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1 Introduction

Over 41,100 deaths and disappearances of migrants en route to their destinations have been recorded globally since 2014.[1] The 1,954-mile long US-Mexican border currently ranks second only to the Mediterranean region in terms of total number of reported migrant fatalities (IOM 2021). In a majority of cases, exposure to hazardous environmental conditions at the border was the cause, and deaths due to hypothermia, drowning, and dehydration are common.[2] What drive the self-selection migrants between life-endangering crossing places and safer alternatives? In this study, we leverage observations of individual-level migration trajectories stretching over a period of 25 years (1980 - 2005), when undocumented migration across the Mexican-US border was at its peak (Figure 1). A rich set of shocks, some more permanent (e.g. enforcement and trade reforms) and others idiosyncratic (e.g. import and weather shocks), impacted the conditions confronting migrants at the border and at their origin communities during this period. Importantly, the lessons drawn from these experiences can faciliate a rethinking in border enforcement designs to proactively take into account how changes in economic prospects at migrant origins and conditions at the border jointly impact the trajectory of migration journeys.

This study complements a vibrant literature documenting the diverse push and pull forces of migration. The canonical theoretical treatment of migration has a longstanding tradition dating from the expected utility framework of Sjaastad (1962). Recent studies present important extensions by incorporating spatial general equilibrium features such as commuting costs (Monte et al. 2018, Bryan and Morten 2019, Caliendo et al.2019, Tombe and Zhu 2019), credit constraints (McKenzie and Rapoport 2007, Munshi and Rosenzweig 2016), mortality risks in foreign workplace (Shrestha 2019, 2020), and social networks to explain group-based heterogeneity in migration destination for example (Chau 1997, Munshi 2003, DiMaggio and Garip 2012). The implicit assumption in these analyses is that conditional on the decision to migrate and the choice of destination, migrants select the least cost route of migration. In this context, border enforcement effectively raises the cost of migration, requiring migrants to hire smugglers, or make

[1] The International Organization of Migration's (IOM) Missing Migrant Project collects data from a variety of sources including staff reports by United Nations High Commissioner for Refugees based on survivor surveys (Mediterranean region), medical examiners and sheriff offices (US), as well as media and year-end government reports.

[2] Other reported man-made causes of migrant death such as homicide, vehicular accidents, and border wall related injuries, while present, are strictly a minority (IOM 2021).

multiple migration attempts to reach their destinations, for example.

This focus on the cost of border crossing has inspired a number of seminal studies that evaluate the effectiveness of border enforcement as means of migrant deterrence, as well as migrant displacement. Ethier (1986) builds a model that examines the role of border enforcement on illegal migration.[3] Empirical studies in this area is understandably scant, and the handful of studies available unanimously feature the US-Mexican border as an excellent illustration of how border enforcement deters migrants and how a combination of geo-climatic diversity and enforcement heterogeneity can jointly contribute to wholesale displacements in migrant crossing locations.[4] Hanson and Spilimbergo (1999) demonstrate that strengthening border enforcement at the US-Mexican border, as measured by overall border patrol manpower, is an effective migrant deterrent device. Gathmann (2008) presents the first study featuring both the migrant deterrence and displacement effects of selective border enforcement along the US-Mexican border using data on crossing histories of individual migrants. Specifically, the study shows that border enforcement induces migrants to switch away from previous crossing places. Subsequent studies have consistently demonstrated this displacement effect whether border enforcement is proxied by border patrol budgets (Gathmann 2008), personnel (Gathmann 2008, Lessem 2018), and fencing (Allen et al. 2019, Feigenberg 2019), or a combination of both (Cornelius 2001).

This paper innovates by directing attention to the triggers of hazardous border crossing choices. We cast a wide net, and include individual migrant-level characteristics, community-level characteristics, as well as the juxtaposition of crossing, individual and community characteristics as potential trigger candidates. In doing so, we depart from the view that border enforcement factors alone determine crossing decisions. We write a simple theoretical model of a migrant's choice between multiple crossing locations, each distinctive in terms of the likelihood of successful crossing, the likelihood of accidents / death while crossing the border, and the cost of crossing (e.g. by hiring a coyote). The model yields two complementary sets of observations. First, migrants with poor long term economic prospects at home are favorably selected at crossing places offering

[3]For models that combine multiple policies (e.g. border enforcement, amnesties, and / or internal enforcement) and the political economy of migration policies, see Chau (2001, 2003), Epstein and Weiss (2011), and Fachinni and Testa (2011).

