Women's Career and Care Responsibilities: The Role of Migrant Domestic Workers in Brazil

Raphael Corbi* Tiago Ferraz† Renata Narita‡

July 27, 2023

Abstract

We investigate the role of migrant domestic workers in alleviating the constraints in labor force participation faced by high-educated native women in Brazil. Using a shift-share approach, that combines weather-induced migration with the past settlement in destination areas, we show that increases in the number of incoming migrants raise the labor force participation of high-educated women, especially those with small children, who are more likely to be constrained by care responsibilities, given the current status of gender norms. In the presence of preschool, more conservative gender norms, or an environment of high violence these impacts are reduced.

Keywords: Internal migration, labor force participation, employment, domestic workers.

*University of São Paulo, Department of Economics, Email: rcorbi@usp.br
†LEPES / FEARP/USP, Email: tpferraz@gmail.com
‡University of São Paulo, Department of Economics, Email: rnarita@usp.br

1 Introduction

While several studies have shown that low-skilled immigrant inflows help highly educated women in developed countries to combine their work and childcare responsibilities (East and Velásquez, 2022; Cortés and Pan, 2019)[1], much less is known about how domestic workers enable women in developing countries to pursue careers while caring for children. This could be an important distinction, considering that the opportunities available for and the constraints faced by women can differ substantially depending on the local development stage. At least since the 1960's there is some literature pointing to a U-shaped relationship between female labor force participation (FLFP) and economic development (Jayachandran, 2021). Lower access to education and health; or less bargaining power for women within the household could help to explain why the gender gap in labor force participation is higher in less developed economies (Jayachandran, 2015).

Much of the existing literature has focused on immigrant inflows as a mechanism to alleviate the constraints that prevent high-educated women to enter the labor market. Several studies show that incoming low-educated immigrants allow high-educated women to work more hours in the U.S. (Cortes and Tessada, 2011) and Italy (Barone and Mocetti, 2011), as well as increased labor force participation in Spain (Farré et al., 2011) and Hong Kong (Cortes and Pan, 2013). There is also some evidence that low-educated immigrants allow high-educated women to work in occupations that reward long hours, decreasing the gender gap (Cortés and Pan, 2019) and increase fertility (Furtado, 2016). As a whole, this literature implies that the more low-educated workers are available to work in the care sector, the easier it is for high-educated women to combine their work with caregiver roles.

We examine these issues in the context of Brazil, a large developing country where poverty and income inequality have fallen quite substantially in recent decades, but where gender norms and family values have adjusted more slowly[2]. Over the last decades, Brazilian working women are increasingly entering professions dominated by men. Still, women in the formal sector work fewer hours and earn significantly lower wages than their male counterparts, despite achieving higher levels of education. They also spend significantly more time on household chores than men (Agénor and Canuto, 2013) even though many middle-class families in Brazil have some help with domestic chores.

To explore how care responsibilities affect women's career paths, we consider the impact of weather-driven internal migration flows of low-educated women from Brazil's Semiarid region, who tend to work in urban households as housekeepers and home

[1]See also Furtado (2015) for an overview.

[2]This is not an exclusive Brazilian feature. See Jayachandran (2015) for a discussion about the literature on the persistence of gender norms when economic conditions change.

care workers, on labor market outcomes of high-skilled women. Between 1982 and 2010, about 4.3 million women left the Semiarid region, a historical source of migrants, to settle in other regions in Brazil. Among the migrants who could find a job (1.1 million), 32% were occupied as domestic workers in the destination areas.

We exploit variation in weather conditions over time and across origin municipalities in the Semiarid region to identify the causal effects of increasing the supply of migrant workers on the female labor force participation in the destination areas. As in Corbi et al. (2021), we use weather shocks at the origin areas to predict the number of migrants leaving each Semiarid's municipality. Then, we allocate these predicted flows in the destination areas using the preexisting share of migrants from those origins.

Our results show that increasing the number of migrants from the Semiarid region by one percentage point increases the labor force participation rate of high-educated women by $0.13 p.p.$, but it has no effect on the probability of working full-time (at least 40 hours per week). We also find that women living in households with young children[3] (less than 6 years old) are more likely to participate in the labor force than those in households without children. Such impacts are stronger in the two initial periods of our sample (1980-1991 and 1991-2000), which is not totally surprising considering that the share of incoming migrant women employed as domestic workers dropped by almost 50% between 2000 and 2010.

We also show that those effects can be amplified in some contexts. For instance, they are larger in municipalities with a lower presence ($0.68 p.p.$) of preschools compared to places with a higher presence ($0.18 p.p.$); and for women in households without the presence of elderly people ($0.22 p.p.$). Taken together, these results suggest that it is the woman's role as a caregiver, more than the unpaid domestic work she realizes, the main constraint that hinders her path toward professional achievements.

On the other hand, there may be some factors that may prevent high-educated women from fully benefiting from the arrival of domestic workers. Factors like living in a more conservative household or in municipalities with a high baseline gender wage gap. Finally, we show that these effects are larger in places with lower violence against women ($0.31 p.p.$) compared to more violent destinations ($0.21 p.p.$).

Our paper is related to at least three strands of the literature. First, we engage with the large body of studies analyzing the impacts of internal migration on local labor markets, especially in the context of developing countries (Corbi et al., 2021; Imbert and Ulyssea, 2022; Kleemans and Magruder, 2018; El Badaoui et al., 2017). These papers usually find negative impacts on labor market outcomes for native workers in areas with higher incoming migration, except for Imbert and Ulyssea (2022) who find a positive impact on formal employment in the long run. Our main contribution is to show that incoming low-educated migrants can substitute home production and improve the labor market prospects of high-educated women.

[3]We choose the cutoff of 6 years old because this is the age when schooling begins to be mandatory in Brazil. Our hypothesis is that when children are in school, women are less constrained to enter the labor force, at least during school hours.

Second, we also relate to the literature on the role of domestic workers in alleviating the constraints faced by high-educated women to enter the labor market (East and Velásquez, 2022; Cortes and Tessada, 2011; Cortes and Pan, 2013; Cortés and Pan, 2019; Farré et al., 2011). This literature usually focuses on the role of international migrants as substitutes for home production. However, in this paper, we focus on internal migrants instead of foreign low-educated migrants. This distinction may be important because internal migrants tend to share a lot of characteristics with natives, like language and culture, which could make the substitution of home production easier.

Finally, we also contribute to a growing literature on the role of gender norms on labor outcomes (Kleven et al., 2019; Fernández, 2013; Fernández et al., 2004; Jayachandran, 2015). We show that more entrenched gender norms may dampen the economic benefits of incoming migrant domestic workers on the labor market prospects of high-educated women.

In addition to this introduction, in Section 2 we provide some background information on the migration from the Semiarid region and the relationship between domestic workers and female employment in Brazil. Section 3 describes the dataset and the empirical strategy we use to identify the causal effects of incoming migration on the labor market outcomes of women in the destination municipalities. In Section 4 we present and discuss our results and conclude in Section 5.

2 Background

In this section, we first describe the economic background and weather conditions in the Semiarid region and contextualize the relationship between domestic workers and female employment in the destination municipalities.

2.1 Brazilian Semiarid

The Brazilian Semiarid encompasses 960 municipalities spread over 9 states, covering an area of around 976,000km^2.[4] According to the official definition by the Ministry of National Integration, a municipality qualifies as Semiarid if at least one of these three criteria holds: (i) annual average precipitation below 800 mm between 1961 and 1990; (ii) aridity index up to 0.5[5]; (iii) risk of drought above 60%[6]. The average historical precipitation in the Semiarid is about 780mm, as opposed to around 1,600 mm for the rest of the country, while the average temperature is around 25°C. The rainy season occurs between November and April, with the highest levels of precipitation after February, when the sowing season typically starts.

