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Does Granting Refugee Status to Family-Reunified Women Improve Their Integration?

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Abstract

In most countries, men are the principal asylum applicants, while women are admitted through family-reunification procedures. Family reunification implies that women's residence permits are contingent on remaining married to their husbands. Using a staggered Difference-in-Differences (DID) Design, I document that granting asylum to family-reunified women improves their economic integration, increases the probability of divorce and decreases their risk of being victims of violence. I find significant impacts on victimization and economic integration regardless of whether the woman remains married or not. I propose that the results can be explained by a reduction in uncertainty about residency and an increase in female bargaining power when the women are granted an autonomous asylum status.

JEL-Codes: J120, J150, J610, K370.

Keywords: refugees, asylum recognition, family reunification, female integration, violence against women, staggered difference-in-differences design.

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1 Introduction

Refugee migration flows exhibit a systematic pattern across gender worldwide: men are mostly admitted as refugees, while women are admitted through the family-reunification system.¹ Family-reunification status may put immigrant women at a significant disadvantage in the host country, because their residence permit is contingent on their partner. In the case of divorce or death of her partner, the woman will lose her residence permit, which implies that a woman who has fled similar conditions to those her partner faced has a higher risk of being returned to the origin country simply due to the type of residence permit she holds. The increased risk could ultimately impact economic and social integration of women negatively.

It is well established that labor market integration of refugee women is poor in comparison with both native women and refugee men. In high-income countries, the refugee-native employment gap is 50 percentage points ten years after immigration, while the wage ratio is 0.55, and these gaps are even larger for refugee women (Brell et al. (2020); Foged et al. (2022)). Evidence from the Nordic countries shows that traditional measures, such as welfare benefit reductions and active labor market programs are less effective in pushing female refugees into work (Arendt and Schultz-Nielsen (2019); Dustmann et al. (Forthcoming); Arendt et al. (2022)), while investments in their human capital, such as language skills and education, have significant returns (Foged et al. (Forthcoming)). The results from Foged et al. (Forthcoming) show that language training has larger benefits for groups with lower labor market attachment, such as women. Such findings suggest that policies that increase the wage of women and their bargaining power within the household could be of particular importance for policymakers seeking to close the substantial gender gaps in earnings and employment of refugees.

Besides the disadvantageous labor market outcomes, family-reunified women also have a higher risk of being subject to intimate partner violence. Roughly, 0.2 percent of women who are family reunified to a refugee spouse, are victimized by their partner each year in Denmark. In comparison, 0.1 percent of other refugee women and less than 0.1 percent of native women experience intimate partner violence annually.² The elevated risk of intimate partner violence for family-reunified women may partly reflect the high dependence on husbands, since these women are only allowed to stay in the host country as long as they remain married. Previous research has shown that women's risk of being victims of intimate

¹See Eurostat (2020) and Statista (2020).

²These numbers are based on victimization data from police registers, and therefore they do not capture cases that are not reported to the police. Ottosen and Østergaard (2018) show that 1.5 percent of native women and 2.7 percent of immigrant women experience IPV annually based on survey data from Denmark in 2012, while Ottosen and Østergaard (2020) estimate that only about 10 percent of the cases are reported to the police.

partner violence is indeed closely linked to their economic dependence on husbands in both developed and developing countries (see Aizer (2010); Hidrobo et al. (2016) among others).

In this paper I study the consequences of recognizing family-reunited women as refugees. To estimate the impact of asylum recognition for this group, I use a staggered Difference-in-Differences (DID) Design. This approach exploits exogenous variation in the timing of receiving asylum by comparing outcomes for women who are granted refugee status with the outcomes of women who are granted refugee status a few quarters later.³ The decision to apply for asylum may be endogenous to the women's integration, but the immigration authorities assess the asylum application solely based on the individual's need for protection from origin country conditions – and not their labor market integration or family situation. Therefore, whether or not the women are granted asylum is orthogonal to their integration and being in abusive relationships in Denmark. Moreover, for identification I rely on quasi-randomness in the timing of receiving asylum, conditional on having applied. The main assumption behind the empirical strategy is, that in absence of the event occurring, the treated group would have followed the same trend as the not-yet-treated group. The discontinuous changes in outcomes around the event are attributed to asylum recognition, and thus measure the impact of refugee status relative to family-reunification status.

The results show that the divorce rate increases by 3 percentage points in the first six quarters following asylum recognition. The risk of suffering violent victimization decreases by 0.8 percentage points (approximately 100 percent relative to the baseline period), while the employment rate increases by 2.4 percentage points (53 percent relative to the baseline period). Quarterly work hours and earnings increase gradually following asylum recognition and increase, on average, by 14 hours and USD 270, which is more than a doubling of hours and earnings relative to the pre-asylum periods. Labor market outcomes and victimization are significantly affected, regardless of whether the woman stays married or divorce her partner.

The empirical findings can be rationalized in a household bargaining model that incorporates violence, bargaining over female labor force participation and risk of return to the origin country. This model serves as framework to understand how family behavior changes when women are granted their own asylum status. An autonomous asylum status will generally reduce the risk of having to return to the origin country and therefore increase female bargaining power. The model predicts that this will result in lower levels of partner violence, increase the probability of divorce and increase female labor market participation.⁴ Alternative mechanisms may explain the empirical results. For instance, decreasing the

³Hainmueller et al. (2016) and Hvidtfeldt et al. (2018) argue that features of the asylum system generate quasi-random variation in asylum wait times in Switzerland and Denmark.

⁴Appendix A includes additional details about the household bargaining model.

risk of return to the origin country may improve economic outcomes, because the expected value of finding a job increases for the job seeker and the employer. Improvements in the household's economic situation and security could reduce violence against women if family stress is reduced following the wife's asylum recognition.

My work relates to a growing literature studying how immigrants' residence permits affect their economic performance and well-being. One strand of literature has considered the effect of having legal status, which provides more certainty about remaining in the host country and gives access to jobs in the formal sector, which typically pay higher wages than jobs in the informal sector (Amuedo-Dorantes et al. (2007); Orrenius and Zavodny (2015); Hainmueller et al. (2017b); Kuka et al. (2019)). Another strand of literature shows that access to citizenship can impact the integration of immigrants (Hainmueller et al. (2015, 2017a); Gathmann and Keller (2018); Govind (2021); Dahl et al. (2022)). Similar to having legal immigration status, citizenship increases certainty about staying in the host country and it may give access to a wider range of jobs, since civil service occupations can be restricted to citizens. In comparison, asylum status gives access to the same kinds of jobs as family-reunification status, but asylum status reduces the uncertainty about remaining in the host country. Relative to previous work, my paper therefore sheds light on the latter channel.

Most closely related to my work are three studies considering refugees' access to permanent residency. Kilström et al. (2023) find that a decrease in the probability of receiving permanent status coupled with an incentive to achieve more labor market attachment and education resulted in increased education enrollment rates and lower earnings for refugee women in Denmark. A related Swedish study documents that temporary status coupled with work incentives decreased participation in language training (Blomqvist et al. (2018)). Finally, Arendt et al. (Forthcoming) show that tightening the criteria for permanent residency for refugees in Denmark, by requiring higher levels of employment and language proficiency, increased participation in language training and labor market attachment for high-performance individuals, but did not benefit low-performance individuals. Relative to these studies, I focus on a residence status that reduces uncertainty and relaxes females' dependence on their husbands without providing additional incentives to participate in the labor market or educational system. To the best of my knowledge, I provide the first evidence of the impact of refugee status relative to family-reunification status. This distinction is particularly important, because women are systematically granted family-reunification status as opposed to refugee status. My results provide one explanation for why women from refugee-sending countries lag behind their male counterparts in economic integration. Moreover, I show that the current practice also puts women at higher risk of becoming victims of

violence and that it may lock some family-reunified women in undesired marriages.

2 Institutional Context

2.1 Refugee Admissions to Denmark, 2001-2017

During the period 2001 to 2017 Denmark admitted approximately 44,000 persons aged 18 to 64 as refugees or spouses who were family reunified to a refugee. The majority (43 percent) were granted asylum in accordance with the UN Refugee Convention (UNHCR (2010)). The UN Refugee Convention applies to individuals persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion. In addition, the Danish state grants asylum to individuals at risk of torture, the death penalty or persecution in the home country, which amounts to approximately 18 percent of the admitted persons (“de facto-” or “B-status”).⁵ Another 8 percent were resettled through the international UN quota system. Refugees are ensured the right to family reunification which implies that 23 percent of those admitted in 2001 to 2017 arrived through the family-reunification system.⁶ The remaining persons were admitted on temporary protection grounds and for other humanitarian concerns.

Studying the admissions by gender reveals that 25,000 men and 19,000 women arrived in this period. Men mostly hold a refugee permit (95 percent), while for women the split between refugee status and family-reunification status is more even, as 54 percent of the 19,000 women have refugee status. When zooming in on the 10,000 persons with family-reunification status, the numbers show that 87 percent are female.⁷ Taken together, this reveals a remarkable pattern in refugee migration, which resembles that of other countries in Europe and the United States (Eurostat (2020); Statista (2020)): Women are more likely to arrive through the family-reunification system than men. The observed pattern may reflect individual preferences and abilities to migrate, along with family-based decision-making and gender differences in qualifying as a refugee.

⁵On occasion special laws are passed for groups that are not individually persecuted (Hvidtfeldt and Schultz-Nielsen (2017)).

⁶To have a spouse family reunified, the couple must prove that they are in a valid marriage based on conditions, such as previous cohabitation, children etc. (The Danish Immigration Service (2020)).

⁷In comparison, 71 percent of family reunified to other immigrants and natives are women.

2.2 Institutional Setting: Family-Reunification, The Asylum Application Process and Labor Market Access

In the Danish refugee admission system the residence permit for the family-reunified woman is contingent on her spouse.⁸ This means that the family-reunified spouse will lose her permit if the refugee husband loses his permission to stay, if the couple is divorced or in the event of death of the partner. This poses a disadvantage to the group of women admitted through the family-reunification system by increasing uncertainty about residency and shifting intra-household bargaining power in favor of the husband. Qualitative evidence suggests that uncertainty about residency if divorcing a partner is an important concern for family-reunified women in Denmark (Liversage and Petersen (2020)). The perceived risk – not necessarily the actual risk – of losing residency should influence family behavior. Two pieces of empirical evidence based on the administrative registers suggest that family-reunified women are concerned about residency. First, family-reunified women who do not change residence status are less likely to divorce than the women who change to an autonomous refugee permit (7 percent vs. 17 percent). Second, for those who divorce or lose their husband within four years after immigration, the probability of emigration from Denmark is three times higher for the group of women without an autonomous permit relative to those who gain their own permit.⁹

Family-reunified persons in Denmark can apply for asylum at their local police station and will undergo the same application procedures as other asylum seekers. The Danish Immigration Service (DIS) will interview the applicant 2-3 times to establish the asylum motive and assess credibility of the application. The DIS assesses whether the applicant is in need of protection from conditions in the country of nationality due to individual persecution or general unsafe conditions, such as civil war. Vulnerability due to abusive marriages and labor market credentials do not affect eligibility for refugee status. Likewise, the processing time of applications depends mainly on collection of information about origin country conditions (Hvidtfeldt et al. (2018)), while it is not determined by labor market prospects or abusive marriages in Denmark. Recognized refugees and their reunified family members have the right to work, have free access to the Danish health care system, and after four consecutive years of

⁸This is similar to other countries, such as the United Kingdom and Sweden. According to EU legislation, persons who are family reunited to a refugee sponsor are not automatically granted an autonomous residence permit in case of divorce or death of the sponsor. This is up to national law in each member state. In the U.S., refugees and their spouses may apply for permanent residency one year after entry. If the principal applicant dies before permanent residency is achieved, the refugee spouse can still apply for adjustment of her status. If the spouses divorce before achieving permanent status, the derivative refugee spouse cannot apply for permanent status based on the former spouse.

