cousin marriage rate, recognized to provide protection against IPV according to the existing studies, and the favorable trend towards non-cousin marriages, associated with a relatively higher risk of violence, could potentially contribute to the rise observed in IPV hazard rates.

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[15] Campbell and Mace (2022) analyze over 16000 Jordanian women from three cohorts of the Jordan Demographic Health Surveys and find that being married to a patrilateral cousin is associated with a reduced risk of reporting IPV. In addition, Weimer (2019) finds that marriage to a first cousin is significantly and negatively correlated with domestic violence in Pakistan, Egypt, and Jordan.

[16] Hamamy and Alwan (2016) indicate that in countries with civil unrest, consanguineous marriages are preferred because close-kin marriage is regarded as safeguarding for personal and family.

Another factor associated with IPV is polygamy.[17] Therefore, a potential increase in polygamous marriages resulting from civil conflict or forced migration may contribute to a rise in IPV rates. To test this hypothesis, we further investigate changes in the prevalence of polygamous marriages. However, the estimation results in Table 7 – Panel B indicate that there is no statistically significant effect of war and refugee status on the occurrence of polygamous marriages. Nevertheless, there is a noteworthy increase observed in non-polygamous marriages. Therefore, in this case, polygamy cannot be identified as a factor that explains the observed increase in IPV.

Several studies suggest that the age and education gap between spouses is associated with a higher risk of IPV.[18] It is presumed that in cases where there is a notable discrepancy in age and education between spouses, the husband, who typically possesses greater life experience and social status, may exert more control and dominance over his wife. This power imbalance often leads to a lower bargaining power for the woman, consequently contributing to the perpetration of IPV.[19] Here, the next question arises as to whether the higher rates of IPV can be attributed to a greater power imbalance, in terms of age and educational disparities, in marriages occurring in Jordan compared to those formed in pre-war Syria.

To investigate this, we first examine how war and refugee status have impacted the prevalence of marriages with a significant age gap (where the husband is 5 or more years older than the woman) compared to marriages with a smaller age gap (where the age difference is less than 5, or the woman is older). The estimation results in Table 8 - Panel A indicate a significant increase in both high-age gap marriages (3.2 pp) and low-age gap marriages (4.8 pp) in Jordan.

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[17] Several studies, such as those conducted in Brazil (Kiss et al., 2012), Kenya (Lawoko et al., 2007), Ethiopia (Sharma et al., 2020), and Nigeria (Onuh et al., 2018) have reported that being in a polygamous relationship is a significant determinant of women's exposure to IPV. In addition, Heath et al. (2020) conducted a randomized control trial examining the effects of Mali's national cash transfer program in a West African context where approximately 40 percent of households practice polygamy. They found that the program resulted in significant reductions in IPV within polygamous households, whereas its effects were more limited in monogamous households. They suggest that the program led to notable decreases in stress and anxiety among men in polygamous households, as well as larger reductions in disputes compared to monogamous households, supporting the notion that polygamy may contribute to an increased risk of IPV.

[18] For instance, studies conducted in India (Chaurasia et al., 2021), Columbia (Jones & Ferguson, 2009), and Nigeria (Oyediran & Feyisetan, 2017) have provided evidence of a positive association between the age difference between couples and the risk of IPV. Furthermore, the study conducted by Cunradi et al. (2002) suggests that among black couples in the United States, age difference contributes to the likelihood of violence. Additionally, Bonnes (2016) found in a study conducted in Malawi that educational differences between a woman and her partner have an impact on her likelihood of experiencing intimate partner abuse.

[19] The age gap between partners can serve as a proxy for differences in life experience at the time of marriage and is associated with variations in bargaining power (Casterline et al., 1986).

However, when considering the relative terms in relation to the baseline levels (mean values presented at the bottom of the table), marriages with a high age gap increased by 57% while marriages with a low age gap increased by 112%. Thus, there is a greater increase in marriages with smaller age differences. We conducted the same analysis using a 3-year and 10-year age gap instead of 5, and the estimation results, as presented in Online Appendix Table A6, confirm the robustness of our findings.

Second, we investigate the shift in the prevalence of marriages where the husband has a higher education level compared to marriages where the husband has an equal or lower education level than his wife. The estimation results in Table 8 - Panel B indicate a significant increase in both groups. However, marriages where the husband is more educated rise by 1.2 pp (52%), while the others rise by 6.7 pp (89%) in Jordan. Thus, marriages, where the husband is not more educated than the woman, rise more in both percentage points and percent terms. These two analyses, which examine marriages based on potential changes in age and educational disparities, indicate that there is no evidence of a greater power imbalance between spouses in marriages occurring in Jordan compared to those formed in pre-war Syria. Therefore, this particular factor does not explain the increase in IPV rates in this context.

5. Conclusion

In this paper, using nationally representative microdata of Syrian refugees in Jordan, we examine how two critical junctions in refugees' life-cycle—the onset of the civil war and the arrival in Jordan—impact women's risk of IPV. Our estimation results suggest that war and forced migration increase the IPV hazard rate compared to prewar Syria.

The main contributing factor to the increased IPV rates is the deteriorating economic conditions experienced by refugee households, evident through declining asset holdings and employment rates. Furthermore, our analysis reveals that husbands with lower educational attainment, who suffer more substantial employment losses, are more likely to perpetrate IPV. This finding underscores the importance of economic distress in exacerbating IPV risk within displaced communities.

Although civil war and forced migration have led to an increase in marriage rates, we find that changes in the structure of marriages, such as age and education gaps between spouses, do not explain the rise in IPV. Similarly, there is no significant evidence linking an increase in

polygamous marriages to the observed increase in IPV rates. However, it is worth noting that the rise in non-cousin marriages may potentially contribute to the observed increase in IPV.

While our study provides valuable insights into the relationship between civil conflict, forced migration, and IPV, there may be other channels at play that we could not examine due to data limitations. Nonetheless, the findings presented here are robust and provide crucial evidence for understanding the dynamics of IPV among refugee women.