[4]That is roughly the same as the territory of Germany and France combined. The semiarid comprises 11 percent of the Brazilian territory and includes parts of almost all Northeastern states (except for *Maranhão*) plus the northern area of *Minas Gerais*, but it does not cover any state capital.

[5]Thornthwaite Index, which combines humidity and aridity for a given area, in the same period.

[6]Defined as the share of days under hydric deficit, using the period 1970-1990.

Municipalities are relatively small with a median population of around 20,000 and have economies mainly based on agriculture and cattle ranching in small subsistence properties. Local economic activity is particularly susceptible to weather shocks (Wang et al., 2004), with some studies showing a loss of up to 80% of agricultural production in periods of long drought (Kahn and Campus, 1992). About 80% of the children lived below the poverty line and infant mortality reached 31 per 1,000 births in 1996, compared to a national average of 25% and 15 per 1,000 births, respectively (Rocha and Soares, 2015). More than 80% of the adult population had less than 8 years of schooling in 1991.

Such poor socioeconomic indicators associated with periods of extreme drought have historically driven large outflows of migrants - or so-called *retirantes* - from the Semiarid to other areas of the country (Barbieri et al., 2010). During the 1960s and 1970s, net migration out of Northeastern states (where most of the Semiarid is located) was 2.2 and 3.0 million individuals (Carvalho and Garcia, 2002), which correspond to net migration rates of -7.6 and -8.7%, respectively. Between 1980 and 2010, over 4 million people left the Semiarid alone searching for better conditions elsewhere in the country. These migrants tend to be historically concentrated in some states. São Paulo alone harbored over 30 percent of the people arriving from the Semiarid in the last four decades. However, in relative terms, incoming migrants represented a population increase of above 2% for the top 10 receiving states.

2.2 Domestic workers and female employment

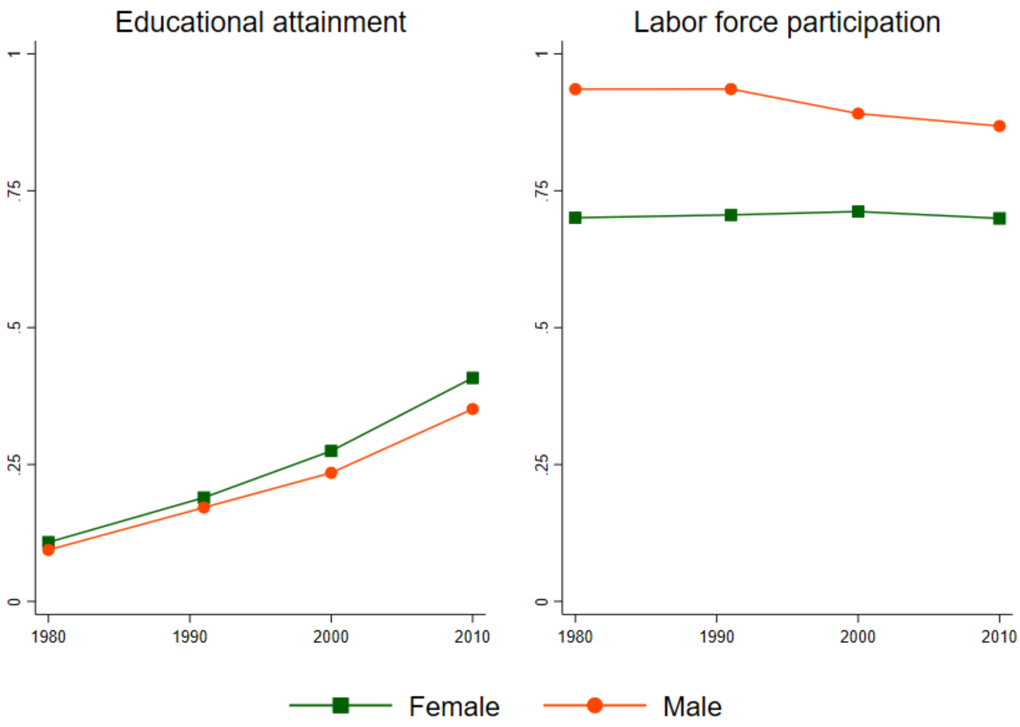
In the last decades, women in Brazil had experienced a widening gap in educational attainment relative to men. Between 1980 and 2010, the share of high-educated (at least complete high school) women in the age group 20-65 rose from 10.8% to 40.8%, just a little above the increase observed by men in the same age group. Meanwhile, the labor force participation of these high-educated women remained essentially flat and below the level observed by men during this entire period (see Figure 1).

There are several aspects that can contribute to reconciling those apparently contradicting facts. For instance, traditional gender norms can pose some difficulties for women to advance in their careers. While part of this may operate through bias against women among bosses, coworkers, and even customers in the workplace, there is a large and growing literature, especially focusing on developed countries, suggesting that the difficulty in combining work and family responsibilities can be a major driver of gender gaps in professional achievement[7].

The more entrenched the norms, especially those related to women's role as caregivers, the more constrained their decision to enter the labor force would be. Some facts suggest that in Brazil, as well as other developing countries, such norms seem to be an important mechanism preventing women's advance in the workplace. For example,

[7] For example, Kleven et al. (2019) show that women's earnings drop significantly after childbirth and never catch up, while there is no impact on men's earnings.

Figure 1: Gender gaps in educational attainment and labor force participation



Notes: This figure shows the gender gap in educational attainment and labor force participation. The left panel presents the share of people aged 20 to 65 with a complete high school education or higher, by gender. The right panel shows the fraction of each these groups in the labor force.

in 2014 women dedicated 25 hours per week, on average, to domestic chores, while men devoted only 11 hours per week (Pinheiro et al., 2016). Also, using data from three waves of the World Value Survey (WVS), between 1989 and 2009, we see that 32% of the Brazilian interviewees agreed with the statement "When jobs are scarce, men should have more rights to them than a woman" (Inglehart et al., 2014).

There is a lot of room for family policies aiming to help increase female labor force participation, like expanding the supply of child care (Lefebvre and Merrigan, 2008; Lefebvre et al., 2009; Baker et al., 2008; Bauernschuster and Schlotter, 2015); paid family leave (Jones and Wilcher, 2019; Del Rey et al., 2021); and tax credits (Blundell and Hoynes, 2004; Blundell et al., 2000) [8].

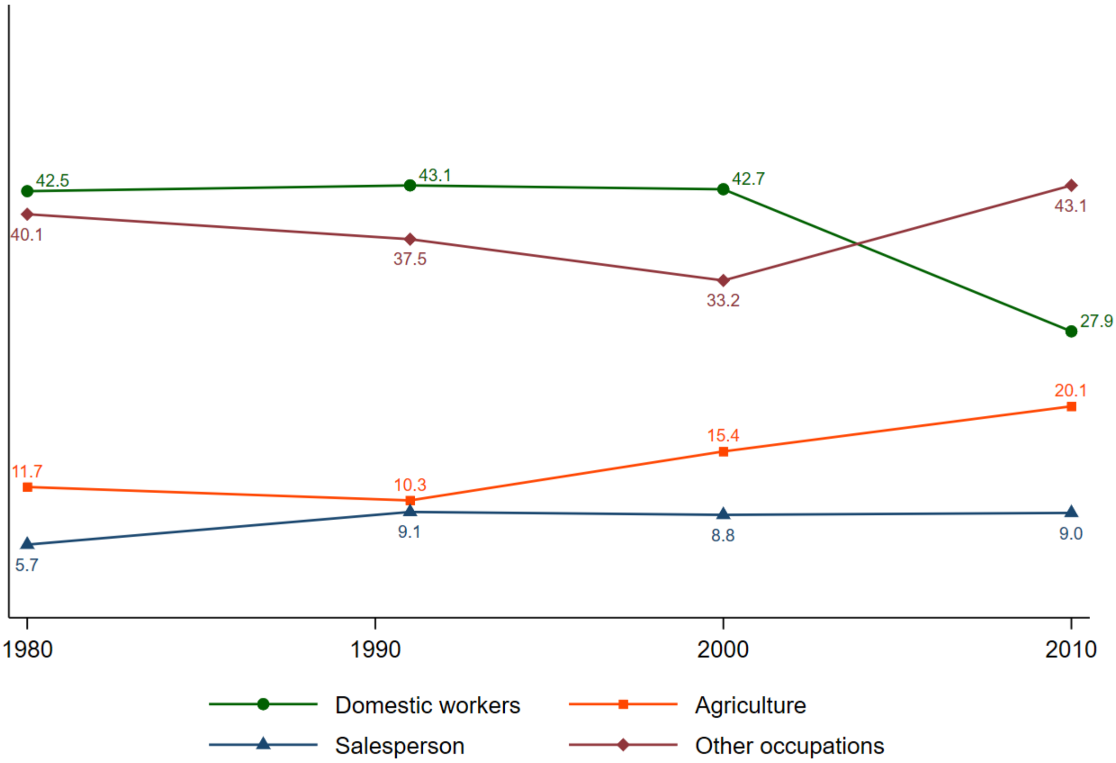
We argue that an influx of low-educated internal migrants who may substitute household production can be a factor that helps to lift some of those constraints and allow high-educated women to enter the labor force. While low-educated international migration to Brazil has been rather low in recent years[9], internal migration is quite substantial, and many of the incoming migrant women work as housekeepers and childcare providers in large cities. Figure 2 shows that between 1980 and 2000, over