⁹The emigration rate is 4 percent for those with an autonomous permit and 14 percent for those without. Those without an autonomous permit may have an open residency case being processed which is not observed in the data and could therefore possibly remain in Denmark while waiting for their case to be decided.

residency they can vote in municipal elections. Additional details about the asylum process can be found in Appendix B.

3 Data

The analysis is based on administrative data on the full population in Denmark from 2001 to 2019. I use unique individual identifiers to track individuals over time and across different registers, and individuals can be linked to their spouses. To study the patterns in refugee migration and changes to residency, I use information from the admission register, which carries detailed information on immigrant status as well as dates of application for and approval of residence permits. I link this data to labor market outcomes from the Danish tax authorities, police registers on victimization and criminal convictions, hospital admissions data, and other demographic variables from the central population register. The data on hours and earnings is available since 2008, while all other data is available since 2001.

3.1 Descriptive Statistics

I study a population of 1,349 adult women (18 years or older) who are initially family reunified to their refugee spouse between 2001 to 2017, but then apply for and obtain their own refugee status. This amounts to 7 percent of all women admitted either as refugees or family reunified to a refugee spouse during the period. The women who change to asylum status constitute 16 percent of all women who were family reunified to a refugee spouse. The majority of these women are granted asylum based on an individual need for protection from persecution in their home countries. Most of them are granted UN Refugee Convention status (50 percent) or “de facto-status/B-status” (26 percent), while the remaining 24 percent are granted temporary protection status. I do not observe unsuccessful asylum applications at the individual level, but aggregated data from the DIS shows that 50-75 percent of asylum applications from family-reunified women are rejected.¹⁰ This suggests that women face significant uncertainty about their residence status after having lodged their asylum application.

The women who change status are, on average, 32 years old with two children at immigration, and most have attained a basic level of education upon arrival (Table 1). Many come from Syria (32 percent), followed by Eritrea (26 percent) and Afghanistan (25 percent). The women whose asylum applications are approved is a selected group compared with women who did not apply or had their applications rejected. For all groups of women, Syria is the largest country of origin, but there are

¹⁰Based on numbers from DIS 2015-2019 and own calculations.

substantial differences in the distribution across origin countries (see Table 1 and Appendix Table D.1). The women who change status are more likely to originate from Eritrea and Afghanistan. They are of similar age as other female refugees and family-reunified women, but have more children at immigration. The educational attainment at arrival for those who change status is similar to the level of the women who are admitted directly as refugees, but relative to other family-reunified women, they have lower levels of education. At the time of the wife's immigration, the husbands of women who change status have lower employment rates and earnings than the husbands of other women. This suggests that the women in this study are among the most disadvantaged immigrant women.

Figure 1 illustrates the distribution of immigration, applications and asylum recognition across calendar months. Panel a shows that the distribution of family reunification is fairly uniform over the calendar year. There are slightly more applications for asylum towards the end of the calendar year (Panel b), and this is also the time where most are recognized as refugees (Panel c). This reflects that the average processing time of an asylum application is just above one year. The bulk of the successful asylum applications is lodged within four months of family reunification, but a few are lodged before and some have applied after several years in Denmark (Panel d). The average wait time for asylum recognition is more than a year, but many cases are processed within 400 days (Panel e), which implies that a large fraction of cases are resolved within three years of family reunification (Panel f). For the empirical analysis, I rely on an unbalanced panel of individuals, following the women up to three years before asylum recognition and 1.5 years after being granted asylum.

3.2 Definition of Main Outcomes

The main outcomes of interest are quarterly indicators for being employed, quarterly hours of work and earnings deflated to 2015-level using the Consumer Price Index (CPI) from Statistics Denmark and converted to 1,000 USD.¹¹ The employment indicator is available between 2001-2019, while hours of work and earnings can be measured from 2008-2019. Second, I analyze intimate partner violence based on information from police registers and hospital records. This indicator takes the value one if police records show that the woman was a victim of violence or sexual assault or if she was hospitalized due to assault based on physician classification of injury.¹² Finally, I study divorce as an outcome. In this case I use an indicator that takes the value one if the woman is divorced. Figure 2 shows the means

¹¹I use the exchange rate from the Danish Central Bank on March 27, 2019.

¹²This measure is similar to the one proposed by Aizer (2010). It likely only captures the most severe cases if less severe cases are not reported to the police or not treated in hospital. The measure will also capture non-intimate partner violence, but potential bias from this measurement error is limited, since the majority of violence against women in Denmark is intimate (KVINFO (2023)).

of the outcomes by quarters indexed to quarter of asylum recognition. The graphs show discontinuous changes in outcomes at the time of asylum recognition, which suggests that the women change their behavior when they are granted asylum. Appendix Figure D.1 shows that this is not the case when they lodge their asylum application, where no discontinuities are found for divorce or labor market outcomes. Furthermore, Appendix Figure D.1 Panel b shows that violence against women peaks in the quarter of asylum application, which suggests that the women experience some backlash once they lodge their asylum application.

4 Empirical Strategy

The ideal experiment to study the impact of granting women refugee status as opposed to family reunification would be to randomize refugee status. Such an experiment does not exist because refugee status is granted to those in need of international protection. This poses a challenge to identifying the causal impact of one type of residency versus another, because the decision to apply for asylum is likely not orthogonal to individual characteristics. However, given application for asylum, it is uncertain whether the application will be successful, and if successful, the timing of being recognized as a refugee is unpredictable for the asylum seeker. Hvidtfeldt et al. (2018) argue that there is substantial exogenous variation in asylum wait times in Denmark caused by batch processing, holidays, and delays in evaluation of new conflicts by the Danish Immigration Services.¹³ Relying on the quasi-randomness in timing of being granted asylum, I can estimate whether this event generates discontinuous changes in labor market performance and other outcomes that would otherwise have evolved smoothly over time. Therefore, the research question posed in this paper is well-suited for a staggered DID design.

A recent series of studies demonstrate that the OLS two-way fixed effects estimator (OLS TWFE) can suffer from bias if there are heterogeneous treatment effects in DID designs with staggered treatment adoption (Borusyak et al. (2023); Callaway and Sant’Anna (2021); De Chaisemartin and d’Haultfœuille (2020); Sun and Abraham (2021)). This bias arises because negative weights may be invoked, due to the assumption of homogeneous treatment effects imposed by OLS. Even if all the weights are positive, TWFE coefficients may not always correspond to the most policy-relevant parameter, because OLS weigh cohort-specific effects proportional to the variance of the treatment indicator instead of cohort size or another relevant weight specified by the researcher (Roth et al. (2023)). Different methods have been proposed to circumvent such issues. In the main empirical specification I follow the methodology

¹³This is similar to the case of Switzerland (Hainmueller et al. (2016)).

from Borusyak et al. (2023), since their estimator provides efficient estimates, if errors are serially uncorrelated, compared with other unbiased DID estimators, such as Callaway and Sant’Anna (2021) and De Chaisemartin and d’Haultfœuille (2020).¹⁴ Errors will have little serial correlation if units in the data experience temporary shocks, while the opposite will be the case if shocks are permanent. Therefore, my choice of estimator is guided by whether the units in the data experience temporary or permanent shocks, which may differ between the outcomes. I therefore also show results based on other robust DID estimators.¹⁵

To estimate a counterfactual for individuals who are granted asylum, I use women who have not yet been granted asylum. I restrict the sample to follow women at most three years before the event and 1.5 years after the event of being granted asylum. This means that, as controls, I only use women who received asylum at most three years later than the treatment group. I index all quarters relative to the event of receiving asylum ($k = t - E$) and report quarterly outcomes six quarters after this event. The model of interest takes the following form for the quarters after asylum recognition:

$$y_{it} = \sum_{j=0}^5 \beta_j \cdot \mathbb{1}[j = k] + \gamma_t + \alpha_i + \varepsilon_{it}. \quad (1)$$

Here y_{it} denotes an outcome for individual i in quarter t at event time k . The six event time indicators (first term on the right-hand side) capture the dynamic treatment effects. The quarter fixed effects, γ_t , control nonparametrically for any time trends and business cycles, and α_i denotes individual fixed effects, taking account of the unbalanced panel of individuals. Because there is variation in the number of quarters elapsed between family reunification and asylum recognition, the dynamics of the event time indicators are distinct from the assimilation pattern related to time since immigration.

The main assumption for identification of a causal treatment effect is, that in the absence of treatment, the women who are granted asylum would have followed the same trend as the women who are granted asylum a few quarters later. Second, I assume that there is no anticipation of asylum recognition in a subset of the pre-period, i.e., that in the three years leading up to the event the women do not change behavior in anticipation of receiving asylum.

Following Borusyak et al. (2023), I first estimate the time fixed effects, γ_t , and the unit fixed effects,

¹⁴The imputation estimator in Borusyak et al. (2023) is efficient if errors are serially uncorrelated over time. Harmon (2022) shows that DID estimators, such as De Chaisemartin and d’Haultfœuille (2020) and Callaway and Sant’Anna (2021), are efficient if errors are strongly correlated over time and the researcher wants to estimate the effect only at one specific time horizon.

¹⁵In Appendix C, I describe the approach and estimation equations for the alternative estimators in detail.

