The Impacts of U.S. Immigration Policy on Fertility in Mexico

Research Proposal

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1. Motivation

In recent decades, U.S. immigration policies have profoundly influenced migration flows, with notable effects on both migrant-sending and receiving countries. One of the largest deportation programs in U.S. history, the Secure Communities (SC) program, implemented in 2008, disproportionately targeted individuals without significant criminal histories (Amuedo-Dorantes & Arenas-Arroyo, 2019). This policy dramatically increased the volume of deportations, leading to profound disruptions in the lives of deportees and their families (Alsan & Yang, 2024; Wang & Kaushal, 2019). While previous research has studied how fertility and partnership change in response to deportations in receiving countries (Amuedo-Dorantes et al., 2020; Amuedo-Dorantes & Arenas-Arroyo, 2021), there is limited evidence on how such forced returns affect demographic behaviors, such as fertility patterns, in sending countries.

This study seeks to evaluate the effects of U.S. deportations, particularly under the SC program, on fertility in Mexico. It hypothesizes that deportations alter fertility decisions among returnees by changing household dynamics, economic stability, and social networks.

Deportations are a special case of return migration that could arguably prompt positive, negative, or null effects on fertility patterns in origin countries. This document presents a brief account of the theoretical and empirical findings in the literature on the relationship between return migration and fertility, as well as the data and empirical strategy that will be used in the paper.

2. Literature review

Fertility choices are deeply influenced by factors such as economic stability, family structure, and cultural expectations, all disrupted by deportation. Return migration can influence fertility positively by altering household income and economic stability. Dustmann and Mestres (2010) demonstrated that return migrants often bring back savings and remittances, which can enhance financial security in sending communities and create a conducive environment for childbearing. These financial inflows may reduce the opportunity costs associated with having children, especially in regions where children contribute to household labor or economic production. Additionally, Stark and Bloom (1985) highlighted how return migrants might serve as agents of social and economic change, potentially reinforcing traditional fertility norms in sending communities. Exposure to different cultural norms abroad can either introduce new fertility preferences or strengthen existing ones, depending on the migrant's experiences and the socio-cultural context of the origin country.

Conversely, return migration can also lead to a decrease in fertility rates. Amuedo-Dorantes and Pozo (2014) argued that economic instability faced by involuntary return migrants, such as deportees, can suppress fertility by increasing financial uncertainty and reducing household resources. This aligns with findings by Massey and Espinosa (1997), who examined how disruptions caused by return migration can negatively affect family stability and fertility aspirations. Reintegration challenges, including unemployment and social stigma, often exacerbate these effects, particularly in economically disadvantaged areas.

Empirical studies have further explored how migration-driven changes in gender roles and family dynamics impact fertility. Lindstrom and Saucedo (2002) found that exposure to low-fertility norms in host countries can lead to the adoption of similar reproductive behaviors upon return, resulting in reduced fertility in sending communities. Similarly, Borjas and Bratsberg (1994) emphasized the heterogeneity of return migrants, noting that those who return voluntarily might differ significantly in economic and social characteristics from those forced to return, leading to varied fertility outcomes.

The duality of return migration's effects on fertility reflects its complex nature. On one hand, financial and cultural factors associated with return migration can support higher fertility, while on the other, economic instability and reintegration challenges may suppress it. These dynamics underscore the importance of considering context-specific factors when analyzing the relationship between return migration and fertility.

3. Policy Context: The Secured Communities program

The SC program was a federally enforced immigration program implemented across U.S. counties from 2008-2013. The program sought to join coordination efforts between security agencies to arrest and deport non-citizen immigrants who violated federal immigration laws.[1] Before the enactment of the SC program, if a non-citizen committed an offense, they would get their fingerprints taken before being admitted into prison, and these data would then be shared with the Federal Bureau of Investigation for criminal background checks and further research.

Under the SC program, these data would also be sent to the U.S. Immigration and Customs Enforcement (ICE), who would determine the individual's immigration status using their Automated Biometric Identification System (IDENT). Whenever there was a fingerprint match, ICE issued an immigration hold on the detainee. This immigration hold would require the federal or local law enforcement agency to hold the detainee for up to 48 hours until ICE could start the deportation process (Alsan & Yang, 2024). Eligibility for deportations under the SC program would involve criminal offenses and immigration-related crimes. Among deportees, 86% had convictions, and among those with convictions, 50% could be characterized as violent. Moreover,

[1] Violations could involve visa overstays to more serious crimes such as homicide, robbery, and kidnapping (Caballero et al., 2018).

78% of all deportees were Mexican, of which 96% were men (Osuna Gomez & Medina-Cortina, 2023).