[8]See Olivetti and Petrongolo (2017) for a comprehensive literature review.

[9]The number of international migrants as a share of the total population has dropped from 1.9% in 1960 to 0.4% in 2010 (Calculations by the authors using data available on the Migration Policy Institute's Migration Data Hub: https://www.migrationpolicy.org/programs/migration-data-hub).

40% of the low-educated incoming migrant women, coming from municipalities in the Semiarid region were employed as domestic workers. And, even though that proportion has declined, in 2010 more than one in four of those women were still employed as domestic workers.

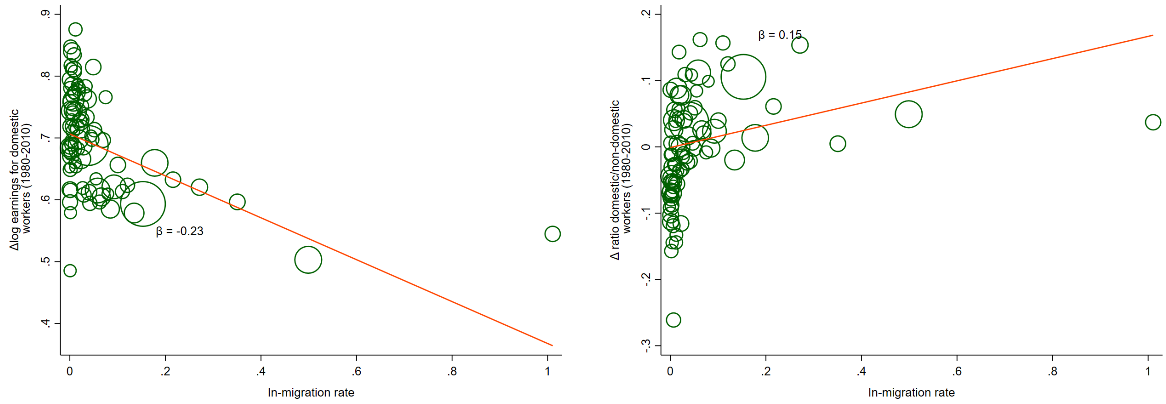
Figure 2: Main occupations among Semiarid migrants (low-educated female workers)



Notes: This figure shows the evolution of the main occupations among low-educated women who migrated from the Semiarid region into other destination municipalities. Source: Census

All that influx of migrants from the Semiarid into the destination areas is likely to affect the market for domestic workers, increasing the supply and, therefore, diminishing the cost of hiring low-educated workers. In Figure 3 we show that this mechanism seems to operate in our context. We estimate the relationship between the long-term (1980-2010) changes in the log earnings (3a) and the ratio of domestic to non-domestic employment (3b) among low-educated workers against the accumulated observed migrant inflow, measured as a share of the native population in 1980. To provide a better visualization we collapsed those variables into 100 bins, based on the distribution of the migration rate. As expected, there is a negative (positive) relationship between the earnings (employment) of low-educated native workers and the accumulated migration in destination areas.

Figure 3: Incoming migration and the labor market for domestic workers



(a) Earnings

(b) Employment

Notes: This figure shows the relationship between the inflow of migrants and changes in the log earnings and employment of low-educated domestic workers at the destination municipalities. All variables are collapsed into 100 bins, based on the distribution of the observed migration rate. The vertical axes are the average long differences (1980-2010) in (a) the log earnings of low-educated female domestic workers and (b) the ratio of domestic to non-domestic employment. The horizontal axis is the average accumulated migration rate. The β coefficients are estimated before collapsing the variables. Circle size is proportional to the average population size in each bin.

3 Data and Empirical Strategy

In this section, we begin by listing the main sources of data used in our analysis and showing some descriptive statistics. Then we describe the empirical framework and report the estimates that link observed migration patterns to our predicted migration flows.

Migration We extend the data collected by Corbi et al. (2021) to the period 1982-2010. Migration data were drawn from four waves of the Brazilian Census (1980, 1991, 2000, and 2010), provided by the *Instituto Brasileiro de Geografia e Estatística (IBGE)*.[10] Using the answers about the municipality of origin and year of migration, we construct a measure of the yearly outflow from each municipality in the Semiarid and a measure of the inflow to each destination (all but Semiarid) from 1982 to 1991 and from 1996 to 2010[11]. Then, we use the 1980 Census to build a "past settlement" measure by associating the share of migrants from each Semiarid municipality who resides in each destination.

[10] As several municipalities were split into new ones during the 1990s, we aggregate our data using the original municipal boundaries as they were in 1980 (so-called "minimum comparable areas" or MCA) in order to avoid potential miscoding regarding migration status or municipality of origin. We use municipality and MCA as synonyms throughout the paper.

[11] The Census round realized in 2000 only asked in which city the respondent lived 5 years past. Therefore, we can only track the migrants until 1996.

Weather shocks We use the Standardized Precipitation-Evapotranspiration Index (SPEI), a measure of drought severity index based on climatic data, which can be used to assess the intensity and duration of episodes of drought (Vicente-Serrano et al., 2010). As in Albert et al. (2021) we use the SPEI-12 version, computed at a 12 months scale. One advantage of using this measure is that the SPEI allows us to account for the water needs in a given region because it can be interpreted as the difference between the precipitation level and the potential evapotranspiration.

The SPEI is available as a global gridded dataset, at the $0.5° \times 0.5°$ level[12], with monthly data spanning January, 1901-December, 2021[13]. Our measure of dryness is the annual average of the SPEI for each origin municipality. Negative values of the SPEI indicate a difference between rainfall and evapotranspiration below the historical average for the location.

Labor outcomes We also use the Census to gather information on labor market outcomes for native individuals. To alleviate concerns that migration could affect the decision of getting more education, we restrict our sample to individuals between 25 and 65 years old, living in the municipality for 10 years or more (natives), who were not enrolled in school. We also drop destination municipalities in the Semiarid region to avoid concerns about spatial correlation in the shocks.

We create dummy variables indicating whether the individual is in the labor force and whether she works at least 40 hours/week[14]. We also create indicators to define as high-educated those individuals with a complete high school education or higher. Then, we take averages at the municipality-year level and calculate the first difference for each outcome. The final sample has 3,120 unique destination municipalities and 9,360 municipality-year observations.