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Tables and Figures

Figure 1: Hazard Rates of Physical IPV Exposure by Years after Marriage
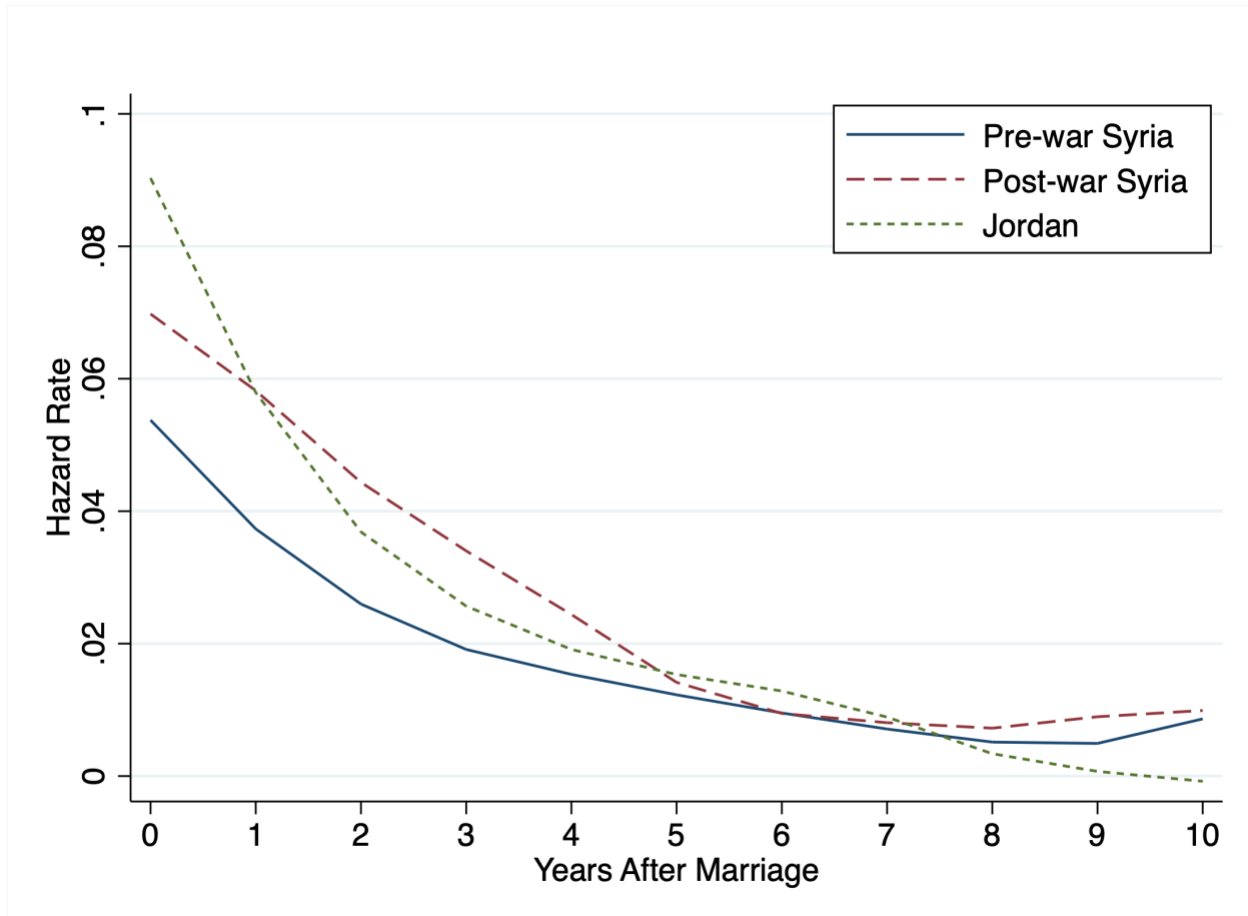
Notes: This figure illustrates the IPV exposure hazard rates for three periods: pre-war Syria, post-war Syria, and Jordan. The data come from the 2017-18 Jordan Population Family and Health Survey, Women Module (IR) - Domestic Violence Sample. The sample includes all 15- to 49-year-old ever-married Syrian women. The sample is put into a discrete-time duration analysis structure, in which each period is one year, and failure is exposure to the first physical IPV event. The event history starts at the marriage year for all women and continues until the year of the first IPV exposure for ever-exposed women and until the survey year, 2017-18, for never-exposed women. For ever-exposed women, the outcome variable takes the value of one at the year of first exposure and zero at all other years. For never-exposed women, the outcome variable is right-censored and takes the value of zero at all years.

Figure 2: Hazard Rates of Marriage by Age
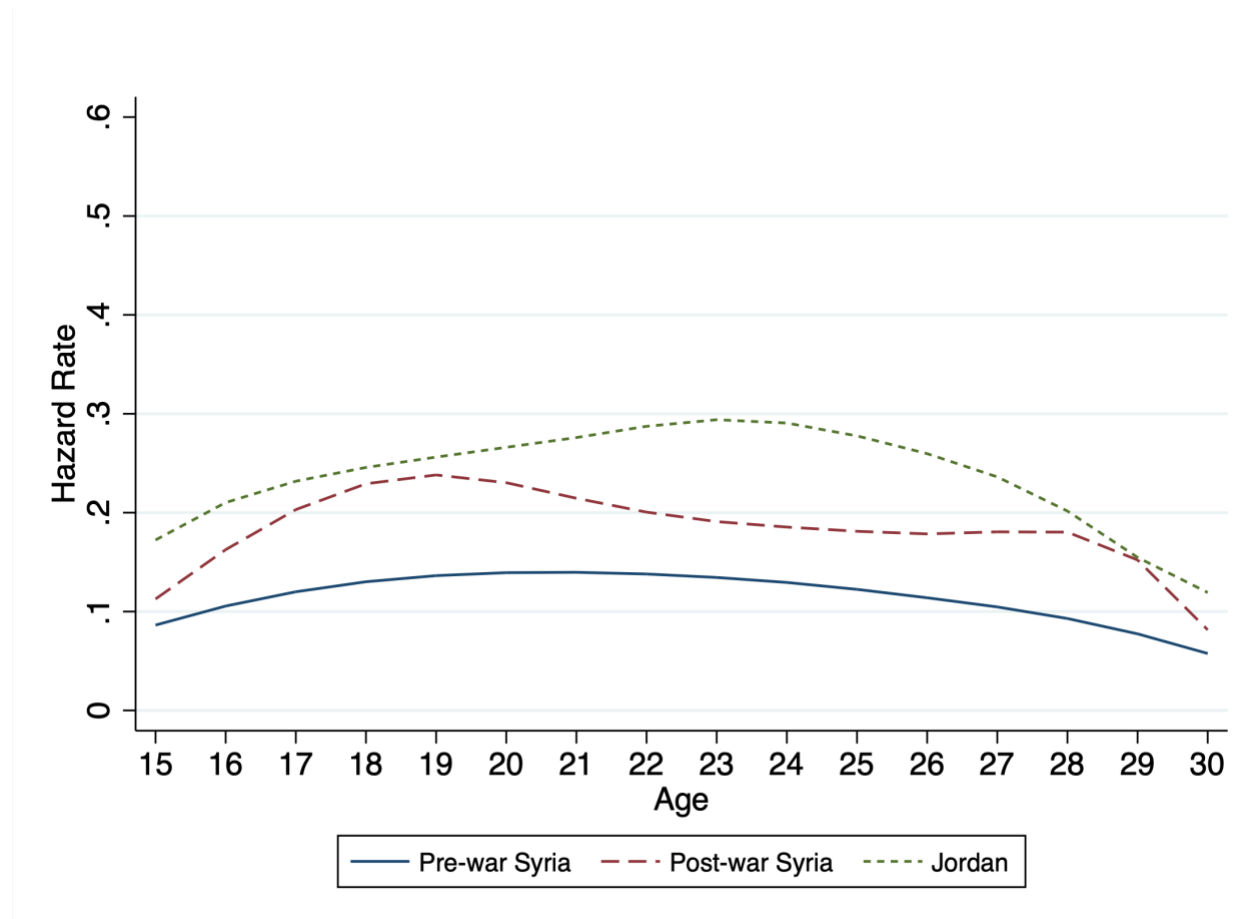
Notes: This figure illustrates the IPV marriage hazard rates for three periods: pre-war Syria, post-war Syria, and Jordan. The data come from the 2017-18 Jordan Population Family and Health Survey. The sample includes all 15- to 49-year-old Syrian women: data on ever-married women comes from Women Module (IR) and data on single women comes from person data (PR). The sample is put into a discrete-time duration analysis structure, in which each period is one age and failure is marriage. The event history starts at age 12 for all women, which is the youngest age of marriage in the data. The event history continues until the age of the first marriage for ever- married women and until the age of the survey year, 2017-2018, for never-married women. For ever-married women, the outcome variable takes the value of one at the age of marriage and zero at all other ages. For never-married women, the outcome variable is right-censored and takes the value of zero at all age values.