α_i , using only data from periods where the persons are not yet treated:

$$y_{it} = \gamma_t + \alpha_i + \epsilon_{it}. \quad (2)$$

I then use the estimates for the unit and time fixed effects to impute the untreated potential outcomes, $\hat{y}_{it}(0)$, and obtain an estimated treatment effect for each treated observation, which is the difference between their observed outcome and their imputed untreated potential outcome in every time period, $\hat{\tau}_{it} = y_{it} - \hat{y}_{it}(0)$. Finally, I take a weighted average of these individual treatment effects, where all treated units have equal weight within a relative time period. This means that larger treatment cohorts receive more weight when calculating the weighted average treatment effects. The dynamic treatment effects are interpreted as changes relative to the three years before asylum recognition, and I cluster standard errors at the individual level.¹⁶

5 Results

5.1 Testing for Parallel Trends and No-Anticipation

Figure 3 presents the empirical tests for parallel trends and no-anticipation in the outcomes of interest as outlined in Borusyak et al. (2023), depicted by red cross markers in the graph. To carry out these tests, I only use data from periods before the women change status. I estimate the following model by OLS and cluster standard errors by individuals:

$$y_{it} = \kappa + \sum_{j=-6}^{-1} \beta_j \cdot \mathbb{1}[j = k] + \gamma_t + \alpha_i + \epsilon_{it}, \quad (3)$$

where the β_j 's capture indicators for the six quarters before asylum recognition, and κ captures the mean of the relevant outcome in relative time periods $k \in [-12, -7]$. Figure 3 presents the estimates of each of the event time indicators, which shows that none of them are statistically different from zero. In Table 2 I report the F -test of joint insignificance of the event time indicators. The F -test cannot reject that the pre-period indicators are statistically equal to zero for any of the five outcomes. The F -statistics are small (between 0.16 and 0.97), and their corresponding p -values are between 0.99 and 0.44. This supports the assumption that the women are on similar trends prior to treatment and that they cannot anticipate the event within this period; thus, they do not alter their behavior in anticipation of asylum recognition in the quarters leading up to it.

¹⁶Appendix Table D.2 shows that the main results are robust to clustering by treatment cohorts.

In addition, wait time for asylum is not significantly correlated with individual observed demographic characteristics, such as age, having children, educational attainment and the husband's education measured at immigration (Appendix Table D.3). This further supports the assumption of no-anticipation of asylum recognition, and it shows that asylum processing times do not differ systematically across groups of women, beyond origin country groups.¹⁷ These results suggest that specific groups, such as more vulnerable women, do not have their cases processed faster.

As a further test of the identifying assumptions, Appendix Figure D.2 shows the probability of a criminal conviction and labor market performance for the husbands of the women who change status. This graph also suggests that households do not anticipate the event and that outcomes for the treated and not-yet-treated groups evolve in parallel over time.

Alternative tests based on De Chaisemartin and d'Haultfœuille (2020), Callaway and Sant'Anna (2021) and OLS TWFE, depicted in Figure 3, also support the identifying assumptions. The parallel trends assumption differs somewhat between the different estimators. Borusyak et al. (2023) and De Chaisemartin and d'Haultfœuille (2020) require parallel trends for all groups and time periods, while Callaway and Sant'Anna (2021) require parallel trends in post-treatment periods. Nevertheless, all estimators support the parallel trends and no-anticipation assumptions.¹⁸

5.2 Main Results

Figure 3 and Table 2 present the main results. In the first quarter after asylum recognition there is a significant 1.4 percentage point increase in the divorce rate, which increases further in the following quarters, such that the divorce rate increases by 3 percentage points, on average, in the first 1.5 years. The gradual increase may reflect that some couples are undergoing a separation period in the first quarters before they can divorce. The risk of being subject to intimate partner violence drops by 0.8 percentage points on average throughout the time period, and by the end of the period, this risk is 2 percentage points lower relative to the pre-asylum period. The women also benefit from having their own refugee status in terms of labor market outcomes. Their employment rate increases gradually in the first 1.5 years by, on average, 2.4 percentage points, relative to 4.5 percent being employed pre-asylum. They also work 23 hours more and earn an additional 500 USD per quarter in the second year after asylum recognition, while the average increase in the first 1.5 years is 14 hours and 270 USD.¹⁹ These are large

¹⁷Consistent with Hvidtfeldt et al. (2018), I find that origin country is correlated with asylum processing time.

¹⁸Appendix C describes the specifications for the alternative estimators.

¹⁹This is not conditional on employment and thus reflects that a significant share of these women do not find (full-time) employment.

effects compared to the low baseline. Average quarterly work hours and earnings in the three years leading up to asylum recognition are a modest 12 hours and 240 USD per quarter.

5.3 Estimated Impacts by Marital Status

It is informative to split the results by marital status. Table 2 shows that the reduction in violent victimization prevails both for women who are not divorced (Panel B) and for women who divorce their husbands at some point throughout the period (Panel C). The results in Panel C are less precisely estimated, since only 17 percent of the sample divorce their spouse in this time period. These findings show that the observed decrease in violence is not entirely driven by increased divorce rates. The decreased probability of return to the woman's home country also affects the level of violence within the marriage, possibly by increasing her utility from divorce, and thereby changing her threat point. The improvements in employment and earnings are also observed regardless of marital status, although the impacts on employment and earnings emerge more slowly and are larger for the women who are divorced by the end of the period. This shows that the labor market response is not driven entirely by divorce, but those who divorce may face a stronger work incentive.

5.4 Robustness Checks

A potential concern is whether the estimated effects can be explained by the typical immigrant assimilation pattern observed in many countries.²⁰ To address this, I show that the estimated pattern is not found when assigning the women random asylum dates, that mimic the actual distribution of wait time. I assign them a random placebo event date of being recognized as a refugee within four years of their actual immigration.²¹ Appendix Figure D.3 shows that there are no significant discontinuous changes in the evolution of outcomes around the placebo event. This supports the interpretation that asylum recognition generates significant causal impacts on the women's integration, and suggests that the observed pattern in outcomes is not arising simply due to time since immigration. As a further robustness test of this, I include a matched sample of never treated refugee women, who were married at immigration. The never treated women are matched to the treated sample based on origin country and immigration quarter, and I only keep cells where there is common support. This approach allows me to compare the evolution of outcomes for treated women to a large sample of never treated women who arrived from the same

²⁰See Brell et al. (2020) for assimilation profiles of immigrants in several Western countries.

²¹I use a chi-square distribution with three degrees of freedom for placebo application dates within one year of immigration. Second, I assign placebo recognition dates using a chi-square distribution with three degrees of freedom from the placebo application until three years after this date.

countries in the same time period. The results from this exercise also show that there is a significant increase in the probability of divorce, a reduction in violence against women and some improvements in labor market outcomes following asylum recognition (Appendix Table D.4).

Moreover, Figure 3 shows that the results are robust to using other DID estimators, such as the ones proposed by Callaway and Sant’Anna (2021), De Chaisemartin and d’Haultfœuille (2020), and a TWFE model estimated by OLS. Finally, Figure 3 shows that estimation of treatment effects is efficient using the method by Borusyak et al. (2023) when considering the contemporaneous probability of victimization or divorce, while the precision of other DID estimators is not too different from Borusyak et al. (2023) when considering the estimated impact on labor market outcomes. The first set of outcomes likely have less serially correlated errors, because the shocks are of a more temporary nature. The latter set may have more serially correlated errors, since the shocks are of a more permanent nature. Therefore, in line with the work by Harmon (2022), the best unbiased estimator differs between the two sets of outcomes.

6 Conclusions

In this study I estimate the impact of recognizing women, who are initially admitted through family-reunification procedures, as refugees themselves. When they are recognized as refugees, they are able to divorce their husbands without automatically being returned to their origin countries. By exploiting quasi-random variation in the timing of receiving asylum in a staggered DID design, I show that the divorce rate increases following asylum recognition. In addition, I document that the risk of being a victim of violence decreases when women change residency. This effect is observed both for women who remain married and for women who divorce their husbands throughout the period. Asylum recognition also has positive consequences for females’ employment and earnings trajectories. These patterns are robust to using different estimation methods proposed in the literature on DID designs.

The empirical findings are consistent with a household bargaining model that incorporates violence, bargaining over female labor force participation and risk of return to the origin country. Alternative mechanisms may also explain the results: Reducing return risk can stimulate investments in human capital and reduce uncertainty within families, which can also explain the reduction in violence and improved labor market outcomes.

My work documents a gender imbalance in the refugee admission system, which contributes to gender inequality among a disadvantaged group of immigrants. My findings shed light on one of the reasons why female immigrants from refugee-sending countries lag behind economically in their host countries.

The impacts of the different types of residence permits are important for policymakers interested in designing immigration policies that can improve economic and social integration of immigrant women. Whether the results in this study are valid for other groups of immigrants is an open question. However, the issues related to family reunification potentially extend to women who are family reunified to non-refugee immigrants and natives.

7 Tables and Graphs

Table 1: Summary Statistics

	Mean	S.D.
<i>Characteristics at Immigration</i>		
Age	31.91	7.91
Number of Children	2.01	1.90
Days between Family Reunification and Asylum Application	170.74	404.37
Days between Asylum Application and Asylum Recognition	452.43	488.39
Days between Family Reunification and Asylum Recognition	625.33	535.08
<i>Education Surveyed</i>		
Basic Education	0.79	0.41
Vocational Education	0.06	0.23
Academic Education	0.15	0.36
Education Not Surveyed	0.28	0.45
<i>Origin Country</i>		
Syria	0.32	0.47
Eritrea	0.26	0.44
Afghanistan	0.25	0.43
Iraq	0.08	0.27
<i>Characteristics of Husband at Wife's Immigration</i>		
Same Origin Country	0.64	0.48
Employment Rate	0.10	0.24
Any Employment	0.18	0.39
Labor Income (1,000 USD)	4.37	11.17
<i>Husband's Education Surveyed</i>		
Basic Education	0.58	0.49
Vocational Education	0.14	0.35
Academic Education	0.28	0.45
Education Not Surveyed	0.50	0.50
N	1,349	

Notes: Summary statistics for the population of females who were family reunified to a refugee spouse and subsequently obtained their own refugee status. Age and number of children are measured at family reunification. Educational attainment acquired abroad shows the distribution across different education levels for those who were surveyed about this. The characteristics of the husband are measured in the year of the wife's immigration.



Figure 1: Timing of Family Reunification, Asylum Application and Recognition of Refugee Status

Notes: Panels a-c show the distribution of family reunification, asylum application and asylum recognition across calendar months for the analysis sample. Panels d-f show the distribution of days elapsed between family reunification and asylum application, days from asylum application to recognition and days from family reunification to asylum recognition.