[4]Historically, San Diego and El Paso were the preferred crossing locations. We show in Section 4 that migrants often reject crossing locations that minimize distance but prefer instead to cross the border through these tried and true border towns.

high reward and high risks. As such, adverse economic shocks encourage migrants to switch away from safe crossing alternatives to risky ones as long as these promise high likelihoods of success. Second, lagged idiosyncratic shocks that temporarily decrease migrant earnings may require migrants to switch away from high cost crossing places promising high rewards when migrants are credit-constrained.

An important takeaway is that migrants' crossing response to economic shocks at origin is specific to (i) the nature of the shock (idiosyncratic or permanent) they experience at origin communities, as well as (ii) the relative risks and rewards profile of the crossing places in question. These considerations offer new insights on the different forces at work governing temporary as opposed to more permanent shifts in crossing locations. Furthermore, border enforcement policies that exaggerate the risk-cum-reward profile of a crossing location can have far reaching income distributional as well as migrant mortality consequences that disproportionately affect poor migrants.

We employ data from the Mexican Migration Project (MMP). The MMP is a repeated cross-sectional survey conducted annually since 1982. Importantly for our study, the MMP provides detail crossing history records along the US-Mexico border, namely when, where, how, in addition to individual migrant characteristics. We study a time period (1980 - 2005) when total apprehension numbers at the border were at historically highest levels reaching over a million apprehensions per year. Our identification strategy leverages a combination of exogenous shocks, featured by (i) iconic border enforcement operations, (ii) permanent trade agreements and short term import and weather shocks, as well as (iii) differences in migrant-level characteristics. Jointly, these provide a rare opportunity to examine multiple simultaneous forces at work, both at the border and in migrant communities, that determine crossing location choices.

Specifically, in order to capture selective variations in border enforcement intensities along the border, we control for the implementation dates and locations of two major boarder operations, namely Operation Gatekeeper and Operation Hold the Line. These operations led to an increase in a combinations of border control activities, including fencing, border patrols, as well as border enforcement technologies. In addition, these immigration control measures began only in the mid-1990s, years after illegal border crossing has peaked for the first time in the late 1980s. The onset of these operations thus provides variations in enforcement intensities that are arguably unrelated to unobserved drivers of crossing frequencies throughout the sample.

To instrument for a permanent change in future wage expectations, we use the signing of the NAFTA trade agreement in 1994. In order to account for the possibility that this trade agreement has differential impacts amongst different Mexican communities, due for example to stiff import competition in sectors directly affected by subsidized agricultural production in the US, we interact the post-NAFTA dummy with the share of labor force engaged in agriculture at the community level in Mexico. Next, to capture idioisyncratic changes in the ability of migrants to afford the cost of migration, we employ a Bartik style shift-share instrument, which accounts for community-level changes in the penetration of agricultural and manufacturing imports, by interacting normalized import by sector with the corresponding employment shares at the community level.

We check our findings against alternative mechanisms, and the introduction of additional controls. First, to flesh out what specific border control activities drive border enforcement effectiveness, we use data on the cumulative miles of fencing to control for time varying border enforcement that is specific to crossing locations to check the standalone impact of border fencing construction. In addition, to distinguish between the possible disproportionate impact of the NAFTA trade shock on Mexican agriculture relative to other more broad-based multilateral trade agreements, we use 1986 as another key date marking a potential permanent shift in economic prospects as Mexico acceded to the General Agreement on Tariff and Trade (GATT).[5]

In addition, to account for potential spurious correlations due to the spatial conflation of trade exposure and proximity to the border, we include results that incorporate regional fixed effects, distance from migrant communities to each of the border sectors, as well as distance from border sectors to destinations. To check that our shift-share import penetration measure produces findings commensurate with other exogenous idiosyncratic shocks, we use community-level annual rainfall shocks as an alternative instrument representing triggers of year-to-year income shocks. Finally, we also leverage the launch of the Secure Fence Act in 2006 when the Tucson sector was specifically targeted for border enforcement increases through new fencing and border patrol personnel. We conduct a falsification test, and check how this change in risk-rewards profile

[5]The year 1986 also marked the beginning of the Immigration Reform Control Act in the US. Section 2 discusses the role of this landmark legislation on illegal immigration.

of the Tucson sector may have affected how migrants choose crossing locations in response to idiosyncratic wage shocks.