Table 1: The Effect of Armed Conflict and Forced Displacement on Physical IPV Hazard Rates

Variables	OLS	Logit	Comp Log-Log
in Jordan	0.005	0.378*	0.374*
	(0.003)	(0.223)	(0.219)
Post-war Syria	0.008	0.465*	0.457*
	(0.005)	(0.282)	(0.276)
Marginal Effects - in Jordan	-	0.006*	0.006*
	-	(0.004)	(0.004)
Marginal Effects - Post-war Syria	-	0.009*	0.008*
	-	(0.006)	(0.006)
Mean	0.015	0.015	0.015
Observations	7,607	7,607	7,607
Number of Women	681	681	681
R-squared	0.022	-	-

Notes: a) The data come from the 2017-18 Jordan Population Family and Health Survey, Women Module (IR) - Domestic Violence Sample. The sample includes all 15- to 49-year-old ever-married Syrian women. The sample is put into a discrete-time duration analysis structure, in which each period is one year and failure is exposure to first physical IPV event. The event history starts at marriage year for all women and continues until the year of the first IPV exposure for ever-exposed women and until the survey year, 2017-18, for never-exposed women. For ever-exposed women, the outcome variable takes the value of one at the year of first exposure and zero at all other years. For never-exposed women, the outcome variable is right-censored and takes the value of zero at all years.

b) The first column represents the result of a pooled OLS regression, while the second column represents the result of a Logit regression and the third column represents the result of a Complementary Log-Log regression. The estimates for the two key variables of interest, Jordan and post-war Syria, are provided. The baseline category is pre-war Syria. All regressions include the following control variables: dummies for years after marriage, dummies for marriage age categories, type of place of residence ([i] urban, [ii] rural), region of place of residence ([i] north, [ii] central, [iii] south). The standard errors are clustered at the individual level. * indicates significance at 10%, ** significance at 5%; and *** significance at 1%.

Table 2: The Effect of Years Spent in Jordan on Physical IPV Hazard Rates

Variables	OLS	Logit	Comp Log-Log
in Jordan	0.013**	0.974***	0.955***
	(0.006)	(0.336)	(0.329)
in Jordan # Years in Jordan	-0.003**	-0.225**	-0.220**
	(0.001)	(0.106)	(0.104)
Post-war Syria	0.008	0.474*	0.467*
	(0.005)	(0.282)	(0.276)
Marginal Effects - in Jordan	-	0.018***	0.019***
	-	0.009	0.009
Marginal Effects - Post-war Syria	-	0.009*	0.009*
	-	0.006	0.006
Mean	0.015	0.015	0.015
Observations	7,607	7,607	7,607
Number of Women	681	681	681
R-squared	0.023	-	-

Notes: a) The data come from the 2017-18 Jordan Population Family and Health Survey, Women Module (IR) - Domestic Violence Sample. The sample includes all 15- to 49-year-old ever-married Syrian women. The sample is put into a discrete-time duration analysis structure, in which each period is one year and failure is exposure to first physical IPV event. The event history starts at marriage year for all women and continues until the year of the first IPV exposure for ever-exposed women and until the survey year, 2017-18, for never-exposed women. For ever-exposed women, the outcome variable takes the value of one at the year of first exposure and zero at all other years. For never-exposed women, the outcome variable is right-censored and takes the value of zero at all years.

b) The first column represents the result of a pooled OLS regression, while the second column represents the result of a Logit regression and the third column represents the result of a Complementary Log-Log regression. The estimates for the two key variables of interest (Jordan, post-war Syria) and an interaction term of Jordan and number of years in Jordan, are provided. The baseline category is pre-war Syria. All regressions include the following control variables: dummies for years after marriage, dummies for marriage age categories, type of place of residence ([i] urban, [ii] rural), region of place of residence ([i] north, [ii] central, [iii] south). The standard errors are clustered at the individual level. * indicates significance at 10%, ** significance at 5%; and *** significance at 1%.

Table 3: Employment Outcomes and Asset Holdings in Prewar Syria and Jordan

	Pre-war Syria	Jordan
A) Employment Levels		
Married Men (aged 18-59)	0.932	0.705
Married Women (aged 18-49)	0.163	0.030
B) Asset Holdings		
Has Car	0,17	0,08
Has Washing Machine	0,95	0,92
Has Airconditioner	0,16	0,07
Has Computer	0,22	0,13
Has Refrigerator	0,94	0,93
Has Satellite	0,98	0,96

Notes: Pre-war Syria for employment comes from 2009 - SFHS data. Jordan data for employment comes from the 2017-18 Jordan Population Family and Health Survey. Pre-war data for washing machine and satellite comes from 2006 - SMICS data, while the pre-war data for other items comes from 2009 - SFHS data. In Jordan data for asset holdings is from 2017-18 Jordan Population Family and Health Survey. Household sampling weights are used. The pre-war data are weighted by the fraction of Syrians in Jordan who originated from each of 14 provinces in Syria.

Table 4: The Effect on Physical IPV Rates by Husband's Educational Attainment

A) Husbands' Employment Outcomes by Educational Attainment

Age	Husbands with Low Educational Attainment			Husbands with High Educational Attainment		
	Pre-war Syria	Jordan	*Loss*	Pre-war Syria	Jordan	*Loss*
20-24	0,91	0,56	*38%*	0,87	0,79	*9%*
25-29	0,95	0,77	*19%*	0,94	0,85	*9%*
30-34	0,97	0,77	*20%*	0,97	0,85	*13%*
35-39	0,97	0,69	*29%*	0,97	0,84	*13%*
40-44	0,92	0,53	*42%*	0,96	0,67	*30%*
45-54	0,83	0,47	*44%*	0,86	0,60	*31%*

B) Estimation Results by Husband's Educational Attainment

Variables	Husbands with Low Educational Attainment			Husbands with High Educational Attainment		
	OLS	Logit	C. Log-Log	OLS	Logit	C. Log-Log
in Jordan	0.013**	0.879***	0.856***	0.001	0.035	0.039
	(0.006)	(0.338)	(0.328)	(0.004)	(0.294)	(0.291)
Post-war Syria	0.016*	0.744*	0.708*	0.003	0.118	0.116
	(0.009)	(0.432)	(0.422)	(0.006)	(0.389)	(0.382)
Marginal Effects - in Jordan	-	0.018	0.018	-	0.001	0.001
	-	(0.008)	(0.008)	-	(0.004)	(0.004)
Marginal Effects - Post-war Syria	-	0.016	0.015	-	0.002	0.002
	-	(0.011)	(0.012)	-	(0.006)	(0.006)
Mean	0.018	0.018	0.018	0.015	0.015	0.015
Observations	2,799	2,799	2,799	4,808	4,808	4,808
Number of Women	253	253	253	428	428	428
R-squared	0.028	-	-	0.017	-	-

Notes: Low educational attainment refers to individuals who have completed primary school education or less, while high educational attainment refers to individuals who have completed secondary school education or above. In panel (A), pre-war Syria data comes from 2009 - SFHS and Jordan data comes from 2017-18 JPFHS. Sample is restricted to ever-married sample of males. Sampling weights are used. In the pre-war Syria data, province-specific averages are weighted by the fraction of Syrians in Jordan who originated from each of the 14 provinces in Syria. In panel (B), the data come from the 2017-18 JPFHS. The data structure, dependent variable and other control variables are the same as those in Table 1. The only difference is that, in order to avoid low observation counts in small groups in logistic regressions, instead of adding dummies for years after marriage, years and squared-years are controlled. The regressions in columns 1-3 include the women who have low educated husbands (completed primary school education or less) and the regressions in columns 4-6 include the women who have high educated husbands (completed secondary school education or above).