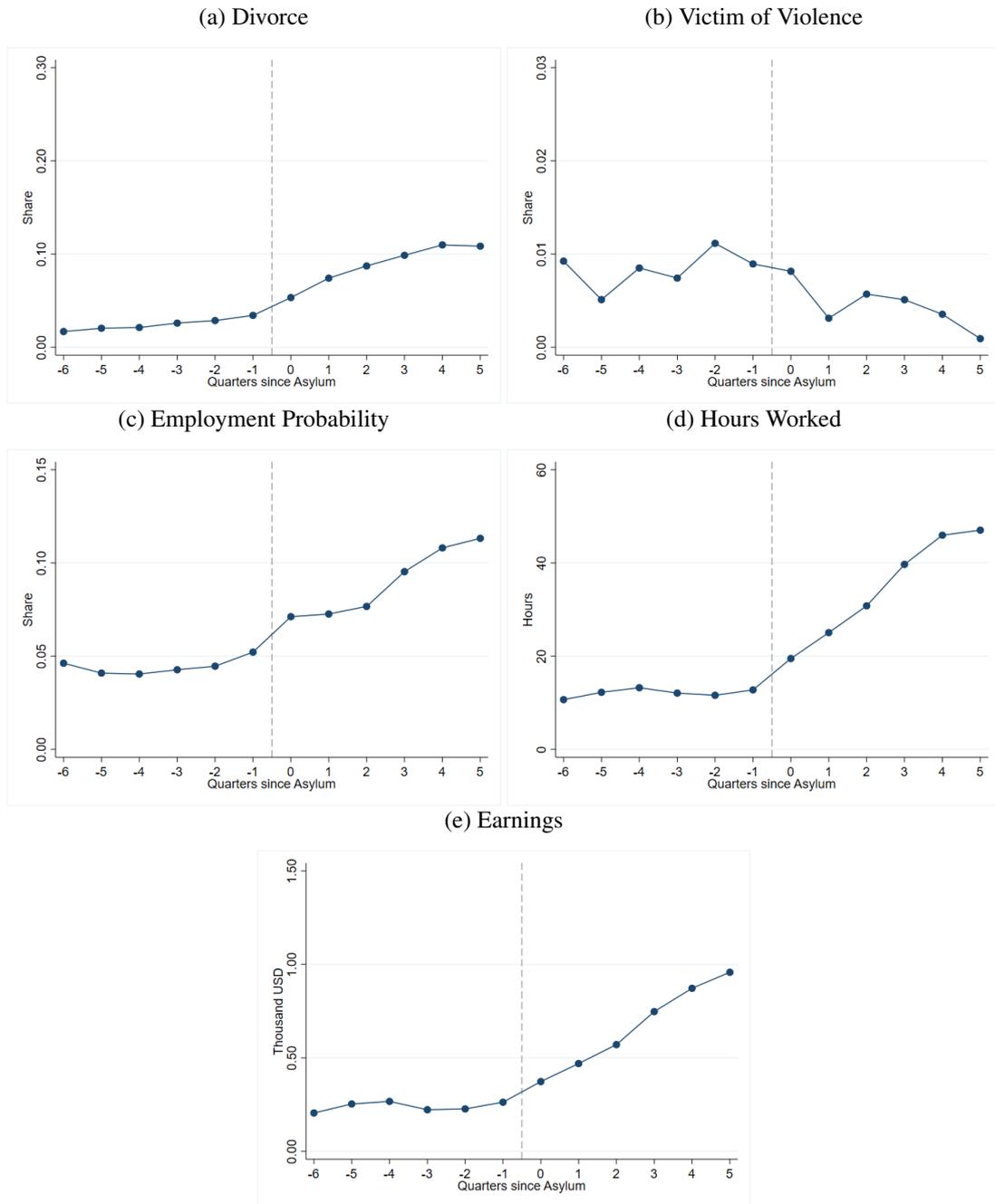


Figure 2: Means of Outcomes by Quarters since Asylum Recognition

Notes: The panels show the means of the outcomes by quarters since asylum recognition.

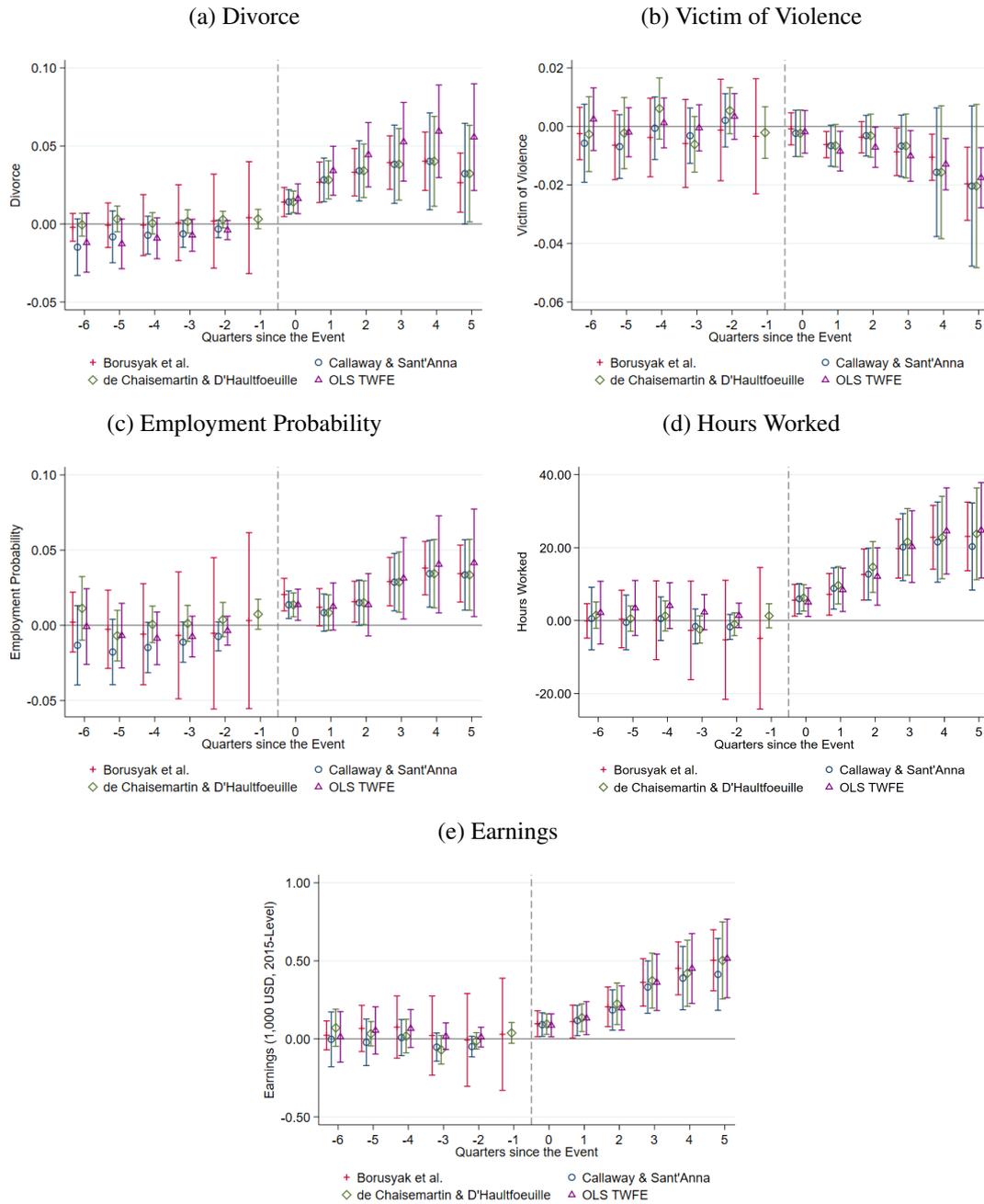


Figure 3: Estimated Effects of Asylum Recognition Relative to Family-Reunification Status by Quarters since Asylum Recognition

Notes: Each panel shows event study estimates based on the methods proposed by Borusyak et al. (2023) (in red with cross markers), Callaway and Sant'Anna (2021) (in blue with circle markers), De Chaisemartin and d'Haultfoeuille (2020) (in green with diamond markers), and two-way fixed effects models estimated by OLS (in purple with triangle markers). The bars represent the 95-percent confidence intervals. Standard errors are clustered at individual level.

Table 2: Estimated Effects

	(1)	(2)	(3)	(4)	(5)
	Divorce	Victim of Violence	Employment Probability	Hours Worked	Earnings
Panel A. All					
0	0.014*** (0.005)	-0.001 (0.003)	0.020*** (0.006)	5.572** (2.229)	0.097** (0.042)
1	0.027*** (0.007)	-0.006*** (0.002)	0.012 (0.006)	7.197** (2.915)	0.111** (0.054)
2	0.033*** (0.008)	-0.004 (0.003)	0.016** (0.007)	12.620*** (3.570)	0.205*** (0.065)
3	0.039*** (0.009)	-0.009** (0.004)	0.029*** (0.008)	19.735*** (4.128)	0.361*** (0.078)
4	0.040*** (0.010)	-0.011*** (0.004)	0.038*** (0.009)	22.826*** (4.469)	0.452*** (0.087)
5	0.027*** (0.010)	-0.020*** (0.006)	0.034*** (0.010)	23.077*** (4.800)	0.503*** (0.100)
Pre-Asylum Recognition Mean	0.023	0.008	0.045	11.888	0.238
<i>F</i> -Statistic	0.16	0.58	0.61	0.66	0.97
<i>Pr</i> > <i>F</i>	0.99	0.74	0.72	0.68	0.44
Average Effect	0.030*** (0.007)	-0.008*** (0.002)	0.024*** (0.006)	14.215*** (2.956)	0.266*** (0.057)
N	14,945	14,945	14,945	10,112	10,112
Panel B. Never Divorced					
0		-0.000 (0.002)	0.019*** (0.006)	6.293** (2.476)	0.107** (0.045)
1		-0.002 (0.002)	0.014** (0.007)	9.015*** (3.370)	0.138** (0.059)
2		-0.000 (0.002)	0.018** (0.008)	13.739*** (4.072)	0.219*** (0.072)
3		-0.000 (0.003)	0.030*** (0.009)	20.564*** (4.729)	0.353*** (0.086)
4		-0.004** (0.002)	0.041*** (0.010)	22.167*** (4.992)	0.418*** (0.094)
5		-0.004 (0.002)	0.031*** (0.010)	19.753*** (5.295)	0.416*** (0.108)
Pre-Asylum Recognition Mean		0.003	0.046	12.248	0.239
<i>F</i> -Statistic		2.81	0.65	0.24	0.38
<i>Pr</i> > <i>F</i>		0.01	0.69	0.96	0.89
Average Effect		-0.002 (0.002)	0.025*** (0.006)	14.387*** (3.328)	0.256*** (0.062)
N		12,181	12,181	8,197	8,197
Panel C. Ever Divorced					
0		0.000 (0.011)	0.027** (0.013)	2.068 (4.768)	0.050 (0.103)
1		-0.027*** (0.008)	-0.000 (0.015)	1.462 (5.106)	0.037 (0.119)
2		-0.018 (0.009)	0.011 (0.016)	10.816 (7.201)	0.200 (0.148)
3		-0.032*** (0.012)	0.024 (0.021)	18.514** (7.948)	0.424** (0.169)
4		-0.021** (0.010)	0.026 (0.023)	25.480*** (9.136)	0.575*** (0.183)
5		-0.045*** (0.010)	0.064*** (0.025)	39.338*** (10.762)	0.892*** (0.232)
Pre-Asylum Recognition Mean		0.030	0.044	10.248	0.235
<i>F</i> -Statistic		0.90	0.46	0.84	0.93
<i>Pr</i> > <i>F</i>		0.50	0.84	0.54	0.48
Average Effect		-0.023*** (0.007)	0.024 (0.014)	15.316** (6.163)	0.341*** (0.131)
N		2,764	2,764	1,915	1,915

Notes: ** $p < 0.05$, *** $p < 0.01$. Standard errors clustered at individual level in parenthesis. In all columns the coefficients denote the estimated impact relative to the pre-treatment period ($k \in [-12, -1]$) using the estimation method proposed by Borusyak et al. (2023), conditional on unit and calendar quarter fixed effects. The *F*-statistic and the *p*-value ($Pr > F$) for the joint insignificance of the pre-event dummies are shown in the bottom of each panel. The pre-asylum recognition mean denotes the mean of the outcome in quarters $k \in [-12, -1]$. The average effect denotes the estimated average effect in the first six quarters after asylum recognition. Hours worked (column (4)) and earnings (column (5)) are available from 2008. All other outcomes are available from 2001. Panel A shows estimated results for all women. Panel B shows estimated results for women who do not divorce their husbands during the period. Panel C shows estimated results for women who do divorce their husbands during the period.