We draw three broad set of findings from the evidence, related to how individual characteristics, shocks at the community level in Mexico, as well as shocks at the border respectively impact crossing place choices. The predicted likelihood that an average migrant will select either San Diego (72%), Tucson (15%), or El Paso (5%) is over 90%. As such, we will focus our discussion on these three border sectors.

First, we check the effects of border enforcement variables, and find that while Operation Gatekeeper in the San Diego sector indeed displaced migrants from the San Diego sector to the Tucson sector, the effect of Operation Hold the Line is not different from zero. Furthermore, the displacement effect of border fencing is significant in the San Diego sector, sending migrants from San Diego to Tucson, but only marginally so in the El Paso sector. The evidence thus suggest that border enforcement policies during this period, through operation gatekeeper and associated selective fencing in the San Diego sector, did appear to have jointly reinforced the status of Tucson as a high reward relative to San Diego, albeit also high risk crossing location during this period due to its hazardous terrain and environmental conditions.

Turning to individual and community level effects, we find, consistent with our theory, that individuals with low education levels and thus low economic prospects in Mexican communities are favorably selected at the Tucson sector relative to the arguably safer alternative in San Diego. At the community level, we consider two types of economic shocks. Our measure of a permanent wage shock at the community level subsequent to NAFTA, interacted with the share of agricultural workers in a community, reveals that the probability that Tucson is the chosen sector rises after NAFTA, and the effect is larger in communities with a higher share of agricultural workers. Meanwhile, the probability that a worker selects San Diego or El Paso declines. It is important to note that 1994 witnessed the coincidence of major border enforcement operations, as well as the signing of the NAFTA agreement. To disentangle these coincidental policy shocks, our finding show that migrant displacement is sensitive to the share of agricultural workers. We take this as evidence consistent with a negative earnings shock subsequent to NAFTA particularly in agricultural communities hastening a shift to border-crossings through Tucson.

Interestingly, our measure of idiosyncratic earnings shocks using the shift-share measure of import competition tells a nuanced story. In particular, an increase in lagged agricultural import penetration has a significant and strictly negative impact on the likelihood that Tucson is the chosen crossing sector, and a strictly positive impact on San Diego and El Paso. One possible explanation is that agricultural workers are credit-constrained (Chiquiar and Hanson 2005, McKenzie and Rapoport 2010, Belot and Hatton 2012, Angelucci 2015), and as such they must rely on prior period savings to finance high cost crossing options. Meanwhile, we find that in the manufacturing sector where workers enjoy higher income and better credit access, deeper import penetration has the opposite effect of increasing the popularity of Tucson relative to San Diego or El Paso as crossing locations. This is consistent with the negative self-selection of migrants at high risk high rewards crossing locations when credit constraints are not binding.

Taken together, these results offer two related perspectives. In terms of understanding the causes of the humanitarian criss along the border, our findings show that while selective border enforcement policies can directly prompt migrants to embark on more dangerous migration journeys, the same policies have the power to alter the risks that migrants choose undertake in response to shocks to the local economic livelihoods of migrant workers. From a border enforcement perspective, we find consistent with the literature that migrants readily choose a different border sector whenever the intensity of border enforcement selectively rises. What we add to this consensus finding to date is that the extent to which migrants are displaced from well-enforced border sectors will depend in the end on migrant's wellbeing at their local communities. Thus, effective border enforcement policies should combine knowledge of crossing patterns at the border, with knowledge about changes in the local economic conditions of migrant communities both permanent and idiosyncratic, and their differential effect on individual migrant along the income spectrum.

The rest of this paper is organized as follows. In section 2, we provide an overview of the institutional and policy landscapes guiding the flow of Mexican-US migration. In section 3, we outline a simple theoretical model of migrants' choice of border crossing in the presence of heterogeneous rewards and risks profiles among the border crossing choices, as well as how this analysis motivated our empirical specification. In Section 4, we provide an overview of the data we assembled for this study, and Section 5 presents our main empirical specifications and results, in addition to a series of robustness checks. Section 6 concludes.