Table 5: The Effect on Subsamples - Eliminating Compositional Effects

Variables	All Women			Women Married in Syria			Women Married Before 2011		
	OLS	Logit	C. Log-Log	OLS	Logit	C. Log-Log	OLS	Logit	C. Log-Log
in Jordan	0.005	0.378*	0.374*	0.002	0.225	0.222	0.003	0.526	0.523
	(0.003)	(0.223)	(0.219)	(0.003)	(0.311)	(0.307)	(0.003)	(0.421)	(0.416)
Post-war Syria	0.008	0.465*	0.457*	0.008	0.460	0.452	0.008	0.666*	0.658*
	(0.005)	(0.282)	(0.276)	(0.005)	(0.284)	(0.279)	(0.005)	(0.358)	(0.351)
Marg. Ef. - in Jordan	-	0.006*	0.006*	-	0.003	0.003	-	0.008	0.008
	-	(0.004)	(0.004)	-	(0.005)	(0.005)	-	(0.008)	(0.008)
Marg. Ef. - Post-war Syria	-	0.009*	0.008*	-	0.007	0.007	-	0.011*	0.011*
	-	(0.006)	(0.006)	-	(0.005)	(0.005)	-	(0.007)	(0.008)
Mean	0.015	0.015	0.015	0.014	0.014	0.014	0.013	0.013	0.013
Observations	7,607	7,607	7,607	7,186	7,186	7,186	6,748	6,748	6,748
Number of Women	681	681	681	544	544	544	462	462	462
R-squared	0.022	-	-	0.019	-	-	0.019	-	-

Notes: The data come from the 2017-18 JPFHS. The data structure, dependent variable and other control variables are the same as those in Table 1. The first panel includes all Syrian refugee women in ages 15-49, the second panel includes Syrian refugee women who were married in Syria (before they migrated) and the third panel includes Syrian refugee women who were married before civil war starts (before 2011).

Table 6: The Effect of Armed Conflict and Forced Displacement on Marriage Hazard Rates

Variables	OLS	Logit	Comp Log-Log
in Jordan	0.083***	0.818***	0.752***
	(0.008)	(0.076)	(0.069)
Post-war Syria	0.056***	0.610***	0.565***
	(0.010)	(0.101)	(0.091)
Marginal Effects - in Jordan	-	0.083***	0.084***
	-	(0.009)	(0.009)
Marginal Effects - Post-war Syria	-	0.061***	0.063***
	-	(0.012)	(0.012)
Mean	0.099	0.099	0.099
Observations	14,584	14,584	14,584
Number of Women	1,786	1,786	1,786
R-squared	0.055	-	-

Notes: a) The data come from the 2017-18 Jordan Population Family and Health Survey. The sample includes all 15- to 49-year-old Syrian women. The sample is put into a discrete-time duration analysis structure, in which each period is one age and failure is marriage. The event history starts at age 12 for all women, which is the youngest age of marriage in the data. The event history continues until the age of the first marriage for ever- married women and until the age of the survey year, 2017 or 2018, for never-married women. For ever-married women, the outcome variable takes the value of one at the age of marriage and zero at all other ages. For never-married women, the outcome variable is right-censored and takes the value of zero at all age values.

b) The first column represents the result of a pooled OLS regression, while the second column represents the result of a Logit regression and the third column represents the result of a Complementary Log-Log regression. The estimates for the two key variables of interest, Jordan and post-war Syria, are provided. The baseline category is pre-war Syria. All regressions include the following control variables: age dummies, type of place of residence ([i] urban, [ii] rural), region of place of residence ([i] north, [ii] central, [iii] south). The standard errors are clustered at the individual level. * indicates significance at 10%, ** significance at 5%; and *** significance at 1%.

Table 7: The Effect on Marriage Patterns: Cousin and Polygamous Marriage

A) Change in Marriage Patterns in Terms of Cousin Marriages

Variables	Cousin Marriages			Non-cousin Marriages		
	OLS	Logit	C. Log-Log	OLS	Logit	C. Log-Log
in Jordan	0.008*	0.225*	0.219*	0.074***	1.003***	0.946***
	(0.005)	(0.126)	(0.123)	(0.007)	(0.084)	(0.078)
Post-war Syria	0.014**	0.398**	0.389**	0.042***	0.655***	0.620***
	(0.006)	(0.161)	(0.156)	(0.009)	(0.118)	(0.110)
Marg. Ef. - in Jordan	-	0.008*	0.008*	-	0.076***	0.077***
	-	(0.005)	(0.005)	-	(0.008)	(0.008)
Marg. Ef. - Post-war Syria	-	0.015**	0.015**	-	0.047***	0.049***
	-	(0.007)	(0.007)	-	(0.010)	(0.010)
Mean	0.033	0.033	0.033	0.066	0.066	0.066
Observations	14,584	14,584	14,584	14,584	14,584	14,584
Number of Women	1,786	1,786	1,786	1,786	1,786	1,786
R-squared	0.014	-	-	0.043	-	-

B) Change in Marriage Patterns in Terms of Polygamy

Variables	Polygamous Marriages			Non-polygamous Marriages		
	OLS	Logit	C. Log-Log	OLS	Logit	C. Log-Log
in Jordan	0.000	0.071	0.072	0.080***	0.836***	0.772***
	(0.002)	(0.303)	(0.301)	(0.008)	(0.078)	(0.071)
Post-war Syria	-0.002	-0.461	-0.457	0.055***	0.629***	0.583***
	(0.002)	(0.520)	(0.520)	(0.010)	(0.103)	(0.094)
Marg. Ef. - in Jordan	-	0.000	0.000	-	0.081***	0.082***
	-	(0.002)	(0.002)	-	(0.009)	(0.009)
Marg. Ef. - Post-war Syria	-	-0.002	-0.002	-	0.060***	0.062***
	-	(0.002)	(0.002)	-	(0.011)	(0.012)
Mean	0.005	0.005	0.005	0.093	0.093	0.093
Observations	13,611	13,611	13,611	13,611	13,611	13,611
Number of Women	1,682	1,682	1,682	1,682	1,682	1,682
R-squared	0.006	-	-	0.054	-	-

Notes: a) The data come from the 2017-18 Jordan Population Family and Health Survey. The sample includes all 15- to 49-year-old Syrian women. The sample is put into a discrete-time duration analysis structure, in which each period is one age and failure is marriage. The event history starts at age 12 for all women, which is the youngest age of marriage in the data. The event history continues until the age of the first marriage for ever- married women and until the age of the survey year, 2017 or 2018, for never-married women. In columns 1-3 of Panel A, the outcome variable takes a value of one at the age of marriage only if the woman has married her first-degree cousin. In columns 4-6 of Panel A, the outcome variable takes a value of one at the age of marriage only if the woman has married a man who is not her first-degree cousin. In columns 1-3 of Panel B, the outcome variable takes a value of one at the age of marriage only if the woman has any co-wife. In columns 4-6 of Panel B, the outcome variable takes a value of one at the age of marriage only if the woman is the only wife of her husband. For never-married women, the outcome variable is right-censored and takes the value of zero at all age values.

b) The first column represents the result of a pooled OLS regression, while the second column represents the result of a Logit regression and the third column represents the result of a Complementary Log-Log regression. The estimates for the two key variables of interest, Jordan and post-war Syria, are provided. The baseline category is pre-war Syria. All regressions include the following control variables: age dummies, type of place of residence ([i] urban, [ii] rural), region of place of residence ([i] north, [ii] central, [iii] south). The standard errors are clustered at the individual level. * indicates significance at 10%, ** significance at 5%; and *** significance at 1%.