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Online Appendix

A Nash Household Bargaining Model

In this Section I present a simple theoretical model that describes the impacts of a reduction in risk of the woman being returned to her home country. The model captures intra-household allocation of consumption, the prevalence of intimate partner violence and the woman's labor force participation. Following Aizer (2010), I set up a Nash bargaining model that incorporates domestic violence. The main insight from the model by Aizer (2010) is that an increase in a woman's potential relative wage leads to a decline in violence against her. This is because the potential relative wage determines her bargaining power at the threat point, and earnings in the household bargaining equilibrium are not necessarily equal to earnings at the threat point. I supplement the model from Aizer (2010) with a risk of being returned to the origin country, which poses a significant disutility for the woman. As another deviation from Aizer (2010), I include female labor force participation in the couple's utility functions. The man's utility is assumed to be decreasing in his wife's labor force participation, because he values more traditional gender norms where the wife stays at home to engage in household production, while the woman's utility is increasing in work outside the home. Even if the woman's view on gender norms related to work is similar to her husband's view, she could still have a different preference for labor force participation than her husband, because it offers her private benefits, such as control over income and social networks. The model shows that a decrease in the woman's risk of being returned to her home country leads to a decline in violence within the marriage and higher female labor force participation.²²

A.1 Nash Bargaining Model with Risk of Being Returned to the Origin Country

Let $U_w(C_w, S, 1 - G)$ describe the woman's utility, which is increasing in her own consumption (C_w), increasing in safety (S) and increasing in her labor force participation ($1 - G$). The man's utility is denoted by $U_m(C_m, V, G)$. His utility is increasing in his own consumption (C_m), increasing in his wife staying at home (G) and increasing in male autonomy, which is achieved through violence (V). More, specifically the violent behavior could increase his self-esteem, power, behavior modification or any other psychological factors that can be present in a violent relationship (Aizer (2010) and Farmer and Tiefenthaler (1997)). The maximum amount of safety is \bar{V} , and safety is therefore defined as

²²A reduction in risk of returning to the origin country also increases the expected value of finding a job for both the job seeker and the employer. I abstract from this in the Nash bargaining model. A related working paper by Kilström et al. (2018) presents a search and match model describing these features.

$S = \bar{V} - V$. Violence must be below \bar{V} , otherwise the woman is dead. The utility functions are assumed to be strictly concave, monotonically increasing, differentiable and homothetic. Moreover, the household has total income I , and the woman's share of income, if she is not married, is denoted by α . This is not necessarily what she earns inside the relationship.

If the couple cannot reach an agreement on the intra-household allocation of resources, they both receive the utility from being single, which is denoted by the pair of utilities $(d_m, d_w) = (U_m((1 - \alpha)I, 0, 0), U_w(\alpha I, \bar{V}, 1) - \delta R)$. In this case there is no intimate partner violence. The parameter δ captures the woman's risk of being returned to her home country, while R is the disutility she gets in that case. This disutility arises because she has deliberately fled her home country, so she strictly prefers to reside in the host country. This could be due to the risk of persecution, war or other undesirable conditions in her origin country.

Aizer (2010) shows that this problem constitutes a Nash bargaining problem and that a Nash bargaining solution provides a unique solution to the problem, which is solved by using the asymmetric bargaining solution from Kalai (1983). Formally, (U_m^*, U_w^*) maximizes the following expression:

$$\begin{aligned} & (U_m - d_m)^\tau (U_w - d_w)^{1-\tau} \\ \text{s.t.} \quad & (U_m, U_w) \geq (d_m, d_w) \\ & \text{and } (U_m, U_w) \text{ feasible.} \end{aligned} \tag{A.1}$$

Here τ denotes the bargaining power of the man. This framework allows me to analyze the impacts on the level of violence and female labor force participation following a reduction in the woman's risk of returning to her origin country when she is granted her own asylum status. In subsections A.2 to A.3 below, I derive the first-order conditions for the optimization problem.

The model predicts a decrease in violence when the woman's risk of being returned to her origin country is decreased. Because her utility from divorce increases if her risk of being returned to her home country is lower, she demands a more favorable allocation of household resources, which includes less violence. Similarly, her labor market participation will increase as a result of a decreased risk of return to the origin country, because her threat point within the marriage has improved.²³ It is possible that the reduction in the risk of being returned to the woman's origin country is so large that there is no longer any utility pair that will satisfy the conditions for the spouses to remain married. This implies that both

²³Aizer (2010) stresses that it is the relative potential wage when not working that matters for household bargaining, not the actual absolute wage. It is possible that the woman's relative potential wage increases when the risk of return is reduced, because employers' expected gain from hiring her is larger. Therefore, the reduction in violence and increase in labor force participation could be even larger than predicted by this model. For simplicity, I abstract from this.

spouses are better off by divorcing each other in that case.

These predictions from the bargaining model outline the hypotheses behind the empirical tests carried out in Section 5, where asylum recognition for women is expected to increase divorce rates and labor market participation, while decreasing the prevalence of domestic violence.

A.2 The Impact on Intimate Partner Violence V

(U_m^*, U_w^*) maximizes the following expression where (U_m, U_w) is feasible:

$$(U_m(V) - d_m)^\tau (U_w(\bar{V} - V) - d_w(\delta))^{1-\tau} \quad (\text{A.2})$$

$$s.t. \quad (U_m, U_w) \geq (d_m, d_w).$$

The first-order condition with respect to V entails:

$$\begin{aligned} & \tau [U_m(V) - d_m]^{\tau-1} U'_m(V) [U_w(\bar{V} - V) - d_w(\delta)]^{1-\tau} \\ & + (1 - \tau) [U_m(V) - d_m]^\tau [U_w(\bar{V} - V) - d_w(\delta)]^{-\tau} U'_w(\bar{V} - V) (-1) = 0 \\ \Leftrightarrow & \frac{\tau}{1 - \tau} \left[\frac{U_w(\bar{V} - V) - d_w(\delta)}{U_m(V) - d_m} \right]^{1-\tau} = \frac{U'_w(\bar{V} - V)}{U'_m(V)} \left[\frac{U_w(\bar{V} - V) - d_w(\delta)}{U_m(V) - d_m} \right]^{-\tau} \\ \Leftrightarrow & \frac{\tau}{1 - \tau} \frac{U_w(\bar{V} - V) - d_w(\delta)}{U_m(V) - d_m} = \frac{U'_w(\bar{V} - V)}{U'_m(V)}. \end{aligned} \quad (\text{A.3})$$

A reduction in the risk of return to the origin country, δ , implies that the woman's utility if divorced, $d_w(\delta)$, increases. Thus, the ratio of marginal utilities, $\frac{U'_w(\bar{V}-V)}{U'_m(V)}$, decreases. Since U_m is increasing and concave in V , while U_w is increasing and concave in safety $S = \bar{V} - V$, the reduction in δ results in a decrease in V .

A.3 The Impact on Female Labor Force Participation $1 - G$

(U_m^*, U_w^*) maximizes the following expression where (U_m, U_w) is feasible:

$$(U_m(G) - d_m)^\tau (U_w(1 - G) - d_w(\delta))^{1-\tau} \quad (\text{A.4})$$

$$s.t. \quad (U_m, U_w) \geq (d_m, d_w).$$

The first-order condition with respect to G entails:

$$\begin{aligned}
& \tau[U_m(G) - d_m]^{\tau-1} U'_m(G) [U_w(1-G) - d_w(\delta)]^{1-\tau} \\
& + (1-\tau)[U_m(G) - d_m]^\tau [U_w(1-G) - d_w(\delta)]^{-\tau} U'_w(1-G)(-1) = 0 \\
\Leftrightarrow & \frac{\tau}{1-\tau} \left[\frac{U_w(1-G) - d_w(\delta)}{U_m(G) - d_m} \right]^{1-\tau} = \frac{U'_w(1-G)}{U'_m(G)} \left[\frac{U_w(1-G) - d_w(\delta)}{U_m(G) - d_m} \right]^{-\tau} \quad (\text{A.5}) \\
& \Leftrightarrow \frac{\tau}{1-\tau} \frac{U_w(1-G) - d_w(\delta)}{U_m(G) - d_m} = \frac{U'_w(1-G)}{U'_m(G)}.
\end{aligned}$$

A reduction in the risk of return to the origin country, δ , implies that the woman's utility if divorced, $d_w(\delta)$, increases. Thus, the ratio of marginal utilities, $\frac{U'_w(1-G)}{U'_m(G)}$, decreases. Since U_m is increasing and concave in G , while U_w is increasing and concave in $1-G$, the reduction in δ results in a decrease in G , i.e., staying at home.

A.4 The Impact on Divorce

If the risk of return to her origin country is decreased ($\delta' < \delta$), the woman's utility from being single increases ($d_w(\delta') > d_w(\delta)$). If the increase in her utility is so high that there does not exist any utility pair such that both spouses will prefer to remain married ($U_m > d_m(\delta')$ and $U_w > d_w(\delta')$ does not hold), then the sufficient and necessary conditions for the bargaining solution resulting in marriage are not satisfied. In this case the couple will divorce.

B The Asylum Process in Denmark

Appendix Figure B.1 depicts the asylum process in Denmark. The first step in this process is to file an asylum application with the Danish police or in the refugee reception center Sandholm. Individuals who already hold another residence permit in Denmark should lodge their asylum application at their local police station, while other asylum seekers can apply either at the refugee reception center or at a police station. The police registers the identity of the applicant and takes their biometrics.²⁴ A few days later the Danish Immigration Service (DIS) asks applicants to fill a detailed application formula (in any language) about the motive for asylum application.²⁵

Next, the applicant has the first interview with the DIS about her motives for applying for asylum and to give any other necessary information. This interview is used to establish the applicant's identity and why she seeks asylum, i.e., whether she has been involved in political activities, conflicts or is persecuted in her home country. Typically there is an interpreter present at the interview. Based on the information from the first interview, the DIS decides how to further process the application. Some applications are sent to other countries for processing²⁶, some applications are deemed "obvious to reject"²⁷, and the remainder of cases are processed through the regular track by the DIS. If an application is deemed obvious to reject, the DIS confers with the Danish Refugee Council (DRC) and if they agree, the application is finally rejected.²⁸ If the DRC does not agree, the application is instead processed through the regular track.