2 The Mexican-US Border

The Southwestern border of the US is comprised of nine border patrol sectors (San Diego (California), El Centro (California), Yuma (Nevada), Tucson (Arizona), El Paso (New Mexico), Big Bend (Texas), Del Rio (Texas), Laredo (Texas) and Rio Grande (Texas)).[6] The number and shares of undocumented migrants apprehended at various points along the US-Mexico border as reported by the US Customs and Border Protection (CBP) are shown in Figures 1 and 2. Total apprehension numbers were low and relatively stable during the 1960s at around a total of 27,000 apprehensions per year. By the 1970s and early 1980s the number rose at a significantly faster pace, and between 1970 and 1985, total apprehension increased at the rate of about 60,000 *additional* apprehensions per year.

The Immigration Reform and Control Act (IRCA) of 1986 is the first major piece of immigration reform legislation directly targeting the employers of undocumented immigrants and internal enforcement. Two innovations in immigration policies that became the lasting legacy of IRCA were employer sanctions and resources to bolster internal interdiction. Employers must henceforth attest to the immigration status of their employees, and for the first time, the hiring of undocumented workers knowingly was made illegal. The Act also contained an unprecedented amnesty clause (Chau 2001, 2003), which allowed seasonal agricultural undocumented immigrants to attain legal status. Similarly, undocumented immigrants who entered the US before January 1, 1982 were also given a path to citizenship. With a focus of IRCA on combining employer sanction, internal interdiction, and amnesty, border enforcement budget in fact was in fact flat throughout the 1970s as well as the 1980s (Massey, Durand and Pren 2016). Taken together, there was a sharp drop in the number of apprehended migrants at the border immediately after 1986 possibly as the existing stock of circular migrants attained legal status. Shortly thereafter, undocumented immigration began to climb once again.

In 1993, the first round of border wall construction began. This marked a period when dedicated border patrols and border wall construction began to selectively target historically high frequency crossing locations. The first federally funded border fencing construction began when

[6] From 1940, border enforcement was carried by the Immigration and Naturalization Service (INS) under the Department of Justice. In 2003, the INS was decommissioned, and in its place were there complementary agencies: the US Customs and Border Protection, US Citizenship and Immigration Services, and US Immigration and Customs Enforcement.

a 14-mile stretch of border wall was approved in 1990 to be built along the Tijuana-San Diego border. Construction was completed in 1993. Meanwhile, two border operations to control the flow of illegal drugs as well as illegal migration were authorized: Operation Hold the Line (1993) in Texas, and Operation Gatekeeper (1994) in California. The locations of these operations were designed to stem the flow of undocumented immigrants at the most commonly taken pathways in the San Diego and El Paso sectors. These operations led to sharp increases in border patrol funding in the 1990s, in the number of border patrol officers, equipment and sensors, as well as the construction of additional border barriers.

The emphasis on selective border enforcement continued through the rest of the 1990's into early years of the following decade. For example, in 1996, the Illegal Immigration Reform and Immigration Responsibility Act was signed into law, which authorized further fortification of the fencing started in 1990. Subsequently in 1999, Operation Safegaurd was authorized to target illegal migration via the Tucson sector in Arizona. Between 1993 and 2005, total border patrol budget tripled from $500 million to $1.5 billion. In 2006, President George W. Bush signed the Secure Fence Act into law, which approved another 700 miles of border walls to be erected from California to Texas. Total border patrol budget more than double again from $1.5 billion to over $3.5 billion by 2010.

Taken together, border enforcement operations during this time period was largely reactive – targeting traditionally popular and safer migration routes. The flip side is that traditionally more hazardous routes are rendered more attractive. Indeed, an iconic feature of the border enforcement lesson throughout this time period is that migrants readily respond to new border fencing by switching away from San Diego crossing in favor of Tucson (Cornelius 2001, Fernàndez-Kelly and Massey 2007, Massey, Durand and Pren 2016, Gathman 2008, Allen et al. 2019, Feigenberg 2019). In order to transition from reactive border enforcement to a more proactive approach, a deeper understanding of the underlying incentives that drive migrants to pick one border crossing location in favor of another is required. To this end, we proceed now to develop a stylized model of migrants' choice of border crossing places, taking into account the juxtaposition of border enforcement characteristics shaped by immigration reforms, the economic livelihoods at migrants' origin communities, and the individual characteristics of the migrants themselves.