Table 1 describes municipality-level data for origin (Panel A) and destination (Panel B) municipalities, collapsed into the Census-year cells. Semiarid's areas show much lower levels of rainfall, and slightly higher temperatures and are less populated than destination municipalities. On average, 13% of the 1980 Semiarid's population leaves every decade, resulting in an average increase of $2p.p.$ of the labor force in the destination.

Table 2 provides some descriptive statistics for destination municipalities. In our sample, about 17% of the women in destination municipalities are high-educated; 38% live with children aged less than 6 years old, while 27% live in households without any children; 37% are in the labor force, and the probability of holding a full-time job is 22%. When we use only high-educated women as the reference group, labor force participation is very high (72%), and the probability of working full-time is much higher (40%).

[12] $0.5°$ is around 56km on the equator.

[13] The dataset can be obtained directly from the website https://spei.csic.es/database.html.

[14] The standard working time in Brazil was 48 hours per week until the new Constitution in 1988 reduced it to 44 hours per week (Gonzaga et al., 2003).

3.1 Empirical Strategy

In this section, we describe the empirical framework that combines exogenous shocks in weather conditions with the predetermined pattern of settlement of migrants from the Semiarid region, which allows us to establish a causal relationship between migration inflows and labor market conditions for women in destination areas.

We specify a model for the changes in labor market outcomes of native individuals in destination municipalities as a function of internal migration flows. Specifically, we assume that

$$\Delta y_{dt} = \alpha + \beta m_{dt} + \gamma X_d + \psi_t + \epsilon_{dt} \tag{1}$$

, where y_{dt} is a vector of labor outcomes at destination municipality d in census-year t, m_{dt}, is the accumulated migrant inflow from the Semiarid region entering the destination area during the period covered by the Census round t, X_d are destination-level baseline controls, ψ_t absorb time fixed effects and ϵ_{dt} is the error term. There are two main concerns in establishing β as a causal parameter. First, the observed inflow of migrants, m_{dt}, is an equilibrium result between demand and supply. Second, time-varying unobserved characteristics can be correlated with incoming migration, rendering OLS estimates biased.

To overcome these issues we create a shift-share instrumental variable (SSIV) in two steps. First, we use the variation in weather conditions at the origin to predict the outflow rate[15] of migrants from the Semiarid region. More specifically, we estimate the following regression:

$$m_{oy} = \alpha + \beta' SPEI_{oy-1} + \phi_o + \delta_y + \varepsilon_{ot} \tag{2}$$

where $SPEI$ the measure of weather shock, at the origin municipality o in the previous year; ϕ_o and δ_y are municipality and year fixed effects, respectively; and ε_{oy} is a random error term. For each year the predicted number of migrants who leave their hometowns is obtained by multiplying this predicted rate by the municipality population reported in the 1980 Census:

$$\widehat{M}_{oy} = \widehat{m}_{oy} \times P_o \tag{3}$$

In the second step, we use the past settlement of migrants from the origin o to municipality d in order to distribute them throughout the destination areas and accumulate these annual flows according to their respective Census round, defining our SSIV as

$$\widehat{M}_{dt} = \sum_{t \in C} \left(\sum_{o=1}^{O} s_{od} \times \widehat{M}_{oy} \right) \tag{4}$$

[15]We define this rate as the observed number of migrants leaving each municipality divided by its population in the 1980 Census

where $C = \{1991, 2000, 2010\}$ are the three rounds of the Census we can use to track the migrants; and s_{od} is the share of migrants from origin municipality o who lived in the destination area d in 1980.

To make interpretation easier we divide the predicted number of incoming migrants by the native population in each destination municipality in 1980, P_d[16], resulting in

$$\widehat{m}_{dt} = \frac{\widehat{M_{dt}}}{P_d} \tag{5}$$

as the SSIV for the observed incoming migration rate in destination municipality d.

In other words, our instrument $\widehat{m}_{dt}$ is a combination of exogenous shocks or 'shifts' $\widehat{M}_{ot}$ (weather-driven outflows) and exposure 'shares' ($s_{od} \geq 0$) or past settlement patterns.

3.2 Prediction of the Weather-induced out-migration

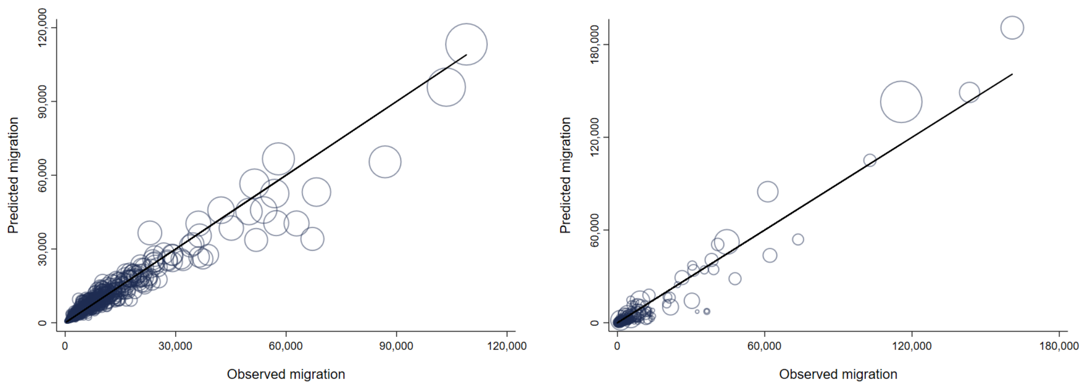
We begin the exploration of our first-stage results by estimating variations of specification 2 and report the estimates in Table 3. All regressions include time and municipality fixed effects. In columns (2)-(7) we include a linear trend interacting time dummies with 1980 characteristics (age; shares of the black and white population; share of the illiterate population, the share of the population with a college education; share of women in the total population; share of married people in the population; shares of employment in agriculture and manufacturing; family income per capita; and four brackets of the total population: 10,000-25,000; 25,001-50,000; 50,001-100,000; and more than 100,000). All regressions are weighted by the harvested agricultural area[17], measured as a fraction of the municipality's total area. Columns (3)-(6) include up to three lags, contemporaneous and one lead of rainfall and temperature shocks. Standard errors are clustered at the municipality level. In column (7) we use a more flexible form, allowing differential effects for shocks below and above the historical average.

As expected, weather shocks in the previous year are negatively correlated with migration outflows indicating that Semiarid's inhabitants leave the region during drought periods. Coefficient estimates are remarkably stable across specifications and adding more lags does not change the baseline results. More important to our identification, we control for the SPEI one year forward to ensure that our instrument is not contaminated by serial correlation in the dryness measure. The coefficient on $SPEI_{t+1}$ reported in column (6) is small in magnitude and not statistically significant, while the coefficient for $SPEI_{t-1}$ remains almost unchanged. Our estimates indicate that a municipality where the SPEI index is one standard deviation below the historical average will experience an increase of around $3p.p.$ in the migration outflow rate. Finally, our estimates in column (7) show that drought episodes are the main driver of out-migration in the Semiarid region.

[16]We highlight that the denominator P_d is only a normalization that helps interpret the coefficients of interest. It does not play any role in identification.

[17]We calculate the average harvested area for each municipality, between 1974-1980.

Figure 4: Observed vs predicted migration



(a) Migration outflow (b) Migration inflow

Notes: This figure presents the relationship between the predicted and observed migration flows across Brazilian municipalities from 1982 to 2010. Panel (a) shows the number of migrants leaving the Semiarid region to non-Semiarid municipalities. Panel (b) shows the number of incoming Semiarid migrants for destination municipalities. In Panel (b) we dropped two destination municipalities with predicted inflow over 200,000 people, to make the visualization clearer. The circle size represents the municipality's total population in 1980. *Data source*: Census microdata (IBGE).