Table 8: The Effect on Marriage Patterns: Age and Education Difference Between Spouses

A) Change in Marriage Patterns in Terms of Age Gap Between Spouses

Variables	Marriages to Men 5 or More Years Older Than the Woman			Marriages to Men Less Than 5 Years Older Than the Woman		
	OLS	Logit	C. Log-Log	OLS	Logit	C. Log-Log
in Jordan	0.032***	0.525***	0.501***	0.048***	1.011***	0.956***
	(0.006)	(0.094)	(0.090)	(0.006)	(0.108)	(0.102)
Post-war Syria	0.020**	0.355***	0.340***	0.033***	0.780***	0.745***
	(0.008)	(0.129)	(0.123)	(0.007)	(0.147)	(0.140)
Marg. Ef. - in Jordan	-	0.031***	0.031***	-	0.052***	0.052***
	-	(0.006)	(0.006)	-	(0.007)	(0.007)
Marg. Ef. - Post-war Syria	-	0.021***	0.021***	-	0.040***	0.041***
	-	(0.008)	(0.008)	-	(0.009)	(0.010)
Mean	0.056	0.056	0.056	0.043	0.043	0.043
Observations	13,624	13,624	13,624	13,624	13,624	13,624
Number of Women	1,684	1,684	1,684	1,684	1,684	1,684
R-squared	0.028	-	-	0.045	-	-

B) Change in Marriage Patterns in Terms of Education Gap Between Spouses

Variables	Marriages to Men with Higher Education Than the Woman			Marriages to Men with Equal or Lower Education Than the Woman		
	OLS	Logit	C. Log-Log	OLS	Logit	C. Log-Log
in Jordan	0.012***	0.479***	0.471***	0.067***	0.833***	0.779***
	(0.004)	(0.139)	(0.136)	(0.007)	(0.085)	(0.078)
Post-war Syria	0.012**	0.478***	0.469***	0.040***	0.562***	0.531***
	(0.005)	(0.186)	(0.182)	(0.009)	(0.115)	(0.107)
Marg. Ef. - in Jordan	-	0.013***	0.013***	-	0.012***	0.013***
	-	(0.004)	(0.004)	-	(0.004)	(0.004)
Marg. Ef. - Post-war Syria	-	0.013***	0.013***	-	0.013***	0.013***
	-	(0.006)	(0.006)	-	(0.006)	(0.006)
Mean	0.023	0.023	0.023	0.075	0.075	0.075
Observations	13,610	13,610	13,610	13,610	13,610	13,610
	1,683	1,683	1,683	1,683	1,683	1,683
R-squared	0.011	-	-	0.045	-	-

Notes: a) The data come from the 2017-18 Jordan Population Family and Health Survey. The sample includes all 15- to 49-year-old Syrian women. The sample is put into a discrete-time duration analysis structure, in which each period is one age and failure is marriage. The event history starts at age 12 for all women, which is the youngest age of marriage in the data. The event history continues until the age of the first marriage for ever- married women and until the age of the survey year, 2017 or 2018, for never-married women. In columns 1-3 of Panel A, the outcome variable takes a value of one at the age of marriage only if the woman has married a man who is more educated than her. In columns 4-6 of Panel A, the outcome variable takes a value of one at the age of marriage only if the woman has married someone who has an equal level of education or is less educated than her. In columns 1-3 of Panel B, the outcome variable takes a value of one at the age of marriage only if the woman has married a man who is more educated than her. In columns 4-6 of Panel B, the outcome variable takes a value of one at the age of marriage only if the woman has married someone who has an equal level of education or is less educated than her. For never-married women, the outcome variable is right-censored and takes the value of zero at all age values.
b) The first column represents the result of a pooled OLS regression, while the second column represents the result of a Logit regression and the third column represents the result of a Complementary Log-Log regression. The estimates for the two key variables of interest, Jordan and post-war Syria, are provided. The baseline category is pre-war Syria. All regressions include the following control variables: age dummies, type of place of residence ([i] urban, [ii] rural), region of place of residence ([i] north, [ii] central, [iii] south). The standard errors are clustered at the individual level. * indicates significance at 10%, ** significance at 5%; and *** significance at 1%.

Online Appendix

Figure A1: Distribution of Years Between Marriage and The First Physical IPV Exposure
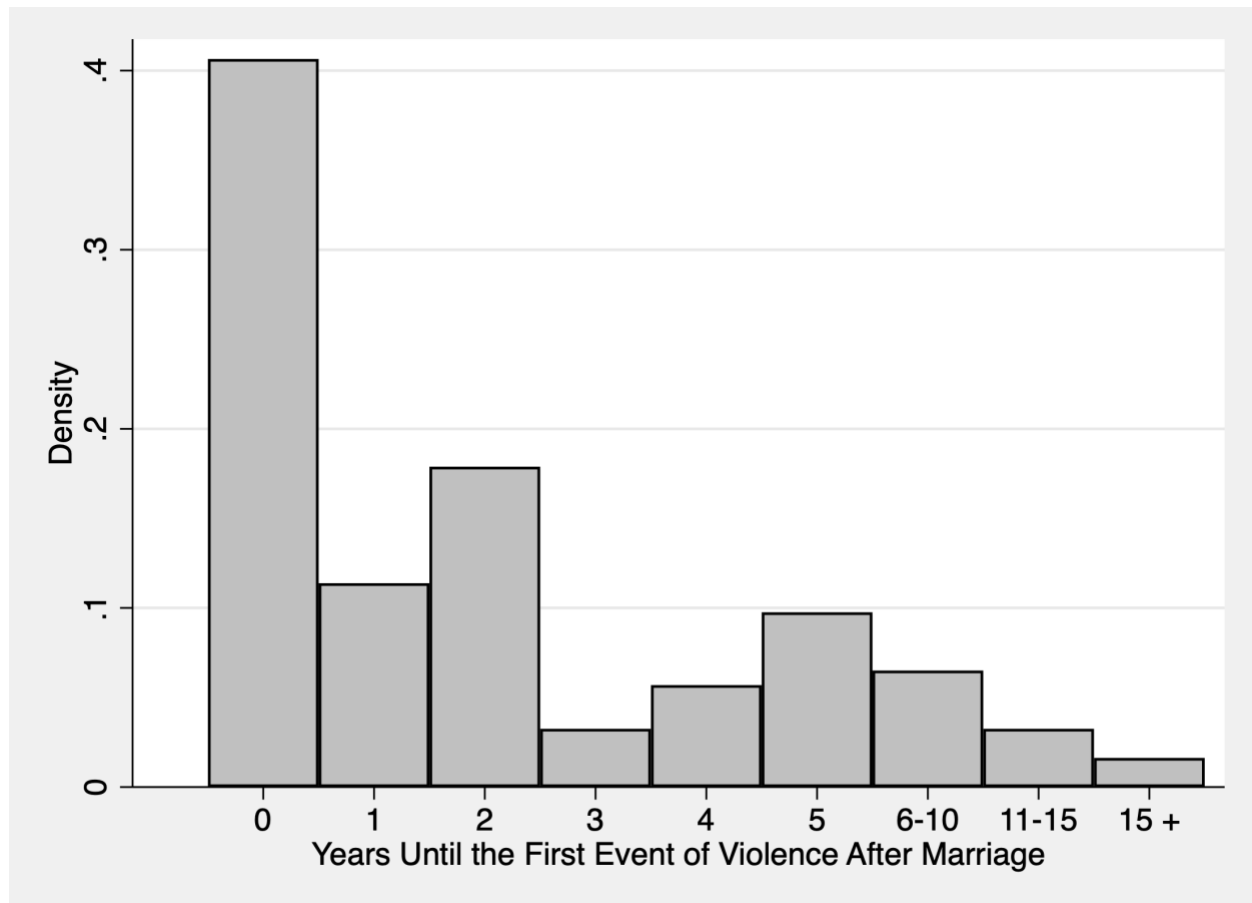
Notes: The data come from the 2017-18 Jordan Population Family and Health Survey, Women Module (IR) - Domestic Violence Sample.