3 Modeling the Choice of Border Crossing

Consider a large population of migrants of size N. Each migrant i must choose a border crossing location out of K feasible options, $k = 1, ..., K$.[7] Let p_k^s denote the likelihood of successful border crossing at k, and p_k^a the likelihood of encountering an accident, which we take to mean any event that deters a migrant from work or employment at home or abroad. With complementary probability $1-p_k^s-p_k^a$, the migrant returns to the migrant origin after a failure to cross the border.[8] Furthermore, let $V_i^s \geq 0$, V_i^a, and $V_i^o \geq 0$ respectively denote the expected discounted lifetime utilities, henceforth expected value, associated with a successful border crossing, accident / death at the border, and an unsuccessful migrant attempt. We henceforth normalize the expected value associated with an accident at the border at zero ($V_i^a = 0$).

In addition to expected economic prospects, migrants may also differ in terms of their ability to shoulder the cost of crossing the border. In particular, let c_{ik} denote the cost of border crossing at k, which depends on the cost of hiring a coyote, plus the total distance required to travel to crossing k and then again from crossing k to the destination location for example. Also let s_i denote savings from prior periods. A migrant is credit constrained if and only if $s_i < c_{ik}$. We assume that migration debts are costly, and available at interest rate $r > 0$. Accounting for the possibility of credit constraints, the total cost of migration is given by:

$$C_{ik} = c_{ik} + rI_{ik}(c_{ik} - s_i)$$

where I_{ik} is an indicator variable that is equal to 1 if the migrant is credit constrained and zero otherwise.

The expected value of crossing k for migrant i is thus

$$V_{ik}(V_i^o) \equiv p_k^s V_i^s + (1 - p_k^s - p_k^a)V_i^o - C_{ik} \equiv \mu_{ik} + (1 - \rho_k)V_i^o + \epsilon_{ik}. \quad (1)$$

$\mu_{ik} \equiv p_k^s V_i^s - C_{ik} > 0$ measures the expected value of a baseline migrant with the highest incentives to migrate, for $V_{ik} = \mu_k$ when $V_i^o = 0$. $\rho_k \equiv p_k^s + p_k^a$ denotes the likelihood of either a successful crossing or an accident at the border. A high ρ_k, henceforth a crossing with high risk-reward

[7] Feasibility for now simply refers membership in the choice set $\{1, ..., K\}$. A definition of feasibility will follow.

[8] The implicit assumption is thus that credit constraints prevent migrants from taking unlimited repeated migration attempts. We will take account of this credit constraint in the sequel.

combination, indicates a crossing location that is high rewards (p_k^s), high risks (p_k^a), or both. ϵ_{ik} is an idiosyncratic preference shifter.

Purely in terms of relative merits, therefore, crossing location k dominates k' if and only if

$$V_{ik}(V_i^o) - V_{ik'}(V_i^o) \geq 0 \Leftrightarrow \mu_k - \mu_{k'} - (\rho_k - \rho_{k'})V_i^o \geq \epsilon_{ik'} - \epsilon_{ik}. \qquad (2)$$

Assume that the $\epsilon_{ik}^{\prime}s$ are Type I extreme value distributed with density function:

$$f(\epsilon_{ik}) = exp(-\epsilon_{ik} - exp(-\epsilon_{ik})).$$

It has been shown (Maddala 1983 pp. 60-61) that crossing k offers the highest value with probability:

$$Pr(V_{ik} = \max\{V_{i1}, ..., V_{iK}\}) = \frac{exp(\mu_{ik} - (1-\rho_k)V_i^o)}{\sum_{j=1}^{K} exp(\mu_{ij} - (1-\rho_j)V_i^o)}.$$

Some observations are in order. From (2), migrants who confront poor economic prospects at origin, or a low V_i^o, prefer crossing location k to k' if and only if k is high rewards and high risks relative to k', all else equal. Intuitively, migrants with low economic prospects favor high risk-reward crossings because they have more to gain ($V_i^s - V_i^o$) in a successful attempt, and less to lose ($-V_i^o$) in the event of an accident.

In addition, since the cost of migration differ from one border crossing to the next, the migrant may be credit constrained when attempting to cross the border at some crossing but not others. Savings from prior period earnings may therefore strictly decrease the total cost of migration for high migration cost locations where $I_{ik} = 1$, but not others.