As mentioned in section 3.1, after leveraging variation in weather shocks to predict the number of migrants leaving the Semiarid region, we use the past settlement pattern of these migrants to allocate them into the destination areas. One important criterion to ensure the validity of our empirical strategy is that both predicted migration outflow and inflow rates, $\widehat{m}_{ot}$ and $\widehat{m}_{dt}$ respectively, should be strongly correlated with their observed counterparts.

Figure 4 reveals that our predictions provide a good fit for the observed migration. Panel (a) shows the relationship between the predicted and observed number of migrants leaving the Semiarid region and entering non-Semiarid municipalities, accumulated over the period 1982-2010. Panel (b) shows the predicted and observed numbers of incoming Semiarid migrants for destination municipalities.

Overall, this analysis shows that our strategy provides a strong first-stage as predicted migration rates, $\widehat{m}_{dt}$, are strongly correlated with observed migration. In all specifications, we show that the first stage F-stat is sufficiently large.[18]

4 Migration Inflows and Female Labor Force Participation

In this section, we establish the relationship between labor market outcomes for female natives and the incoming migration at destination areas.

Table 4 reports the main results for our SSIV estimates. Columns (1)-(3) present the effects on the labor force participation rate, while columns (4)-(6) show the impacts on the share of individuals working at least 40 hours per week. All regressions include time

[18]A sufficiently high F-stat avoids weak instrument concerns, especially in the light of the recent discussion in Lee et al. (2020) who show that a 5 percent test requires an F statistic of 104.7, significantly higher than the broadly accepted threshold of 10.

dummies and control for destination-level 1980 characteristics (age; shares of the black and white population; share of the illiterate population, the share of the population with a college education; share of women in the total population; share of married people in the population; shares of employment in agriculture and manufacturing; family income per capita; and four brackets of the total population: 10,000-25,000; 25,001-50,000; 50,001-100,000; and more than 100,000) and are weighted by the working-age native population in 1980. Standard errors are clustered at the destination municipality level.

Panel A shows that increasing the inflow of migrants from the Semiarid region by one percentage point in the destination areas raises the labor force participation of high-educated women by $0.13p.p.$ but there is no effect on the probability of working full-time. As an important robustness check, we show in Table 5 that there is no effect on the outcomes for native men, reassuring us that is unlikely that our results are driven by some local demand shock instead of the supply of migrant domestic workers.

From now on, we focus on high-educated women as they are the group more likely to benefit from the arrival of incoming migrants. In Table 6 we show that high-educated women with children aged less than 6 years old, the age of mandatory school enrollment, are more likely to be affected by the increasing availability of migrant domestic workers. In Panel A, we use the full sample, stacking the first differences for all the Census periods (1980-1991, 1991-2000, 2000-2010) and show that for women living in households with children, raising the number of incoming migrants by one percentage point increases the labor force participation rate by $0.22.p.$, while the effect is much smaller and the estimate less precise for women in households without any children ($0.11p.p.$). We find no effect on the probability of having a full-time job. In Panels B, C, and D we show the same analysis separately for each period. Unsurprisingly, between 1980 and 2000, when the proportion of migrants from the Semiarid employed as domestic workers is higher, the impacts are more substantial, but they drop in the last period. In the period 1980-1991, both labor force participation and the share of women working full-time increased, while in the next period (1991-2000), only the attachment to the labor force increased and in the last period (2000-2010) there is no effect on labor force participation and the probability of working full-time actually decreased for women without children.

Our results so far suggest that women with care responsibilities are more constrained in their decision to enter the labor force or to work more hours. One way to alleviate such constraints is to provide child care outside the household. In places where such facilities are available, we should expect the importance of incoming domestic workers to be lower[19].

To test this hypothesis we run the same analysis separately for municipalities with low and high presence of preschool in 1980. We use the share of children aged less than 6 years old who are enrolled in preschool as a proxy[20] for the presence of daycare

[19]At least for women living in households with children. In theory, it would also be possible that women without children benefited from domestic workers alleviating the burden of other domestic chores.

[20]Ideally we should use the availability of daycare as a measure of how constrained women are in a

and divide the destination municipalities into two groups: low-presence are those below the median, while high-presence are those above the median share of enrollment. Comparing column (2) from Panels A and B from Table 7, we show that the magnitude of the impact from an inflow of migrants is substantially larger for high-educated women with children in destinations with low presence of preschool ($0.68 p.p.$) than that in municipalities with high availability of preschool ($0.18 p.p.$). There is also no differential impact on the probability of working in a full-time job.

Another way of lifting the constraints faced by high-educated women would be having someone else in the household that could substitute the woman as a caregiver. In Brazil, it is not unusual for elderly members of the family to assume such a role. In this case, one could expect the effects of incoming low-educated migrants to be larger for women in households where there is no such option. We confirm this hypothesis in Table 8, showing that all the effect comes from households without the presence of the elderly. Also, we find larger impacts for women with children in those households, suggesting that those who are more constrained by their care responsibilities benefit the most from the availability of potential domestic workers.

While we provided some evidence that there is an important economic mechanism explaining how the incoming migration can increase the labor supply of high-educated native women, there are other constraints that could be preventing them to benefit from such a mechanism. For instance, the perception of violence, especially against women can be an important factor to explain why some women would prefer not to participate in the labor force. Velásquez (2020) shows that, in Mexico, local violence forces women to reduce the number of hours worked or exit the labor force entirely. We provide a test for this mechanism in Table 9, where we divide destination municipalities by their ranking in the distribution of the female homicide rate in 1980. Low-violence municipalities are those below the median of the female homicide rate, while high-violence destinations are those above the median. Our results suggest that this mechanism seems to be operating in our context. The labor force participation of high-educated women increases more ($0.31 p.p.$) in less violent municipalities than in destinations with more cases of violence against women ($0.22 p.p.$).

Another possible constraint is given by social norms, especially those regarding the role of women in society. In places where gender norms are more entrenched women could be less responsive to economic incentives. In order to assess this mechanism, we repeat the same analysis using two distinct groups. In the first, we use only households where the head, the spouse, or the parents/in-laws are evangelical, while in the second group, we use only households where they identified as having another religion or none at all. We use this definition because the evangelicals in Brazil tend to be more conservative than other religious denominations (Corbi et al., 2022). Table 10 reveals that in more conservative households there is no effect neither on labor force participation nor on the probability of having a full-time job. On the other hand, in households with

given destination. Unfortunately, there is no data available for this period, forcing us to use the presence of preschool as a proxy for daycare.

no evangelical members, women, especially those with children, are more likely to participate in the labor force ($0.23 p.p.$) than women without children ($0.12 p.p.$).

Finally, we also consider the possibility that women may face some sort of discrimination in the labor market. In places where employers may discriminate against women, it is possible that native women could not benefit from the incoming migrant workers. In order to assess this hypothesis we calculate the baseline gender wage gap in 1980 as the ratio between female and male average earnings. We define a municipality as a low (high) gender wage gap using the median of this measure as a threshold. Our estimates show that in places where the gender gap in 1980 was lower, women are more likely to benefit from the incoming migration (both at the extensive and intensive margins).

5 Discussion and Concluding Remarks

In this paper, we investigate the effects of increasing the inflow of migrants from the Semiarid region on the labor force participation of high-educated women in destination municipalities. We use a shift-share instrument approach combining variation in the number of people leaving their hometowns, driven by weather shocks, with past settlement patterns to exploit exogenous variation in the number of migrants entering each destination municipality.

Our estimates indicate that an exogenous supply shock of low-educated workers, more likely to be employed as domestic workers, increases the labor force participation rate of high-educated women, especially those who are more constrained by their care responsibilities.

Such effects are amplified in destination municipalities with a lower presence of preschools but reduced in places with more violence, in more conservative environments, and in places where women are more likely to be discriminated against.

References

Agénor, P.-R. and O. Canuto (2013). Gender equality and economic growth in brazil.

Albert, C., P. Bustos, and J. Ponticelli (2021). The effects of climate change on labor and capital reallocation. Technical report, National Bureau of Economic Research.