Figure A2: Differences in predicted exposure hazard rates by years after marriage
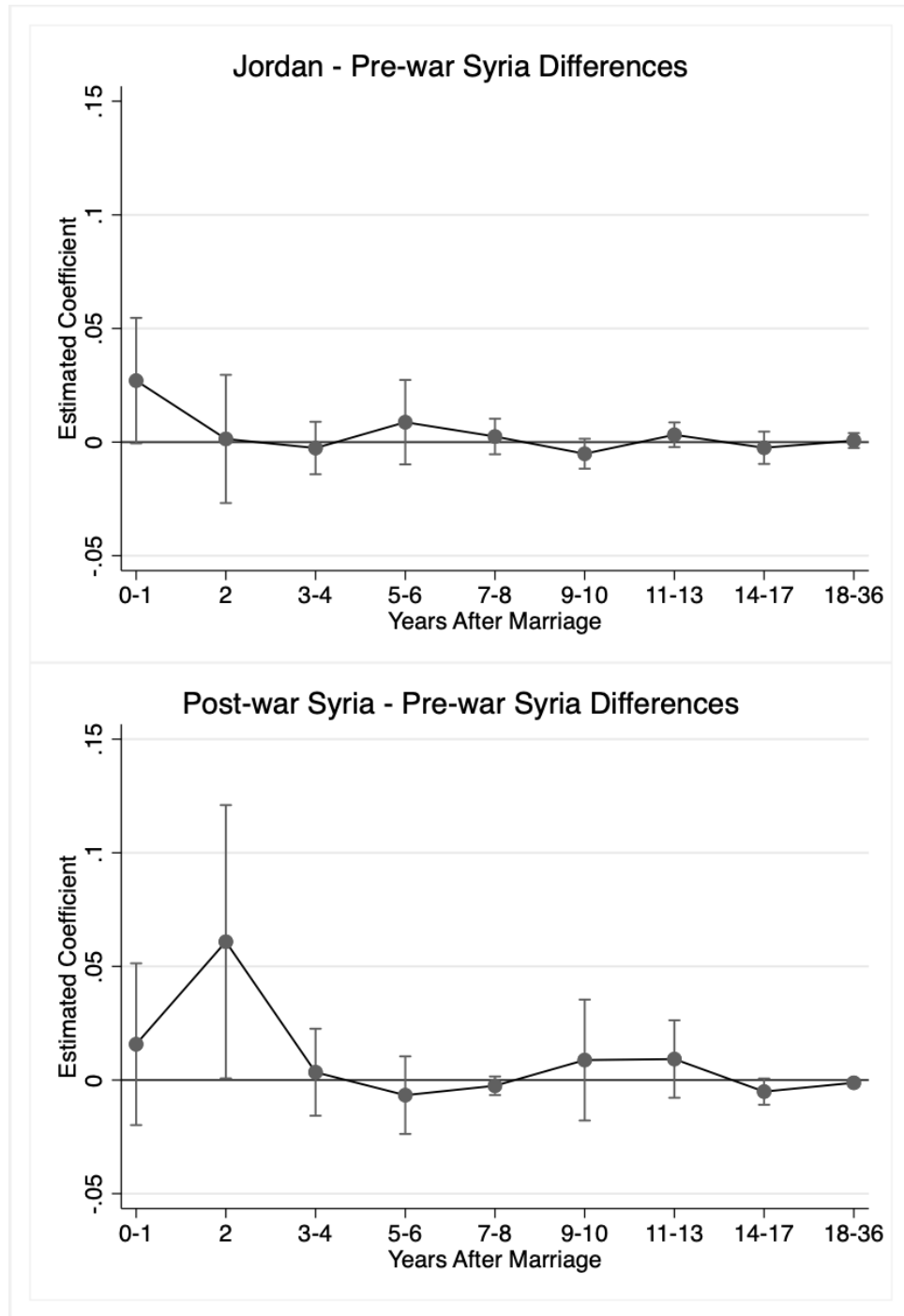
Notes: The data structure is the same as that in Table 1. The upper panel presents the coefficients of the interactions of the "in Jordan" dummy variable with dummies for years after marriage and the lower panel shows the coefficients of the interactions of the "postwar Syria" dummy variable with dummies for years after marriage (where the baseline control is "prewar Syria") in an OLS regression. The dependent variable and other control variables are the same as those in Table 1. The 90% confidence intervals are provided.

Figure A3: Wealth Comparison of Jordanians and Syrian Refugees based on 2017-18 JPFHS
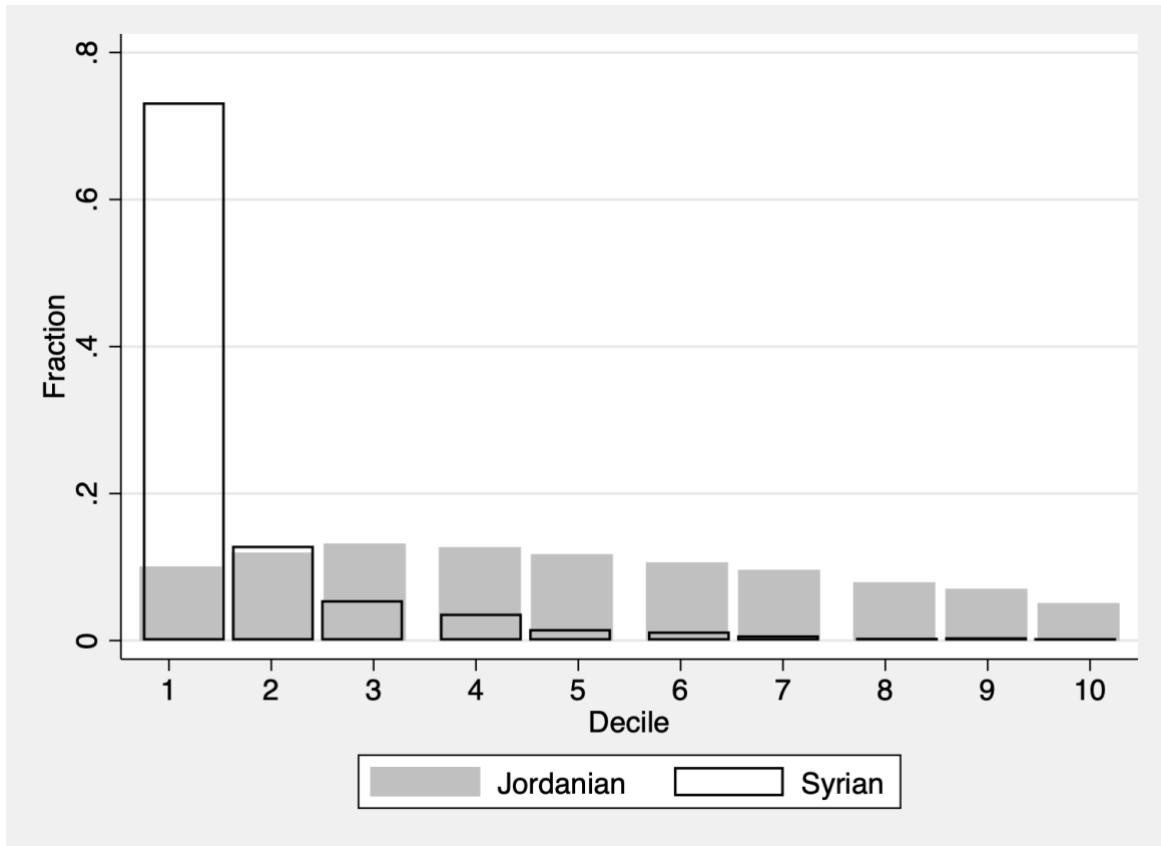
Notes: The data come from the 2017-18 Jordan Population Family and Health Survey. This figure depicts the wealth distribution of Jordanian vs. Syrian households. Data includes a variable "wealth score": Households are given scores based on the number and kinds of consumer goods they own, ranging from a television to a bicycle or car, and housing characteristics such as source of drinking water, toilet facilities, and flooring materials. These scores are derived using principal component analysis. We compile wealth deciles by assigning the household score to each household member, ranking each person by his score, and then dividing the distribution into ten equal categories, each comprising 10% of the population.