In both of these cases, a migrant's individual characteristics (e.g. local economic prospects V_i^o and prior period savings s_i) impact the merits of border crossing in ways that are specific to the crossing location. In the case of V_i^o, the probabilistic risks and rewards ρ_k of a crossing location dictates whether a border crossing becomes more favorable subsequent to a negative shock to V_i^o. In the case of prior period earnings and savings, all else equal, the cost of migration dictates whether a migrant is credit constrained, and thus whether prior period earnings matter at all to border crossing decisions. From (1),

$$\frac{Pr(V_{ik} = \max\{V_i1, ..., V_{iK}\})}{Pr(V_{i1} = \max\{V_i1, ..., V_{iK}\})} = \frac{exp(\mu_{ik} - (1-\rho_k)V_i^o)}{exp(\mu_{i1} - (1-\rho_1)V_i^o))} = exp(\mu_{ik} - \mu_{i1} - (\rho_k - \rho_1)V_i^o)). \qquad (3)$$

It follows that a negative shock to V_i^o can strictly increase (strictly decrease, or has no effect on) the likelihood a migrant chooses k relative to 1 if and only if $\rho_k > (< \text{ or } =)\rho_1$. Likewise, whether the budget constraint is binding any point in time will depend on the size of the migration cost at k relative to savings available. It follows that the effect of the characteristics of the individual (e.g. her level of education, the extent of trade shock facing the community the individual resides in) on the likelihood of choosing sector k is alternative-specific as ρ_k differs across alternative crossing locations.

These observations motivate our empirical methodology. We adopt the alternative-specific conditional logit model, the McFadden's choice model (McFadden 1974), which estimates (3) above by allowing the simultaneous inclusion of variables that are migrant crossing alternative-pecific, as well as individual migrant-specific. It furthermore allows the estimated coefficients associated with individual characteristics to differ by border crossings using interaction terms. We now turn to a discussion of the data, and the list of border crossing and individual characteristics we will include in our model.

4 Data

We employ data from the Mexican Migration Project (MMP).[9] It is a repeated cross-sectional dataset documenting the life and migration experiences of members of over 27,000 households surveyed between 1982 and 2018. The survey covers the full migration history of household heads and spouses, along with the migration experiences of family members. The survey also documents household as well as community characteristics, covering employment, environmental variables such as average annual rainfall.

Border Crossing Places

Importantly for this study, the dataset collects detailed border crossing information for undocumented migrants, including information on when, how and where they crossed the border for each trip they took. In order to rule out possible path dependencies, we limit our analysis to first-time border crossing decisions. Furthermore, even though the survey began in 1982, recorded crossings based on recall goes as far back as the 1920s. We set the start of our study period at 1980 for observations prior to 1980 are sparse and can dip under single digits even for the most

[9]See <https://mmp.opr.princeton.edu/research/studydesign-en.aspx> for details on survey methodology, sample selection, as well as survey questionnaire.

popular crossing locations. The Secure Fence Act of 2006 presented a major departure from previous enforcement operations by putting in place signicant increases in border fencing near the Tucson-Mexico border. In order to avoid conflating multiple regimes of relative crossing location risks and rewards driven by changes in border enforcement in 2006, we set the time frame of our analysis to run between 1980 and 2005. Finally, we consider only migrants 18 years of age or older to account for any agency concerns that may arise with decision-making for young migrants. This leaves us with 2,478 observations of individuals in 153 communities distributed in 24 Mexican states with migrants bound for 38 US states.

Table 1 presents an overview of migrant characteristics in terms of years of education, age at first crossing, gender, and family connections in the US. These are organized according to the location of border crossing (Tucson, or not), and the year of border crossing (first (1980-92) and second (1993-2005) half of our sample period). The average migrant in our sample received around 7 years of education, and was 28 years old at the time of first migration. Migrants are overwhelmingly male. Around 40% have at least one family member (parents / siblings) who had US migration experience, implying an average of about one family member with US migration experience per migrant. Notably, these statistics are quite uniform regardless of crossing sector, or crossing time period, with perhaps the exception of family connections. Specifically, in the first half of our sample period, migrants who select the Tucson sector are less likely to have family connections in the US (34% as opposed to 46% among non-Tucson crossers), this difference has vanished by the second half of our sample period at around 37%.

About 52.7% of the crossings were made by migrants originating from the historically migrant sending states of Aguascalientes, Colima, Durango, Guanajuato, Jalisco, Michoacán, Nayarit, and San Liu Potosi. Also, about 57.7% of the migrants were successful at their first attempt, while others often succeeded after multiple attempts. Over 90% were successful after four attempts.