Baker, M., J. Gruber, and K. Milligan (2008). Universal child care, maternal labor supply, and family well-being. *Journal of political Economy 116*(4), 709–745.

Barbieri, A. F., E. Domingues, B. L. Queiroz, R. M. Ruiz, J. I. Rigotti, J. A. M. Carvalho, and M. F. Resende (2010). Climate change and population migration in brazil's northeast: scenarios for 2025–205. *Population and Environment 31*, 344–370.

Barone, G. and S. Mocetti (2011). With a little help from abroad: the effect of low-skilled immigration on the female labour supply. *Labour Economics 18*(5), 664–675.

Bauernschuster, S. and M. Schlotter (2015). Public child care and mothers' labor supply—evidence from two quasi-experiments. *Journal of Public Economics 123*, 1–16.

Blundell, R., A. Duncan, J. McCrae, and C. Meghir (2000). The labour market impact of the working families' tax credit. *Fiscal studies 21*(1), 75–104.

Blundell, R. and H. W. Hoynes (2004). Has' in-work'benefit reform helped the labor market? In *Seeking a Premier Economy: The Economic Effects of British Economic Reforms, 1980-2000*, pp. 411–460. University of Chicago Press.

Carvalho, J. A. and R. A. Garcia (2002). Estimativas decenais e quinquenais de saldos migratorios e taxas líquidas de migração do brasil. Working paper, Cedeplar/UFMG.

Corbi, R., T. Ferraz, and R. Narita (2021). Internal migration and labor market adjustments in the presence of nonwage compensation.

Corbi, R. B., F. M. Sanches, et al. (2022). *Church competition, religious subsidies and the rise of Evangelicalism: A dynamic structural analysis*. FEA/USP.

Correia, S. (2017). Linear models with high-dimensional fixed effects: An efficient and feasible estimator. Working paper. http://scorreia.com/research/hdfe.pdf.

Cortes, P. and J. Pan (2013). Outsourcing household production: Foreign domestic workers and native labor supply in hong kong. *Journal of Labor Economics 31*(2), 327–371.

Cortés, P. and J. Pan (2019). When time binds: Substitutes for household production, returns to working long hours, and the skilled gender wage gap. *Journal of Labor Economics 37*(2), 351–398.

Cortes, P. and J. Tessada (2011). Low-skilled immigration and the labor supply of highly skilled women. *American Economic Journal: Applied Economics 3*(3), 88–123.

Del Rey, E., A. Kyriacou, and J. I. Silva (2021). Maternity leave and female labor force participation: evidence from 159 countries. *Journal of Population Economics 34*, 803–824.

East, C. N. and A. Velásquez (2022). Unintended consequences of immigration enforcement: Household services and high-educated mothers' work. *Journal of Human Resources*, 0920–11197R1.

El Badaoui, E., E. Strobl, and F. Walsh (2017). Impact of internal migration on labor market outcomes of native males in thailand. *Economic Development and Cultural Change 66*(1), 147–177.

Farré, L., L. González, and F. Ortega (2011). Immigration, family responsibilities and the labor supply of skilled native women. *The BE Journal of Economic Analysis & Policy 11*(1).

Fernández, R. (2013). Cultural change as learning: The evolution of female labor force participation over a century. *American Economic Review 103*(1), 472–500.

Fernández, R., A. Fogli, and C. Olivetti (2004). Mothers and sons: Preference formation and female labor force dynamics. *The Quarterly Journal of Economics 119*(4), 1249–1299.

Furtado, D. (2015). Immigrant labor and work-family decisions of native-born women. *IZA World of Labor*.

Furtado, D. (2016). Fertility responses of high-skilled native women to immigrant inflows. *Demography 53*(1), 27–53.

Gonzaga, G. M., N. A. Menezes Filho, and J. M. Camargo (2003). Os efeitos da redução da jornada de trabalho de 48 para 44 horas semanais em 1988. *Revista Brasileira de Economia 57*, 369–400.

Imbert, C. and G. Ulyssea (2022). Firm dynamics and the labor market effects of rural-urban migration.

Inglehart, R., C. Haerpfer, A. Moreno, C. Welzel, K. Kizilova, J. Diez-Medrano, M. Lagos, P. Norris, E. Ponarin, B. Puranen, et al. (2014). World values survey: Round six-country-pooled datafile version. *Madrid: JD systems institute 12*.

Jayachandran, S. (2015). The roots of gender inequality in developing countries. *economics 7*(1), 63–88.

Jayachandran, S. (2021). Social norms as a barrier to women's employment in developing countries. *IMF Economic Review 69*(3), 576–595.

Jones, K. and B. Wilcher (2019). Reducing maternal labor market detachment: A role for paid family leavefl.

Kahn, A. S. and R. T. Campus (1992). Effects of drought on agricultural sector of northeast brazil. Working paper.

Kleemans, M. and J. Magruder (2018). Labour market responses to immigration: Evidence from internal migration driven by weather shocks. *The Economic Journal 128*(613), 2032–2065.

Kleven, H., C. Landais, and J. E. Søgaard (2019). Children and gender inequality: Evidence from denmark. *American Economic Journal: Applied Economics 11*(4), 181–209.

Lee, D. S., J. McCrary, M. J. Moreira, and J. Porter (2020). Valid t-ratio inference for iv. Papers, arXiv.org.

Lefebvre, P. and P. Merrigan (2008). Child-care policy and the labor supply of mothers with young children: A natural experiment from canada. *Journal of Labor Economics 26*(3), 519–548.

Lefebvre, P., P. Merrigan, and M. Verstraete (2009). Dynamic labour supply effects of childcare subsidies: Evidence from a canadian natural experiment on low-fee universal child care. *Labour Economics 16*(5), 490–502.

Olivetti, C. and B. Petrongolo (2017). The economic consequences of family policies: lessons from a century of legislation in high-income countries. *Journal of Economic Perspectives 31*(1), 205–230.

Pinheiro, L. S., A. T. Lima Junior, N. d. O. Fontoura, and R. d. Silva (2016). Mulheres e trabalho: breve análise do período 2004-2014.

Rocha, R. and R. R. Soares (2015). Water scarcity and birth outcomes in the brazilian semiarid. *Journal of Development Economics 112*, 72–91.

Velásquez, A. (2020). The economic burden of crime evidence from mexico. *Journal of Human Resources 55*(4), 1287–1318.

Vicente-Serrano, S. M., S. Beguería, and J. I. López-Moreno (2010). A multiscalar drought index sensitive to global warming: the standardized precipitation evapotranspiration index. *Journal of climate 23*(7), 1696–1718.

Wang, X., A. S. Auler, R. L. Edwards, H. Cheng, P. S. Cristalli, P. L. Smart, D. A. Richards, and C.-C. Shen (2004). Wet periods in northeastern brazil over the past 210 kyr linked to distant climate anomalies. *Nature 432*, 740–743.

Figures and tables

Table 1: **Summary statistics: weather and migration data**

	Mean	Std. Dev.	Min	Max	Obs
Annual Rainfall	1,332.57	309.16	550.58	2,739.67	2,607
Rainfall shock	-0.02	0.07	-0.22	0.12	2,607
Annual Temperature	25.53	1.42	13.80	28.35	2,607
Temperature shock	0.00	0.01	-0.01	0.01	2,607
Out-migration	2,509.04	3,518.86	55.00	45,599.00	2,607
Out-migration rate	0.13	0.05	0.00	0.49	2,607
Population	24,443.47	36,301.41	1,265.00	556,642.00	2,607
Panel B: Destination (Non-Semiarid)	Mean	Std. Dev.	Min	Max	Obs
Annual Rainfall	2,604.54	589.58	0.00	5,392.33	9,366
Rainfall shock	-0.02	0.05	-0.29	0.13	9,315
Annual Temperature	22.72	3.21	0.00	28.38	9,366
Temperature shock	-0.00	0.01	-0.02	0.02	9,315
In-migration	418.06	4,860.12	0.00	275,321.00	9,366
In-migration rate	0.02	0.05	0.00	1.97	9,363
Population	47,516.95	248,995.28	716.25	11,253,503.00	9,366

Notes: Rainfall is measured in mm, while the temperature is measured in degrees Celsius. Rainfall and temperature shocks are measured as the log difference from their respective historical averages. The migration outflow (inflow) rate is the share of migrants over the local (native) population in 1980. All statistics are collapsed into the Census-year level.