When an application proceeds through the regular track, the next step is the second interview with the DIS to provide more details about the asylum application. The applicant is asked to provide a detailed explanation for why she has fled her origin country and this interview can take several hours. The DIS may have a third interview with the asylum seeker, and will then send a letter by post with the decision after these interviews.

If the DIS rejects the application, it automatically proceeds to the Refugee Appeals Board and in this case the asylum seeker is secured free legal assistance by an attorney. The Refugee Appeals Board's processing of the appeal case typically takes several months. During this time the board's secretariat collects all relevant information, such as the applicant's individual circumstances and reports about

²⁴The police registers the applicant's name, date of birth, nationality, fingerprints and photo.

²⁵Applicants who cannot read or write are exempt from filling this application formula.

²⁶The Dublin Regulation determines which EU member state should process the asylum application based on family considerations, residency, port of entry and any pending asylum application in another country.

²⁷For example, if the applicant is a citizen in a country that does not typically send refugees, or if the applicant's motives for applying for asylum clearly do not qualify her for refugee status.

²⁸DRC is a Danish NGO that provides support to refugees and displaced persons.

general conditions in the origin country. Once the secretariat has prepared the relevant material, three members of the board convenes to make their decision.²⁹ The asylum seeker and her lawyer participate in the meeting and the asylum decision is typically made within a few hours. The decision made by the Refugee Appeals Board is final.

When the DIS and the Refugee Appeals Board process applications, they consider circumstances in the applicant's country of nationality that put them in need of international protection. The relevant residence permits for asylum applicants in Denmark are protection under the 1951 UN Refugee Convention, subsidiary protection ("B-status" and "de facto-status"), and Temporary Protection Status. The UN Convention applies to persons who are individually persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion. This includes, for example, persons who are at risk of being killed by their home country's regime due to political activities, desertion from the army or fleeing military conscription. Individuals who are not covered by the UN convention, but who, for instance, are at risk of torture, the death penalty or persecution in the home country can obtain subsidiary protection ("B-status" and "de facto-status"). Finally, asylum seekers can be granted Temporary Protection Status due to general conditions in their country of nationality, such as civil war. As such, the interviews by the DIS and the Refugee Appeals Board seek to uncover relevant factors in the applicant's country of nationality, while they do not take into account conditions in the host country.

²⁹The board consists of approximately 50 judges, lawyers and civil servants from the Ministry of Immigration and Integration. One person from each group will be present at the meeting, and the case is decided by majority vote.

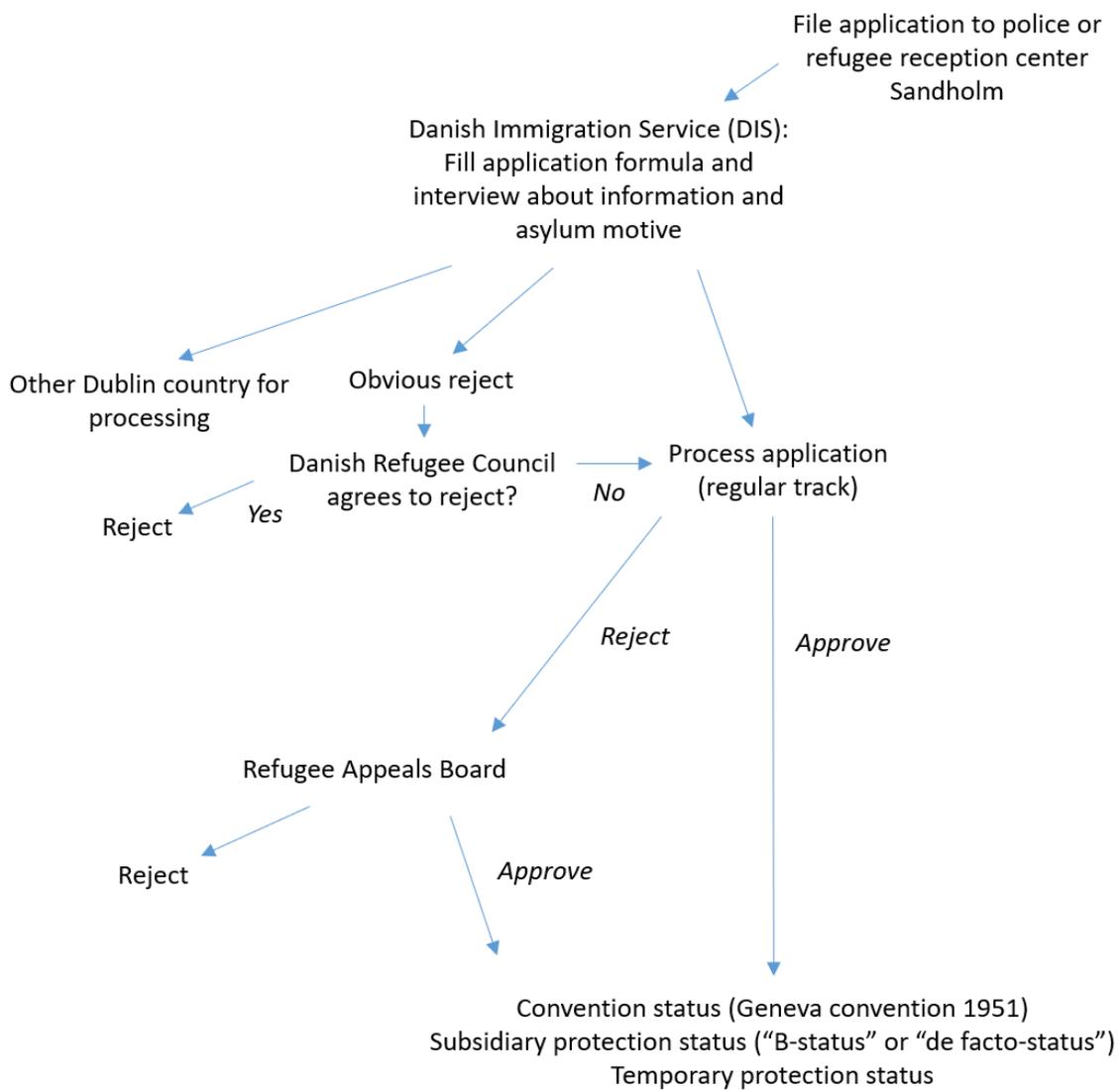


Figure B.1: The Asylum Process in Denmark

Notes: The figure illustrates the processing of asylum applications in Denmark.

C Alternative Difference-in-Differences Estimators

In this section I describe how I implement alternative DID estimators. For each method I outline the estimation strategy, applied weights and calculation of standard errors.

C.1 Callaway and Sant’Anna (2021)

To implement the estimator proposed by Callaway and Sant’Anna (2021) I follow the regression framework outlined in Bhuller et al. (Forthcoming). For each treatment cohort c and event time m , I create a subsample of individuals who were treated in quarter c and a control group who did not change status by time c or $c + m$ (whichever time period is greater). For each subsample, I can then estimate the following DID model:

$$y_{it} = \alpha^{cm} + \beta^{cm} \mathbb{1}[i \text{ treated in } c] + \delta^{cm} \mathbb{1}[t = c+m] + \theta^{cm} \mathbb{1}[i \text{ treated in } c] \mathbb{1}[t = c+m] + u_{it}^{cm}, \quad (\text{C.1})$$

where α^{cm} captures the mean for the control group in the baseline period $m = -1$, β^{cm} is a fixed effect for individuals in the treatment cohort, and δ^{cm} captures a time fixed effect. The parameter θ^{cm} denotes the estimated treatment effect for each time period and treatment cohort. I estimate this model for all treatment cohorts using their appropriate control group of not-yet-treated individuals. The estimates for each event time by cohort are then aggregated into one estimate specific to each event time $m \in [-6, 5]$, where treatment cohorts are weighted equally within event time periods. The estimates for time periods $m \in [0, 5]$ denote the dynamic treatment effects relative to the period before changing status, while the estimates for time periods $m \in [-6, -2]$ are tests of whether the treatment and control groups are on similar trends prior to treatment, capturing the difference relative to $m = -1$. As in Bhuller et al. (Forthcoming), I stack all subsamples and estimate the model in one fully interacted step, which allows for an easy calculation of standard errors clustered at individual level.

C.2 De Chaisemartin and d’Haultfœuille (2020)

This estimator by De Chaisemartin and d’Haultfœuille (2020) follows a similar intuition to the one proposed by Callaway and Sant’Anna (2021) as it compares changes in outcomes for individuals who changed treatment status between time periods (called “switchers”) to individuals who did not change treatment status over the same time period (called “stable units”). Since treatment is an absorbing state in my setting, the DID model for each cohort and time period proposed by De Chaisemartin and

d'Haultfœuille (2020) corresponds to the one proposed by Callaway and Sant'Anna (2021). Thus, I can estimate models similar to Model (C.1) and then calculate a weighted average of the cohort-time DID estimators, where the weights are proportional to the number of switchers. I report estimated treatment effects for time periods $m \in [0, 5]$. To investigate whether the switchers are on parallel trends with the stable units prior to switching treatment status, I compare the evolution in outcomes between $t-2$ to $t-1$ for those who switch and do not switch treatment status between $t-1$ and t (this is different from the pre-trend test described in Appendix Section C.1 above). I report these estimated differences between the groups for relative time periods $m \in [-6, -1]$. Standard errors are bootstrapped and clustered at individual level.

C.3 OLS TWFE

The model estimated by OLS takes the following form, where all quarters are indexed relative to the event of receiving asylum ($k = t - E$):

$$y_{it} = \kappa + \sum_{j=-6}^5 \beta_j \cdot \mathbb{1}[j = k] + \gamma_t + \alpha_i + \varepsilon_{it}. \quad (\text{C.2})$$

Here y_{it} denotes an outcome for individual i in quarter t at event time k . β_j captures each event time estimate in time periods $k \in [-6, 5]$, and κ is an indicator for event times $k \in [-11, -7]$ binned together. I normalize $k = -1$ and $k = -12$ to zero. γ_t denotes quarter fixed effects, and α_i denotes individual fixed effects. Model (C.2) is estimated by OLS and I cluster standard errors by individuals. If treatment effects are homogeneous this model will provide unbiased estimates.