To provide a sense of the extent to which migrants take on long distance journeys in order to reach the border crossing of their choice, we measure the shortest road distance traveled by each migrant i from their origin community to their stated destination in the US (m) and their stated crossing location choice using data from Google Map ($actualdist_{i,m}$)).[10] We find that migrants

[10] We use city destination if the information is recorded, otherwise, if only destination state information is

travel long distances to reach the border, and then again to reach the destination. The mean distance traveled from migrant community to the chosen border sector is 1327.57 miles, and the mean distance traveled from the chosen border sector to the destination state is 740.97 miles.

To gauge the extent to which migrants deviate from distance minimizing choices of border crossing, we first measure the shortest road distance from each of the 153 possible MMP communities that migrant i belongs to each of 9 border sectors (k) ($mindistmex_{i,k}$).[11] We also measure the shortest road distance from the border sector k to the stated destination m of each migrant ($mindistus_{k,m}$), and the shortest road distance from the community i to destination k, ($\min_{k=1,\ldots,9}(mindistmex_{i,k} + mindistus_{k,m})$) calculated based on the road distance required for each of the 9 border sectors. The deviation of actual distance traveled ($actualdist_{i,m}$) and the minimum distance traveled is denoted

$$devdist_{i,m} = actualdist_{i,m} - \min_{k=1,\ldots,9}(mindistmex_{i,k} + mindistus_{k,m}).$$

Table 2 summarizes the matrix of $devdist_{i,m}$ aggregated across the main regions in Mexico and the US. The data is further divided into two periods (pre-1994 and post-1994).[12] Evidently, Mexican migrants are not distance minimizers, and the patterns of deviation are not uniform. Migrants' border crossing choices often meant many additional miles traveled. Pre-1994, the range of average deviation from the shortest ran from 8 miles (Border (Mexico) to Plains (US)) to 1770 miles (Central (Mexico) to Northeast (US)). Post-1994, the range of $devdist_{i,m}$ has changed, where migrants bound for the Great Lakes, the Northeast, and Northwest saw a reduction, while the rest saw even lengthier journeys. Of course, distance traveled during migration does not capture the changes in conditions that may have occurred at migrant origins, or at border crossings. We turn to these next.

recorded, we select the state capital as the destination city.

[11]Where there are multiple crossing places within a sector, we select the most popular crossing place.

[12]We use the following regional classification. In Mexico, the regions are Historical (Aguascalientes, Colima, Durango, Guanajuato, Jalisco, Michoacán, Nayarit, San Liu Potosi), Central (Distrito Federal, Guerrero, Hidalgo, México, Morelos, Oaxaca, Puebla, Queretar, Tlaxcala), Border (Baja California, Chihuahua, Coahuila, Nuevo León, Sinaloa, Sonora, Tamaulipas) and Southeast (Campeche, Chiapas, Quintana Roo, Tabasco, Vercruz, Yucatán). In the US, the regions are Borderlands (Arizona, California, New Mexico, Texas,), Northwest (Idaho, Nevada, Oregon, Utah, Washington), Great Lakes (Illinois, Indiana, Michigan, Ohio, Wisconsin), Northeast, Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, Pennsylvania, Rhode Island, Vermont, Wyoming), Southeast (District of Columbia, Florida, Georgia, Maryland, North Caroline, South Carolina, Virginia, West Virginia), Deep South (Alabama, Arkansas, Kentucky, Louisiana, Mississippi, Tennessee), Plains (Colorado, Iowa, Kansas, Minnesota, Missouri, Montana, Nebraska, North Dakota, Oklahoma, South Dakota). See for example Massey, Durand and Pren (2016).

Study Population, Permanent and Idiosyncratic Shocks

While the MMP provides a rich source of information on migrants and their families, a number of caveats apply. First, surveys are conducted in typically rural areas known to have higher concentration of migrants. An overwhelming majority of the migrants in our sample period ($> 99\%$) are illegal at the time of first crossing, and as Lessem (2019) notes, most surveys are conducted in Mexico, and as such temporary and circular migrants are the focus, while permanent migrants are under-surveyed. For our study, the focus on the undocumented migrant population presents strength rather than limitation for naturally the effect of border enforcement applies to illegals only. In addition, temporary and circular migrants as a group is particularly vulnerable to the hazards of border crossings.