Implementing the SC program took time and effort among several law enforcement offices and ICE. Only a few counties in border states implemented it in its early stages until it reached full compliance by 2013. I use the staggered adoption of the SC program in my empirical approach for the period 2008-2013.

4. Data

Vital records: data on fertility come from *Instituto Nacional de Estadística y Geografía* (INEGI), which contain information about the universe of reported births. Using these data, I will calculate the total fertility rate (TFR) as follows:

$$\text{TFR} = 5 \times \sum_{a=15\text{-}19}^{40\text{-}44} \frac{\text{Births of women in age range a}}{\text{Total women in age range a}} \tag{1}$$

To compute it, I will use the annual number of births based on the mother's municipality of residence for each given age group a.[2] The granularity of the data will allow me to explore heterogeneity by education, age, and health insurance status. As an alternative measure, I will use the birth rate, that is, the number of live births per thousand people.

Migrant networks and deportations: I will combine detailed administrative data on migrant networks to track both the municipality of origin in Mexico and the U.S. county of residence of migrants prior to the onset of the SC program. Specifically, I will use administrative records from the *Matrículas Consulares de Alta Seguridad (MCAS)* identity card program. This program was designed to provide Mexican nationals residing abroad (primarily in the U.S.) with a robust form of identification, regardless of their immigration status. Issued by Mexican consulates, the card serves as a valid form of identification and is predominantly held by unauthorized immigrants, who face limited access to official identification in the United States (Massey et al., 2010). The card is valid for five years (renewable upon expiration or when the cardholder relocates) and facilitates access to essential services such as opening bank accounts, obtaining driver's licenses, renting homes, and applying for utilities.

While the MCAS program does not cover the entire undocumented migrant population in the U.S., its primary advantage is that it mirrors the distribution of this population as reflected in other official sources (Caballero et al., 2018) . Furthermore, the MCAS data provides detailed

[2] The five-year age groups will be 15 to 19; 20 to 24; 25 to 29; 30 to 34; 35 to 39; and 40 to 44.

information on both the migrants' U.S. location and their place of origin in Mexico. It is estimated that 93% of deportees return to their municipality of origin upon arriving in Mexico (Osuna Gomez & Medina-Cortina, 2023), so it is a plausible approximation of the joint link between the migrants' source municipality and their residence in the U.S.

The independent variable will measure the number of deportees under the SC program per thousand population. To construct this variable, I will use two sources of information. First, I will calculate the network linkage using MCAS data, which reflects the share of migrants from each source municipality m residing in U.S. county c in a baseline year (2006), as follows:

$$Network_{m,c,2006} = \frac{n^{m}_{c,2006}}{N^{c}_{2006}} \tag{2}$$

Where n^{m}_{c,t_0} is the total number of MCAS cards issued to migrants residing in a county c who originate from municipality m in 2006. N^{c}_{2006} is the total number of MCAS cards in county c in 2006.

Second, I will use publicly available data on the number of Mexicans removed from county c under the SC program from the Transactional Records Access Clearinghouse (TRAC).

Thus, the treatment variable, $\psi_{m,t}$, will be a shift-share measure representing the number of deported migrants per thousand population in each Mexican municipality during the analysis period (2008-2013). It assumes that Mexican municipalities will be differentially exposed to the degree of the baseline concentration of migrants in the U.S. from source municipalities in Mexico and the implementation of the SC program via deportations.

$$\psi_{m,t} = \frac{100{,}000}{pop_{m,2006}} \sum_{c \in C} Deportations_{c,t} \times Network_{m,c,2006} \tag{3}$$

Additional data: to explore mechanisms of changing labor supply and demand, I will use household surveys, Mexico's economic census, and data on partnerships coming from INEGI.

5. Empirical strategy

The analysis will use a difference-in-difference model to compare municipalities with a high reception of migrants versus those with a low reception in response to the staggered adoption of the SC program in the U.S. The baseline estimations are based on the following regression model using OLS:

$$Y_{m,t} = \alpha + \beta\psi_{m,t} + \omega X_{m,t} + \lambda_{s,t} + \gamma_m + \epsilon_{m,t} \tag{4}$$

Y is the age-adjusted fertility rate of women living in the municipality m at time t. The parameter of interest is β, the coefficient on deportations per thousand people, ψ. X is a set of characteristics measured before the start of the SC program, interacted with time dummies. The parameters λ and γ are state-by-year and municipality fixed effects that account for time-varying shocks at the state level, and time-invariant factors across municipalities, respectively. Standard errors are clustered by municipality. Regressions are weighted by the number of births before the implementation of SC.