Table 2: **Summary statistics: Women in destination municipalities**

	All women				
	Mean	Std. Dev.	Min	Max	Obs
Age	38.41	3.37	20.00	46.62	12,484
Black	0.06	0.05	0.00	0.67	12,484
White	0.57	0.28	0.00	1.00	12,484
High-education	0.17	0.12	0.00	1.00	12,484
Children $<$ 6 years	0.38	0.13	0.00	1.00	12,484
Without children	0.27	0.11	0.00	1.00	12,484
Labor Force	0.37	0.15	0.00	1.00	12,484
Full-time job	0.22	0.12	0.00	0.76	12,484
	Only high-educated women				
	Mean	Std. Dev.	Min	Max	Obs
Children $<$ 6 years	0.35	0.16	0.00	1.00	12,248
Without children	0.31	0.15	0.00	1.00	12,248
Labor force	0.72	0.14	0.00	1.00	12,248
Full-time job	0.40	0.17	0.00	1.00	12,248

Notes: Each observation is a destination municipality-year cell. In Panel A we consider all women in destination municipalities, while in Panel B the reference group is high-educated (complete high school or higher) women. This sample also includes the baseline 1980 Census.

Table 3: **Migration outflows induced by weather shocks**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
SPEI_$t-1$	-0.028***	-0.029***	-0.035***	-0.035***	-0.024**	-0.027***	
	(0.009)	(0.009)	(0.010)	(0.010)	(0.010)	(0.009)	
SPEI_{t-2}			0.013	0.014			
			(0.010)	(0.010)			
SPEI_{t-3}				-0.001			
				(0.010)			
SPEI_{t}					-0.013		
					(0.011)		
SPEI_{t+1}						-0.010	
						(0.010)	
Negative shocks							0.047***
							(0.015)
Positive shocks							-0.010
							(0.015)
Observations	21,725	21,725	21,725	21,725	21,725	21,725	21,725
Municipalities	869	869	869	869	869	869	869
Time dummies	✓	✓	✓	✓	✓	✓	✓
Municipality dummies	✓	✓	✓	✓	✓	✓	✓
Baseline × time		✓	✓	✓	✓	✓	✓

Notes: Each observation is an origin municipality-year cell. The dependent variable is the number of individuals who left the origin municipality divided by the total population in the 1980 Census. All specifications municipality and year fixed effects. Columns (2)-(6) also control for municipality-level 1980 characteristics (age; shares of the black and white population; share of the illiterate population, the share of the population with a college education; share of women in the total population; share of married people in the population; shares of employment in agriculture and manufacturing; family income per capita; and four brackets of the total population: 10,000-25,000; 25,001-50,000; 50,001-100,000; and more than 100,000) interacted with time dummies. All regressions are weighted by the harvested agricultural area, measured as a fraction of the municipality's total area. Standard errors are clustered at the municipality level. *** Significant at 1%. ** Significant at 5%. * Significant at 10%.

Table 4: **Effects of migration on female labor force participation and worked hours**

	Panel A: Labor force participation		
	All women	High-education	Low-education
	(1)	(2)	(3)
Migrant inflow	-0.058	0.134***	-0.065*
	(0.040)	(0.036)	(0.036)
Observations	9,360	9,123	9,359
F-stat (IV)	138	138	138
	Panel B: Full-time job		
Migrant inflow	-0.029	0.033	-0.020
	(0.031)	(0.048)	(0.027)
Observations	9,360	9,123	9,359
F-stat (IV)	138	138	138

Notes: This table shows SSIV coefficients on changes in the municipality-level labor force participation rate and the share of individuals working at least 40 hours per week. The dependent variables are the stacked first differences (1980-1991, 1991-2000, 2000-2010) for each outcome. In Panel A, the outcome is the share of female individuals participating in the labor force. In Panel B, the outcomes are the share of female individuals who are employed in full-time jobs. High-education individuals are those who completed a high school education or higher. All regressions include time dummies and control for destination-level 1980 characteristics (age; shares of the black and white population; share of the illiterate population, the share of the population with a college education; share of women in the total population; share of married people in the population; shares of employment in agriculture and manufacturing; family income per capita; and four brackets of the total population: 10,000-25,000; 25,001-50,000; 50,001-100,000; and more than 100,000) and are weighted by the working-age native population in 1980. Standard errors clustered at the destination municipality level in parenthesis. *** Significant at 1%. ** Significant at 5%. * Significant at 10%.

Table 5: **Effects of migration on male labor force participation and worked hours**

	Panel A: Labor force participation		
	All men	High-education	Low-education
	(1)	(2)	(3)
Migrant inflow	-0.023	-0.019	-0.022
	(0.049)	(0.044)	(0.044)
Observations	9361	8968	9360
F-stat (IV)	138	137	138
	Panel B: Full-time job		
Migrant inflow	0.052	0.046	0.062
	(0.057)	(0.066)	(0.053)
Observations	9,361	8,968	9,360
F-stat (IV)	138	137	138

Notes: This table shows SSIV coefficients on changes in the municipality-level labor force participation rate and the share of individuals working at least 40 hours per week. Each cell is the coefficient from a specific regression. The dependent variables are the stacked first differences (1980-1991, 1991-2000, 2000-2010) for each outcome. In Panel A, the outcome is the share of male individuals participating in the labor force. In Panel B, the outcomes are the share of male individuals who are employed in full-time jobs. High-education individuals are those who completed a high school education or higher. All regressions include time dummies and control for destination-level 1980 characteristics (age; shares of the black and white population; share of the illiterate population, the share of the population with a college education; share of women in the total population; share of married people in the population; shares of employment in agriculture and manufacturing; family income per capita; and four brackets of the total population: 10,000-25,000; 25,001-50,000; 50,001-100,000; and more than 100,000) and are weighted by the working-age native population in 1980. Standard errors clustered at the destination municipality level in parenthesis. *** Significant at 1%. ** Significant at 5%. * Significant at 10%.

Table 6: **Effects of migration on labor force participation and worked hours high-educated women**

	Panel A: Stacked differences (1980-2010)			
	Labor force participation		Full-time job	
	With children	No children	With children	No children
	(1)	(2)	(3)	(4)
Migrant inflow	0.220***	0.116**	0.054	0.075
	(0.054)	(0.052)	(0.053)	(0.073)
Observations	8,783	8,370	8,783	8,370
	Panel B: Δ(1980-1991)			
Migrant inflow	0.456***	0.277***	0.203**	0.311**
	(0.125)	(0.096)	(0.097)	(0.142)
Observations	2,577	2,308	2,577	2,308
	Panel C: Δ(1991-2000)			
Migrant inflow	0.387**	0.394**	0.050	0.130
	(0.162)	(0.164)	(0.128)	(0.154)
Observations	3,087	2,968	3,087	2,968
	Panel D: Δ(2000-2010)			
Migrant inflow	-0.016	-0.034	-0.082**	-0.117**
	(0.048)	(0.062)	(0.042)	(0.054)
Observations	3,119	3,094	3,119	3,094

Notes: This table shows SSIV coefficients on changes in the municipality-level labor force participation rate and the share of individuals working more than 48 hours per week, for high-educated women with children aged less than 6 years. Each cell is the coefficient from a specific regression. In Panel A the dependent variables are the stacked first difference for each outcome for all periods (1980-1991, 1991-2000, 2000-2010). In Panels B-D we present each Census period separately. All regressions include time dummies and control for destination-level 1980 characteristics (age; shares of the black and white population; share of the illiterate population, the share of the population with a college education; share of women in the total population; share of married people in the population; shares of employment in agriculture and manufacturing; family income per capita; and four brackets of the total population: 10,000-25,000; 25,001-50,000; 50,001-100,000; and more than 100,000) and are weighted by the working-age native population in 1980. Standard errors clustered at the destination municipality level in parenthesis. *** Significant at 1%. ** Significant at 5%. * Significant at 10%.