Figure A4: Differences in Predicted Marriage Hazard Rates by Age

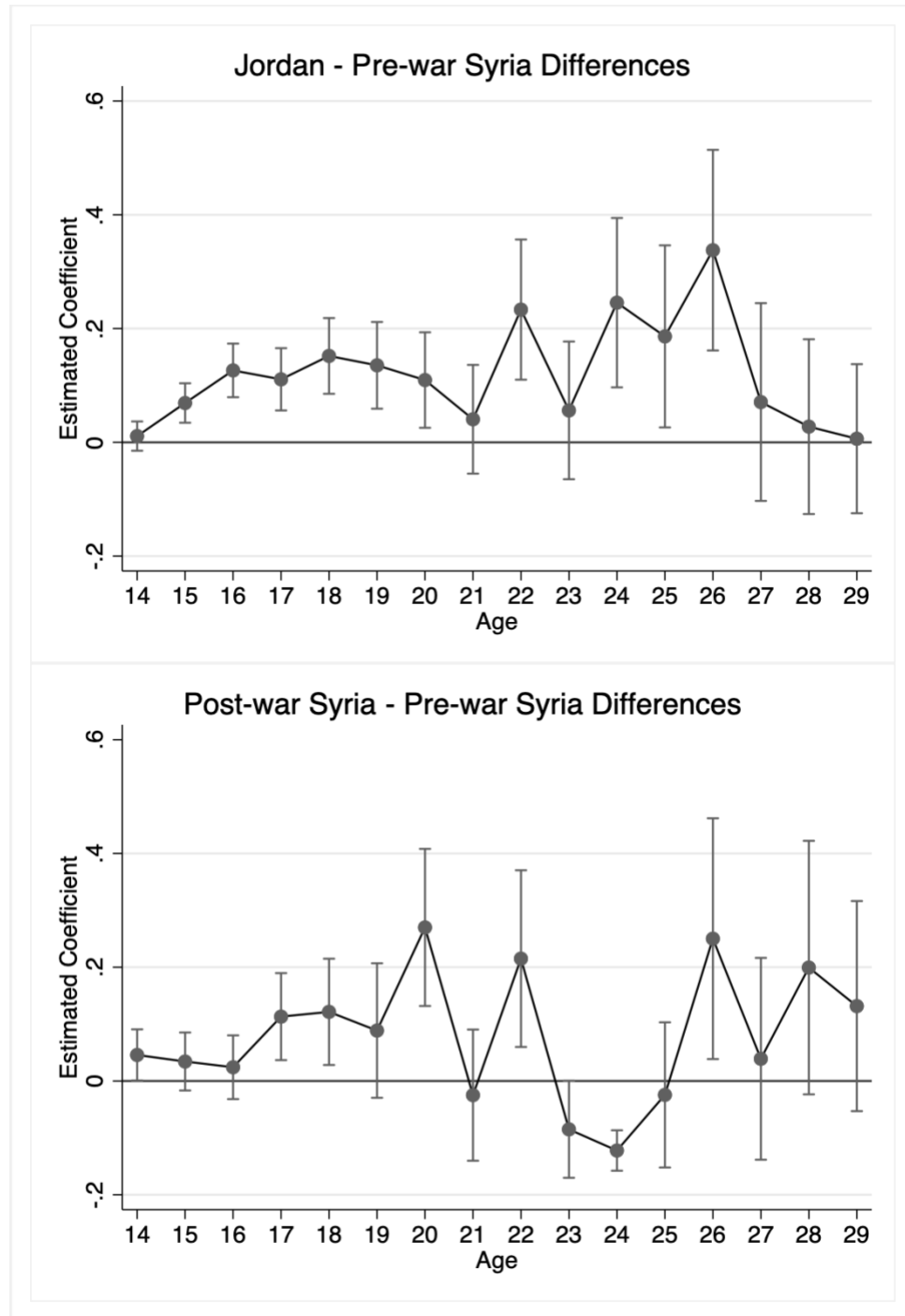Notes: The data structure, the dependent variable and other control variables are the same as that in Table 6. The upper panel presents the coefficients of the interactions of the "in Jordan" dummy variable with age dummies and the lower panel shows the coefficients of the interactions of the "postwar Syria" dummy variable with age dummies (where the baseline control is "prewar Syria") in an OLS regression. The 90% confidence intervals are provided.

Table A1: Prevalence of Selected Outcomes by Exposure to Physical Violence

Variables	Women Not Exposed to Physical IPV	Women Ever Exposed to Physical IPV	p-value of t-test
Other Violence Outcomes			
Experienced any control behavior (any of following 5)	0,75	0,94	0,00
Husband jealous if respondent talks with other men	0,73	0,87	0,00
Husband accuses respondent of unfaithfulness	0,03	0,15	0,00
Husband does not permit respondent to meet female friends	0,08	0,33	0,00
Husband tries to limit respondent's contact with family	0,06	0,27	0,00
Husband insists on knowing where respondent is	0,27	0,67	0,00
Experienced any emotional violence (any of following 3)	0,08	0,69	0,00
Ever been humiliated by husband	0,05	0,49	0,00
Ever been threatened with harm by husband	0,00	0,17	0,00
Ever been insulted or made to feel bad by husband	0,05	0,59	0,00
Beating Justified Under Certain Circumstances			
Beating justified if wife goes out without telling husband	0,13	0,18	0,12
Beating justified if wife neglects the children	0,12	0,20	0,02
Beating justified if wife argues with husband	0,11	0,17	0,05
Beating justified if wife burns the food	0,03	0,07	0,05
Beating justified if wife insults	0,30	0,48	0,00
Beating justified if wife disobeys	0,20	0,31	0,01
Beating justified if wife has relations with another man	0,62	0,70	0,11
Decision Making: Contributes to the Decision			
Women can decide on her health care	0,87	0,81	0,18
Women can decide on large household purchases	0,72	0,60	0,01
Women can decide on visits to family or relatives	0,81	0,76	0,25
Women can decide on what to do with money husband earns	0,68	0,56	0,03

Notes: The data come from the 2017-18 Jordan Population Family and Health Survey, Women Module (IR) - Domestic Violence Sample. Two samples t-test p-values are reported.

Table A2: An Illustration of the Data Structure

Woman ID	Survey Age	Marriage Age	Age of First Exposure	Arrival Year	Age	Time	Year	Exposed	Post-war Syria	In Jordan
111111	32	25	30	2013	25	0	2010	0	0	0
111111	32	25	30	2013	26	1	2011	0	1	0
111111	32	25	30	2013	27	2	2012	0	1	0
111111	32	25	30	2013	28	3	2013	0	0	1
111111	32	25	30	2013	29	4	2014	0	0	1
111111	32	25	30	2013	30	5	2015	1	0	1
222222	32	24	26	2013	24	0	2009	0	0	0
222222	32	24	26	2013	25	1	2010	0	0	0
222222	32	24	26	2013	26	2	2011	1	1	0

Notes: The table provides two examples of women in our sample. Both women are born in 1985 and arrive in Jordan in 2013. However, the first woman is married at age 25 and first exposed to IPV at age 30 (in 2015), after she arrives in Jordan; whereas the second woman gets married at age 24 and first exposed to IPV at age 26, in post-war Syria, 2011.