D Additional Figures and Tables

Table D.1: Summary Statistics for the Population of Women Who Do Not Change Status

	All Mean	Family Reunified to a Refugee Mean	Refugee Mean
<i>Characteristics at Immigration</i>			
Age	29.74	31.12	28.88
Number of Children	1.36	1.66	1.18
Days between Asylum Application and Asylum Recognition	317.67	.	317.67
<i>Education Surveyed</i>			
Basic Education	0.72	0.69	0.75
Vocational Education	0.07	0.07	0.06
Academic Education	0.21	0.24	0.19
Education Not Surveyed	0.42	0.35	0.47
<i>Origin Country</i>			
Syria	0.39	0.45	0.35
Eritrea	0.05	0.01	0.07
Afghanistan	0.10	0.12	0.09
Iraq	0.11	0.17	0.07
<i>Characteristics of Husband at Wife's Immigration</i>			
Same Origin Country	0.48	0.72	0.10
Employment Rate	0.22	0.22	0.20
Any Employment	0.30	0.30	0.34
Labor Income (1,000 USD)	10.85	10.96	9.62
<i>Husband's Education Surveyed</i>			
Basic Education	0.62	0.61	0.67
Vocational Education	0.15	0.15	0.11
Academic Education	0.23	0.24	0.22
Education Not Surveyed	0.48	0.48	0.48
N	19,116	7,300	11,816

Notes: Summary statistics for the population of females who are either admitted as refugees or family reunified to a refugee, and who do not change status. Age and number of children are measured at immigration. Days between application and asylum are only measured for refugees. The family reunified do not apply for asylum and thus do not have an application record. Educational attainment acquired abroad shows the distribution across different education levels for those who were surveyed about this. The characteristics of the husband are measured in the year of the woman's immigration if she is married.

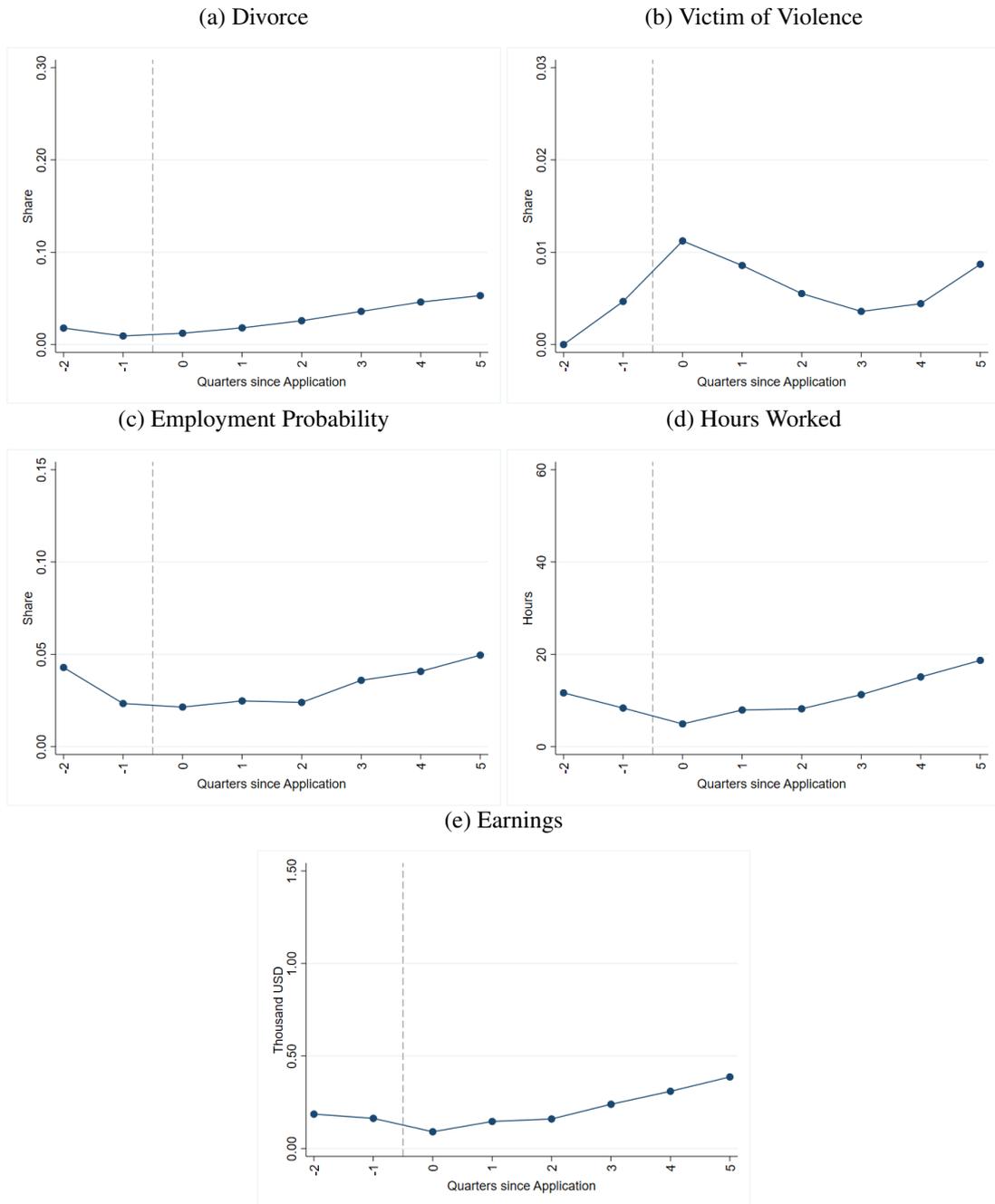


Figure D.1: Means of Outcomes by Quarters since Asylum Application

Notes: The panels show the means of the outcomes by quarters since application.

Table D.2: Estimated Effects, Standard Errors Clustered by Treatment Cohort

	(1) Divorce	(2) Victim of Violence	(3) Employment Probability	(4) Hours Worked	(5) Earnings
Panel A. All					
0	0.014*** (0.001)	-0.001 (0.001)	0.020*** (0.002)	5.572*** (0.519)	0.097*** (0.010)
1	0.027*** (0.002)	-0.006*** (0.001)	0.012*** (0.002)	7.197*** (0.666)	0.111*** (0.013)
2	0.033*** (0.003)	-0.004*** (0.001)	0.016*** (0.002)	12.620*** (0.899)	0.205*** (0.019)
3	0.039*** (0.004)	-0.009*** (0.003)	0.029*** (0.003)	19.735*** (0.956)	0.361*** (0.020)
4	0.040*** (0.004)	-0.011*** (0.004)	0.038*** (0.003)	22.826*** (0.911)	0.452*** (0.021)
5	0.026*** (0.004)	-0.020*** (0.006)	0.034*** (0.003)	23.077*** (1.079)	0.503*** (0.022)
Pre-Asylum Recognition Mean	0.023	0.008	0.045	11.888	0.238
<i>F</i> -Statistic	0.22	0.52	0.63	1.56	1.76
<i>Pr</i> > <i>F</i>	0.97	0.79	0.71	0.19	0.13
Average Effect	0.030*** (0.003)	-0.008*** (0.002)	0.024*** (0.002)	14.215*** (0.794)	0.266*** (0.016)
N	14,945	14,945	14,945	10,112	10,112
Panel B. Never Divorced					
0		-0.000 (0.000)	0.019*** (0.002)	6.293*** (0.708)	0.107*** (0.013)
1		-0.002*** (0.000)	0.014*** (0.003)	9.015*** (0.919)	0.138*** (0.017)
2		-0.000 (0.000)	0.018*** (0.003)	13.739*** (1.178)	0.219*** (0.024)
3		-0.000 (0.000)	0.030*** (0.003)	20.564*** (1.237)	0.353*** (0.024)
4		-0.004*** (0.000)	0.041*** (0.003)	22.167*** (1.149)	0.418*** (0.024)
5		-0.004*** (0.000)	0.031*** (0.003)	19.753*** (1.493)	0.416*** (0.029)
Pre-Asylum Recognition Mean		0.003	0.046	12.248	0.239
<i>F</i> -Statistic		3.09	0.50	0.47	0.52
<i>Pr</i> > <i>F</i>		0.01	0.81	0.82	0.79
Average Effect		-0.002*** (0.000)	0.025*** (0.003)	14.387*** (1.061)	0.256*** (0.021)
N		12,181	12,181	8,197	8,197
Panel C. Ever Divorced					
0		0.000 (0.003)	0.027*** (0.003)	2.068 (1.422)	0.050 (0.030)
1		-0.027*** (0.004)	-0.000 (0.005)	1.462 (2.379)	0.037 (0.054)
2		-0.018*** (0.004)	0.011 (0.009)	10.816*** (3.058)	0.200*** (0.068)
3		-0.032*** (0.008)	0.024*** (0.009)	18.514*** (2.574)	0.424*** (0.058)
4		-0.021*** (0.006)	0.026*** (0.008)	25.480*** (3.291)	0.575*** (0.069)
5		-0.045*** (0.008)	0.064*** (0.009)	39.338*** (3.445)	0.892*** (0.078)
Pre-Asylum Recognition Mean		0.030	0.044	10.248	0.235
<i>F</i> -Statistic		0.96	0.54	1.94	2.09
<i>Pr</i> > <i>F</i>		0.46	0.77	0.11	0.09
Average Effect		-0.023*** (0.003)	0.024*** (0.006)	15.316*** (2.544)	0.341*** (0.056)
N		2,764	2,764	1,915	1,915

Notes: ** $p < 0.05$, *** $p < 0.01$. Standard errors clustered by treatment cohorts in parenthesis. The number of treatment cohort clusters is 69. In all columns the coefficients denote the estimated impact relative to the pre-treatment period ($k \in [-12, -1]$) using the estimation method proposed by Borusyak et al. (2023), conditional on unit and calendar quarter fixed effects. The *F*-statistic and the *p*-value ($Pr > F$) for the joint insignificance of the pre-event dummies are shown in the bottom of each panel. The pre-asylum recognition mean denotes the mean of the outcome in quarters $k \in [-12, -1]$. The average effect denotes the estimated average effect in the first six quarters after asylum recognition. Hours worked (column (4)) and earnings (column (5)) are available from 2008. All other outcomes are available from 2001. Panel A shows estimated results for all women. Panel B shows estimated results for women who do not divorce their husbands during the period. Panel C shows estimated results for women who do divorce their husbands during the period.

Table D.3: Correlation between Asylum Wait Time (Days) and Individual Characteristics

	(1)	(2)	(3)
Age	2.271 (2.051)	0.028 (2.109)	1.087 (2.127)
Any Children Age 0-2y	-10.804 (33.215)	-5.932 (32.989)	-18.323 (32.757)
Any Children Age 13-17y	-36.857 (37.393)	-12.415 (35.902)	-29.901 (37.822)
Basic Education	-20.463 (33.771)	-19.093 (34.023)	-20.664 (33.249)
Vocational Education	-13.809 (64.455)	-9.869 (64.699)	-41.886 (64.723)
Academic Education	7.334 (45.744)	-64.471 (48.610)	-47.436 (47.382)
Basic Education (Husband)	37.182 (40.326)	31.454 (38.250)	29.969 (39.872)
Vocational Education (Husband)	-33.225 (56.967)	-34.340 (53.596)	-30.964 (57.448)
Academic Education (Husband)	-46.177 (39.357)	-30.956 (41.317)	-41.748 (39.602)
Constant	401.803*** (77.918)	613.414*** (94.083)	550.783*** (89.641)
Origin Country Fixed Effects	No	Yes	No
Origin Region Fixed Effects	No	No	Yes
<i>F</i> -Statistic	0.61	0.47	0.46
<i>Pr</i> > <i>F</i>	0.79	0.90	0.90
N	1,343	1,343	1,343

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Robust standard errors in parentheses. *F* denotes the *F*-statistic and *Pr* > *F* denotes the associated p-value from an *F*-test of joint insignificance of age, indicators for having children age 0-2 years and age 3-17 years, and indicators for the educational levels of the woman and her husband. All variables are measured at immigration. Column (1) shows the partial correlations not conditional on origin country. Column (2) shows the partial correlations conditional on origin country fixed effects (the reference group is Syria). Column (3) shows the partial correlations conditional on indicators for Africa, Asia and other region (Middle East is the reference group). N denotes the number of observations. A few observations do not have a registered asylum application date.