The main assumption for proper identification of β is that, in the absence of the SC program, the age-adjusted fertility rate of municipalities more exposed would have evolved similarly to those municipalities less exposed. The validity of this parallel trends assumption can be partially assessed by estimating the following distributed-lag model:

$$Y_{m,t} = \alpha + \sum_{k=-4}^{4} \beta_k \, \psi_{m,t-k} + \omega X_{m,t} + \theta_t + \gamma_m + \epsilon_{m,t} \tag{5}$$

Where the estimated β_k measure the relationship between deportations and the change in age-adjusted fertility. The pre-treatment effects are grouped in the leads ($k < 0$), and the effects following the adoption of the SC program are captured by the lags ($k > 0$). One of the advantages of the distributed-lag model is that it allows the use of a continuous variable, ψ. I follow the convention in the event study literature and choose $\beta_{-1} = 0$, and cumulate the effects for the leads to assess the parallel trends assumption, which should lead to close to zero and statistically insignificant coefficients (Schmidheiny & Siegloch, 2023).

References

Alsan, M., & Yang, C. S. (2024). Fear and the Safety Net: Evidence from Secure Communities. *The Review of Economics and Statistics*, *106*(6), 1427–1441. https://doi.org/10.1162/rest_a_01250

Amuedo-Dorantes, C., & Arenas-Arroyo, E. (2019). Immigration Enforcement and Children’s Living Arrangements. *Journal of Policy Analysis and Management*, *38*(1), 11–40. https://doi.org/10.1002/pam.22106

Amuedo-Dorantes, C., & Arenas-Arroyo, E. (2021). Immigration policy and fertility: Evidence from undocumented migrants in the U.S. *Journal of Economic Behavior & Organization*, *189*, 274–297. https://doi.org/10.1016/j.jebo.2021.06.027

Amuedo-Dorantes, C., Arenas-Arroyo, E., & Wang, C. (2020). Is immigration enforcement shaping immigrant marriage patterns? *Journal of Public Economics*, *190*, 104242. https://doi.org/10.1016/j.jpubeco.2020.104242

Amuedo-Dorantes, C., & Pozo, S. (2014). On the Intended and Unintended Consequences of Enhanced U.S. Border and Interior Immigration Enforcement: Evidence From Mexican Deportees. *Demography*, *51*(6), 2255–2279. https://doi.org/10.1007/s13524-014-0340-7

Borjas, G. J., & Bratsberg, B. (1994). *Who Leaves? The Outmigration of the Foreign-Born* (Working Paper 4913). National Bureau of Economic Research. https://doi.org/10.3386/w4913

Caballero, M. E., Cadena, B. C., & Kovak, B. K. (2018). Measuring Geographic Migration Patterns Using Matrículas Consulares. *Demography*, *55*(3), 1119–1145. https://doi.org/10.1007/s13524-018-0675-6

Dustmann, C., & Mestres, J. (2010). Remittances and temporary migration. *Journal of Development Economics*, *92*(1), 62–70. https://doi.org/10.1016/j.jdeveco.2008.12.002

Lindstrom, D. P., & Saucedo, S. G. (2002). The Short- and Long-Term Effects of U.S. Migration Experience on Mexican Women's Fertility*. *Social Forces*, *80*(4), 1341–1368. https://doi.org/10.1353/sof.2002.0030

Massey, D. S., & Espinosa, K. E. (1997). What's Driving Mexico-U.S. Migration? A Theoretical, Empirical, and Policy Analysis. *American Journal of Sociology*, *102*(4), 939–999. https://doi.org/10.1086/231037

Massey, D. S., Rugh, J. S., & Pren, K. A. (2010). *The Geography of Undocumented Mexican Migration*. https://online.ucpress.edu/msem/article/26/1/129/46341/The-Geography-of-Undocumented-Mexican-Migration

Osuna Gomez, D., & Medina-Cortina, E. (2023). *The Effect of Immigration Enforcement Abroad on Immigrants' Home-Country Firms* (SSRN Scholarly Paper 4620336). Social Science Research Network. https://doi.org/10.2139/ssrn.4620336

Schmidheiny, K., & Siegloch, S. (2023). On event studies and distributed-lags in two-way fixed effects models: Identification, equivalence, and generalization. *Journal of Applied Econometrics*, *38*(5), 695–713. https://doi.org/10.1002/jae.2971

Stark, O., & Bloom, D. E. (1985). The New Economics of Labor Migration. *The American Economic Review*, *75*(2), 173–178.

Wang, J. S.-H., & Kaushal, N. (2019). Health and Mental Health Effects of Local Immigration Enforcement. *International Migration Review*, *53*(4), 970–1001. https://doi.org/10.1177/0197918318791978