Table A3: Robustness Check with Younger Sample - Survey Age Restricted to 30

Variables	Survey Age < 50			Surveyage <= 30		
	OLS	Logit	C. Log-Log	OLS	Logit	C. Log-Log
in Jordan	0.005	0.378*	0.374*	0.023**	0.804**	0.794**
	(0.003)	(0.223)	(0.219)	(0.011)	(0.394)	(0.386)
Post-war Syria	0.008	0.465*	0.457*	0.019*	0.656	0.645
	(0.005)	(0.282)	(0.276)	(0.011)	(0.459)	(0.449)
Marg. Ef. - in Jordan	-	0.006*	0.006*	-	0.018**	0.019**
	-	(0.004)	(0.004)	-	(0.010)	(0.010)
Marg. Ef. - Post-war Syria	-	0.009*	0.008*	-	0.017	0.017
	-	(0.006)	(0.006)	-	(0.014)	(0.015)
Mean	0.015	0.015	0.015	0.023	0.023	0.023
Observations	7,607	7,607	7,607	2,031	2,031	2,031
Number of Women	681	681	681	323	323	323
R-squared	0.022	-	-	0.026	-	-

Notes: The data come from the 2017-18 JPFHS. The data structure, dependent variable and other control variables are the same as those in Table 1. The only difference is that, in order to avoid low observation counts in small groups in logistic regressions, instead of adding dummies for years after marriage, years and squared-years are controlled. The regressions in the left panel include the women younger than 50 in the survey year (whole sample), while the regressions in the right panel include the women younger than 30 in the survey year.

Table A4: Robustness Check - Eliminating the Recall Bias

Variables	Last 30 Years			Last 10 Years		
	OLS	Logit	C. Log-Log	OLS	Logit	C. Log-Log
in Jordan	0.005	0.378*	0.374*	0.006*	0.483*	0.476*
	(0.003)	(0.223)	(0.219)	(0.004)	(0.285)	(0.280)
Post-war Syria	0.008	0.465*	0.457*	0.009*	0.574*	0.563*
	(0.005)	(0.282)	(0.276)	(0.006)	(0.337)	(0.330)
Marg. Ef. - in Jordan	-	0.006*	0.006*	-	0.007*	0.007*
	-	(0.004)	(0.004)	-	(0.004)	(0.004)
Marg. Ef. - Post-war Syria	-	0.009*	0.008*	-	0.009*	0.009*
	-	(0.006)	(0.006)	-	(0.006)	(0.006)
Mean	0.015	0.015	0.015	0.014	0.014	0.014
Observations	7,607	7,607	7,607	5,305	5,305	5,305
Number of Women	681	681	681	635	635	635
R-squared	0.022	-	-	0.027	-	-

Notes: The data come from the 2017-18 JPFHS. The data structure, dependent variable and other control variables are the same as those in Table 1. The only difference is that, in order to avoid low observation counts in small groups in logistic regressions, instead of adding dummies for years after marriage, years and squared-years are controlled. The regressions in the left panel include the observations from events that occurred up to thirty years prior to the survey year (after 1986), while the regressions in the right panel include the observations from events that occurred up to ten years prior to the survey year (after 2006).

Table A5: The Effect on IPV by Husband's Educational Attainment – Robustness Check using Women Married Before the War

Estimation Results by Husband's Educational Attainment

Variables	Husbands with Low Educational			Husbands with High Educational		
	OLS	Logit	C. Log-Log	OLS	Logit	C. Log-Log
in Jordan	0.008*	1.362*	1.339*	0.001	0.255	0.256
	(0.005)	(0.737)	(0.718)	(0.003)	(0.528)	(0.526)
Post-war Syria	0.014	1.373***	1.342***	0.003	0.335	0.334
	(0.009)	(0.508)	(0.490)	(0.006)	(0.520)	(0.514)
Marg. Ef. - in Jordan	-	0.029	0.030	-	0.004	0.004
	-	(0.024)	(0.026)	-	(0.008)	(0.008)
Marg. Ef. - Post-war Syria	-	0.029	0.029	-	0.005	0.005
	-	(0.016)	(0.017)	-	(0.009)	(0.009)
Mean	0.013	0.013	0.013	0.013	0.013	0.013
Observations	2,481	2,481	2,481	4,267	4,267	4,267
Number of Women	173	173	173	289	289	289
R-squared	0.021	-	-	0.016	-	-

Notes: The data comes from the 2017-18 JPFHS. The sample is restricted to women who married before 2011. The data structure, dependent variable and other control variables are the same as those in Table 1. The only difference is that, in order to avoid low observation counts in small groups in logistic regressions, instead of adding dummies for years after marriage, years and squared-years are controlled. The regressions in columns 1-3 include the women who have low educated husbands (completed primary school education or less) and the regressions in columns 4-6 include the women who have high educated husbands (completed secondary school education or above).

Table A6: Robustness Check - Change in Age Differences

A) Age Difference: 3

Variables	Marriages to Men 3 or More Years Older Than the Woman			Marriages to Men Less Than 3 Years Older Than the Woman		
	OLS	Logit	C. Log-Log	OLS	Logit	C. Log-Log
in Jordan	0.056***	0.695***	0.651***	0.024***	0.932***	0.901***
	(0.007)	(0.082)	(0.076)	(0.004)	(0.143)	(0.138)
Post-war Syria	0.032***	0.449***	0.422***	0.021***	0.827***	0.797***
	(0.009)	(0.115)	(0.108)	(0.006)	(0.186)	(0.178)
Marg. Ef. - in Jordan	-	0.055***	0.055***	-	0.028***	0.028***
	-	(0.007)	(0.007)	-	(0.005)	(0.005)
Marg. Ef. - Post-war Syria	-	0.034***	0.035***	-	0.025***	0.026***
	-	(0.010)	(0.010)	-	(0.007)	(0.008)
Mean	0.074	0.074	0.074	0.024	0.024	0.024
Observations	13,624	13,624	13,624	13,624	13,624	13,624
Number of Women	1,684	1,684	1,684	1,684	1,684	1,684
R-squared	0.040	-	-	0.039	-	-

B) Age Difference: 10

Variables	Marriages to Men 10 or More Years Older Than the Woman			Marriages to Men Less Than 10 Years Older Than the Woman		
	OLS	Logit	C. Log-Log	OLS	Logit	C. Log-Log
in Jordan	0.009**	0.476***	0.470***	0.071***	0.829***	0.769***
	(0.004)	(0.163)	(0.161)	(0.008)	(0.083)	(0.076)
Post-war Syria	0.010**	0.515**	0.507**	0.043***	0.558***	0.526***
	(0.005)	(0.213)	(0.210)	(0.009)	(0.111)	(0.103)
Marg. Ef. - in Jordan	-	0.009 ***	0.009***	-	0.072***	0.072***
	-	(0.004)	(0.004)	-	(0.008)	(0.008)
Marg. Ef. - Post-war Syria	-	0.010**	0.010**	-	0.047***	0.048***
	-	(0.005)	(0.005)	-	(0.011)	(0.011)
Mean	0.017	0.017	0.017	0.082	0.082	0.082
Observations	13,624	13,624	13,624	13,624	13,624	13,624
Number of Women	1,684	1,684	1,684	1,684	1,684	1,684
R-squared	0.007	-	-	0.053	-	-

Notes: This table presents a robustness check of Table 9, where an age difference of five is tested. Here, the Panel A conducts the same test with an age difference of three, while the Panel B conducts the same test with an age difference of ten.