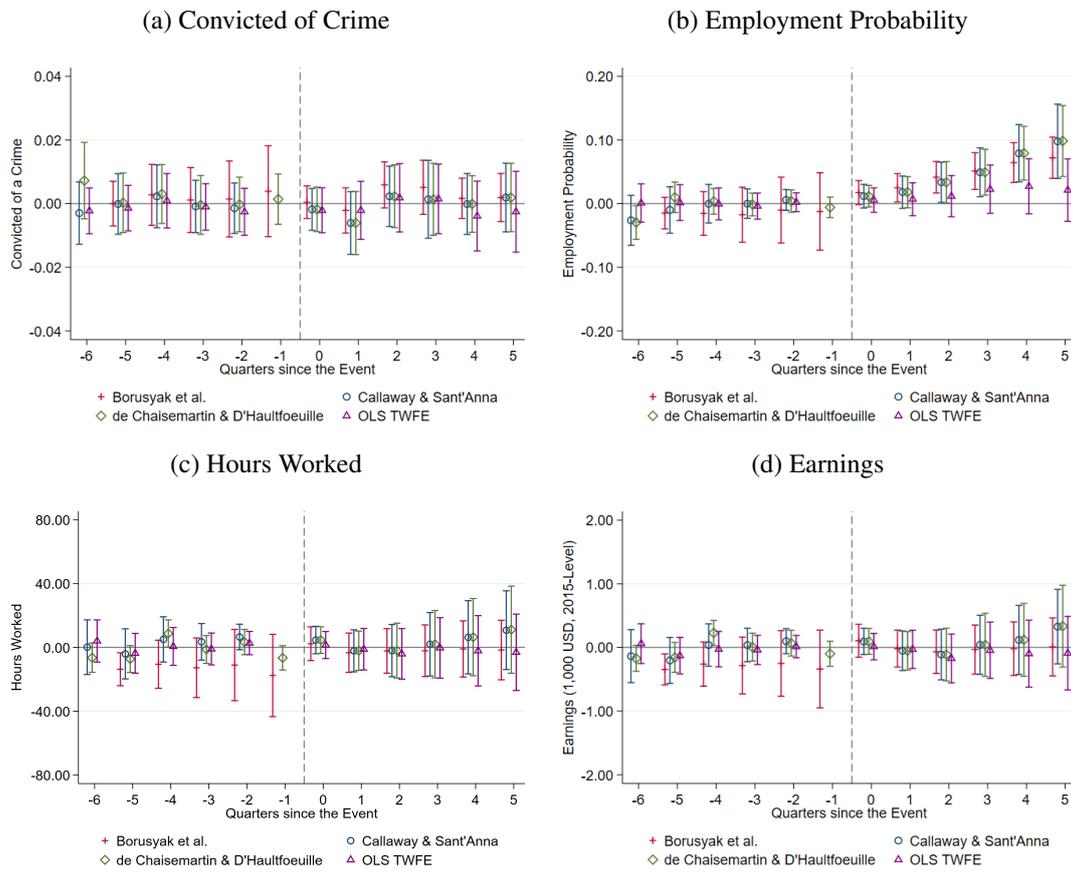


Figure D.2: Estimated Effects on Husbands of Wife’s Asylum Recognition Relative to Her Family-Reunification Status by Quarters since Asylum Recognition

Notes: Each panel shows event study estimates based on the methods proposed by Borusyak et al. (2023) (in red with cross markers), Callaway and Sant’Anna (2021) (in blue with circle markers), De Chaisemartin and d’Haultfoeuille (2020) (in green with diamond markers), and two-way fixed effects models estimated by OLS (in purple with triangle markers). The bars represent the 95-percent confidence intervals. Standard errors are clustered at individual level.

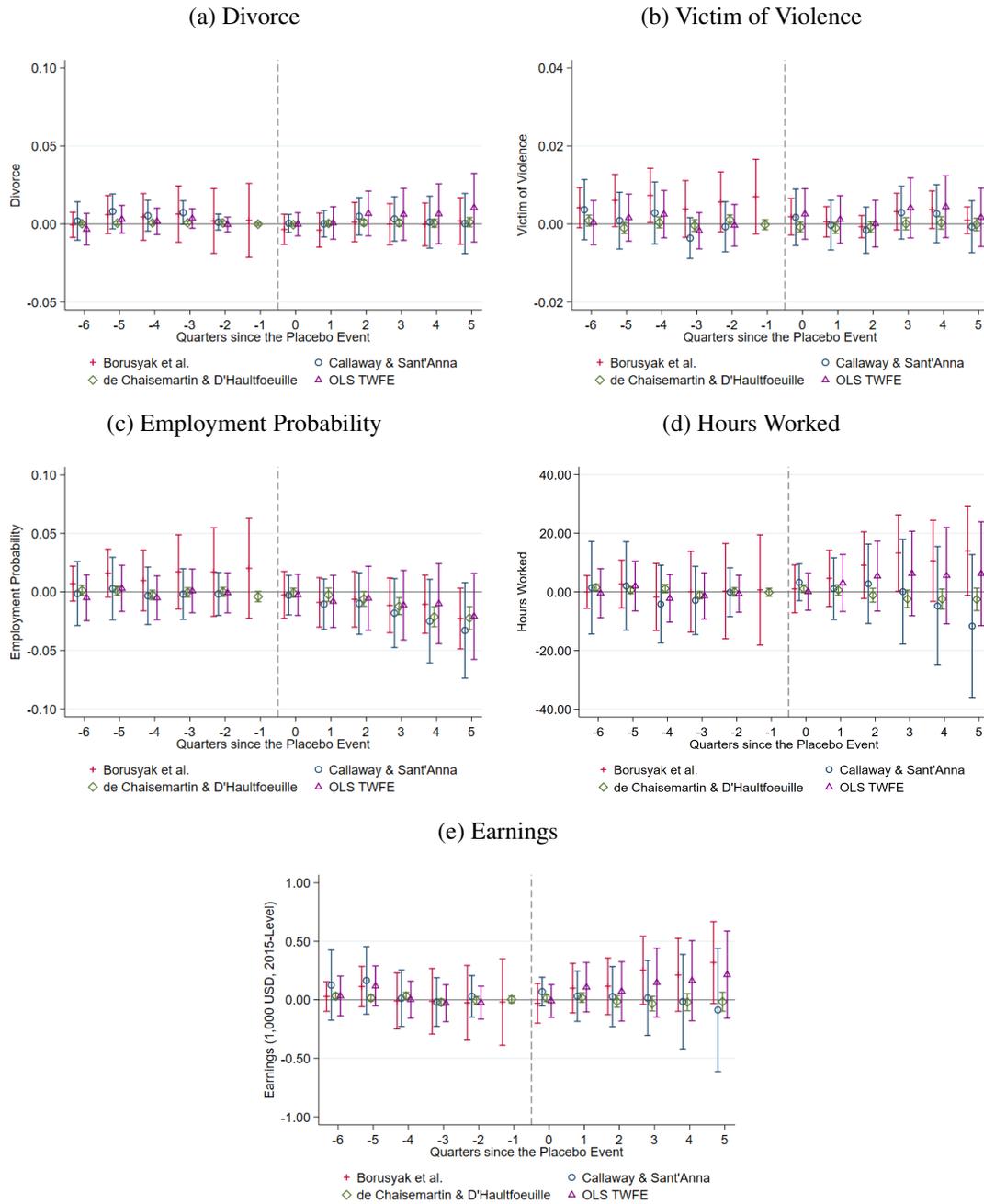


Figure D.3: Placebo Tests

Notes: Each panel shows event study estimates based on the methods proposed by Borusyak et al. (2023) (in red with cross markers), Callaway and Sant’Anna (2021) (in blue with circle markers), De Chaisemartin and d’Haultfoeuille (2020) (in green with diamond markers), and two-way fixed effects models estimated by OLS (in purple with triangle markers). Each person is assigned a random asylum recognition date. The placebo assignment procedure mimics the actual distribution of asylum wait time. The bars represent the 95-percent confidence intervals. Standard errors are clustered at individual level.

Table D.4: Estimated Effects, Including Matched Sample of Never Treated Women

	(1)	(2)	(3)	(4)	(5)
	Divorce	Victim of Violence	Employment Probability	Hours Worked	Earnings
0	0.030*** (0.005)	-0.004 (0.003)	0.007 (0.005)	1.511 (2.604)	-0.025 (0.049)
1	0.051*** (0.007)	-0.007*** (0.002)	0.001 (0.006)	2.177 (3.216)	-0.016 (0.064)
2	0.065*** (0.008)	-0.002 (0.003)	0.002 (0.006)	4.701 (3.528)	0.010 (0.065)
3	0.079*** (0.009)	-0.005 (0.003)	0.012 (0.007)	9.253** (4.019)	0.122 (0.080)
4	0.085*** (0.009)	-0.007*** (0.002)	0.018** (0.008)	11.910*** (4.408)	0.173 (0.089)
5	0.083*** (0.009)	-0.009*** (0.002)	0.022** (0.009)	15.238*** (4.852)	0.265*** (0.102)
Pre-Asylum Recognition Mean	0.021	0.010	0.021	5.770	0.129
<i>F</i> -Statistic	1.97	0.21	0.27	1.39	2.72
<i>Pr</i> > <i>F</i>	0.07	0.98	0.95	0.22	0.01
Average Effect	0.065*** (0.007)	-0.006*** (0.002)	0.010 (0.006)	7.465** (3.256)	0.088 (0.065)
N	163,726	163,726	163,726	136,840	136,840

Notes: ** $p < 0.05$, *** $p < 0.01$. Standard errors clustered at individual level in parenthesis. In all columns the coefficients denote the estimated impact relative to the pre-treatment period ($k \in [-12, -1]$) using the estimation method proposed by Borusyak et al. (2023), conditional on unit and calendar quarter fixed effects. The *F*-statistic and the *p*-value ($Pr > F$) for the joint insignificance of the pre-event dummies are shown in the bottom of each panel. The pre-asylum recognition mean denotes the mean of the outcome in quarters $k \in [-12, -1]$ for the women who eventually change residence status. The average effect denotes the estimated average effect in the first six quarters after asylum recognition. Hours worked (column (4)) and earnings (column (5)) are available from 2008. All other outcomes are available from 2001. The sample includes women who eventually change residency and a matched control sample of refugee women who do not change residence status.