Table 7: **Effects on female labor force participation and worked hours, by the presence of preschool**

	Labor force participation		Full-time job	
	With children	No children	With children	No children
	(1)	(2)	(3)	(4)
Panel A: Low presence of preschool				
Migrant inflow	0.685**	0.097	0.228	0.034
	(0.293)	(0.126)	(0.263)	(0.121)
Observations	4,357	4,160	4,357	4,160
Panel B: High presence of preschool				
Migrant inflow	0.179***	0.108*	0.059	0.092
	(0.045)	(0.056)	(0.052)	(0.078)
Observations	4,426	4,210	4,426	4,210

Notes: This table shows SSIV coefficients on changes in the municipality-level labor force participation rate and the share of women working at least 40 hours per week, for high-educated women with children aged less than 6 years. In Panel A our sample uses only municipalities below the median of the share of children below 6 years old enrolled in preschool, while in Panel B the sample is restricted to municipalities above the median. All regressions include time dummies and control for destination-level 1980 characteristics (age; shares of the black and white population; share of the illiterate population, the share of the population with a college education; share of women in the total population; share of married people in the population; shares of employment in agriculture and manufacturing; family income per capita; and four brackets of the total population: 10,000-25,000; 25,001-50,000; 50,001-100,000; and more than 100,000) and are weighted by the working-age native population in 1980. Standard errors clustered at the destination municipality level in parenthesis. *** Significant at 1%. ** Significant at 5%. * Significant at 10%.

Table 8: **Effects on female labor force participation and worked hours, by the presence of elderly people**

	Labor force participation		Full-time job	
	With children	No children	With children	No children
	(1)	(2)	(3)	(4)
	Panel A: Without elderly			
Migrant inflow	0.223***	0.120**	0.053	0.043
	(0.054)	(0.061)	(0.053)	(0.079)
Observations	8,742	8,208	8,742	8,208
	Panel B: With elderly			
Migrant inflow	0.126	0.062	-0.096	0.024
	(0.093)	(0.084)	(0.113)	(0.099)
Observations	4,208	5,957	4,208	5,957

Notes: This table shows SSIV coefficients on changes in the municipality-level labor force participation rate and the share of women working at least 40 hours per week, for high-educated women with children aged less than 6 years. In Panel A our sample uses only women in households without elderly people (people aged above 65 and not working), while in Panel B the sample is restricted to households with the presence of elderly people. All regressions include time dummies and control for destination-level 1980 characteristics (age; shares of the black and white population; share of the illiterate population, the share of the population with a college education; share of women in the total population; share of married people in the population; shares of employment in agriculture and manufacturing; family income per capita; and four brackets of the total population: 10,000-25,000; 25,001-50,000; 50,001-100,000; and more than 100,000) and are weighted by the working-age native population in 1980. Standard errors clustered at the destination municipality level in parenthesis. *** Significant at 1%. ** Significant at 5%. * Significant at 10%.

Table 9: **Effects on female labor force participation and worked hours, by the incidence of violence**

	Panel A: Low violence			
	Labor force participation		Full-time job	
	With children	No children	With children	No children
	(1)	(2)	(3)	(4)
Migrant inflow	0.310**	0.252	-0.099	0.282
	(0.156)	(0.154)	(0.146)	(0.190)
Observations	6,810	6,418	6,810	6,418
	Panel B: High violence			
Migrant inflow	0.217***	0.089	0.068	0.048
	(0.056)	(0.057)	(0.055)	(0.079)
Observations	1,973	1,952	1,973	1,952

Notes: This table shows SSIV coefficients on changes in the municipality-level labor force participation rate and the share of women working at least 40 hours per week, for high-educated women with children aged less than 6 years. In Panel A we use only municipalities below the median of the homicide rate in 1980. In Panel B there are only municipalities above the median. All regressions include time dummies and control for destination-level 1980 characteristics (age; shares of the black and white population; share of the illiterate population, the share of the population with a college education; share of women in the total population; share of married people in the population; shares of employment in agriculture and manufacturing; family income per capita; and four brackets of the total population: 10,000-25,000; 25,001-50,000; 50,001-100,000; and more than 100,000) and are weighted by the working-age native population in 1980. Standard errors clustered at the destination municipality level in parenthesis. *** Significant at 1%. ** Significant at 5%. * Significant at 10%.

Table 10: **Effects on female labor force participation and worked hours, by the level of religiosity**

	Panel A: Evangelical household			
	Labor force participation		Full-time job	
	With children	No children	With children	No children
	(1)	(2)	(3)	(4)
Migrant inflow	0.078	0.113	-0.125	0.312
	(0.092)	(0.128)	(0.108)	(0.213)
Observations	4,525	3,666	4,525	3,666
	Panel B: Non-evangelical household			
	Labor force participation		Full-time job	
	(1)	(2)	(3)	(4)
Migrant inflow	0.228***	0.118**	0.062	0.072
	(0.055)	(0.052)	(0.053)	(0.073)
Observations	8,753	8,310	8,753	8,310

Notes: This table shows SSIV coefficients on changes in the municipality-level labor force participation rate and the share of women working at least 40 hours per week, for high-educated women with children aged less than 6 years. In Panel A our sample uses only women in households where either the head, the spouse, or the parents/in-laws are evangelical, while in Panel B we use only households where they declared another or none religion. All regressions include time dummies and control for destination-level 1980 characteristics (age; shares of the black and white population; share of the illiterate population, the share of the population with a college education; share of women in the total population; share of married people in the population; shares of employment in agriculture and manufacturing; family income per capita; and four brackets of the total population: 10,000-25,000; 25,001-50,000; 50,001-100,000; and more than 100,000) and are weighted by the working-age native population in 1980. Standard errors clustered at the destination municipality level in parenthesis. *** Significant at 1%. ** Significant at 5%. * Significant at 10%.

Table 11: **Effects on labor markets for high-educated women, by the level of baseline gender wage gap**

	Labor force participation		Full-time job	
	With children	No children	With children	No children
	(1)	(2)	(3)	(4)
	Panel A: Low gender wage gap			
Migrant inflow	0.287***	0.196**	0.166**	0.285***
	(0.080)	(0.086)	(0.078)	(0.104)
Observations	4,361	4,107	4,361	4,107
	Panel B: High gender wage gap			
Migrant inflow	0.077	0.030	-0.103	-0.204**
	(0.052)	(0.081)	(0.071)	(0.082)
Observations	4,422	4,263	4,422	4,263

Notes: This table shows SSIV coefficients on changes in the municipality-level labor force participation rate, the employment rate, and the share of women working at least 40 hours per week, for high-educated women with children aged less than 6 years. In Panel A our sample uses only municipalities below the median of the baseline share of female employment, while in Panel B we use only municipalities above the median. All regressions include time dummies and control for destination-level 1980 characteristics (age; shares of the black and white population; share of the illiterate population, the share of the population with a college education; share of women in the total population; share of married people in the population; shares of employment in agriculture and manufacturing; family income per capita; and four brackets of the total population: 10,000-25,000; 25,001-50,000; 50,001-100,000; and more than 100,000) and are weighted by the working-age native population in 1980. Standard errors clustered at the destination municipality level in parenthesis. *** Significant at 1%. ** Significant at 5%. * Significant at 10%.