A second issue concerns appropriate controls for migrant earnings. To this end, while the MMP provides local wage data in Mexican origin communities, such observations are imprecise measures of the counterfactual wage that applies when the same worker commits to finding employment in Mexico, if for example, searching for a good job takes time, or if there is on-the-job employer / worker learning. We thus use alternative measures of local level wage shocks, by leveraging the multiple trade liberalization episodes that took place during this period. Specifically, we use the 1994 signing of the North American Free Trade Agreement as a potential permanent wage shock. Since the signing of the NAFTA, Mexican farmers and farm workers face competition with imported agricultural products while investment in manufacturing employment has improved (Fernàndez-Kelly and Massey, 2007).[13] In order to capture the disproportionate impact that NAFTA has on Mexican agriculture, we employ a post-1994 dummy, $Post1994_t$ at year t, and present a proxy for the size of the associated permanent wage shock by applying weights at the community level using the share of male workers employed in agriculture

$$Post1994_t \times Agshare_{it}.$$

[13]In 1994, Mexico signed the North American Free Trade Agreement. Trade as a percentage of GDP as well as inward foreign investment increased significantly in the years following the NAFTA agreement. Notwithstanding these gains, research findings are not uniform about the impact of NAFTA on Mexican agriculture. By a number of accounts, farming in Mexico was put under the stress of import competition with U.S. imports, notably due to U.S. agricultural subsidies. Job losses to the tune of 1.5 million took place in this period in Mexican agriculture (de Janvry and Sadoulet 1995, Audrey 2004, Wise 2009). Other studies suggest a complex nexus of policy changes that were also at play including the phasing in of tariff reductions required by Mexico's accession to GATT, and changes in the domestic price support regime within Mexico (Lederman, Maloney and Severne 2005).

where $Agshare_{it}$ denotes the average decadal share of male workers engaged in agriculture in the migrant's community. An important caveat here is that 1994-1995 also marked the year of the Mexican Peso Crisis, or the Tequila Crisis.[14] The US and the International Monetary Fund organized massive loans to short-circuit the crisis. A sharp economy-wide contraction took place in 1995, accompanied by a negative GDP growth rate of -6.2 percent in 1995. Growth resumed in 1996 and 1997, when Mexican GDP grew at rates of 5.1 percent and 6.8 percent respectively (Lederman et al. 2000). We will return to the question of whether the 1994 shock was a short term one from 1994-95 as a result of the peso crisis, or if more fundamental long term changes may have ensued.

To complement the 1994 landmark trade agreement as an exogenous and sustained shock to migrant earnings at home, we capture other year-on-year idiosyncratic shocks to migrant earnings using a shift-share measure of import penetration from all trade partners. Let IM_{it} denote the import penentration at time t at migrant $i's$ municipality:

$$IM_{it} = \sum_c \frac{\ell_{i,c,t}}{\ell_{c,t}} \frac{M_{c,t}}{Y_t}$$

where c denotes a production sector. Due to data limitations, we consider two sectors, agriculture and manufacturing. The import penetration index is the sum of two interacted shares: $\ell_{i,c,t}/\ell_{c,t}$ denotes the share of community i's workers in sector c relative to the total number of workers in c across all communities. The higher this share, the higher the importance of sector c in the community. $M_{c,t}/Y_t$ is the share of the value of imports in sector c normalized by the Mexican GDP in year t. We use data from the World Development Indicators for both $M_{c,t}$ as well as Y_t. In our context, it makes sense to separately consider import penetration due to agriculture, and manufacturing separately, for these can have different implications on migrant earnings. Thus, we denote

$$IMag_{it} = \frac{\ell_{i,ag,t}}{\ell_{ag,t}} \frac{M_{ag,t}}{Y_t}, \quad IMman_{it} = \frac{\ell_{i,man,t}}{\ell_{man,t}} \frac{M_{man,t}}{Y_t}.$$

Border Enforcement

To capture the extent of border enforcement by sector, we use the cumulative mileage of border

[14] In 1994, Mexico's decision to transition to a more flexible exchange rate regime vis-a-vis the US dollar led to a series of speculative attacks. GDP growth fell precipitously from 6 percent in 1994 to minus 5 percent in 1995. This coincided with a sharp increase in Mexican migration to the U.S. by 200,000 to 300,000 (Monras, 2019).

fencing at each of the 9 border sectors reported in Guerrero and Castañeda (2017) based on a Freedom of Information Act request. Prior to 1990, border walls were non-existent, and migrants simply walked across the border in the cover of darkness at night. The 1990s saw the first wave of border wall / fencing construction. Every year between 1990 and 2005 with the exception of 2001 and 2003, new sections of border wall were being built in response to initiatives to curb illegal migration, and by 2005, six out of the nine border sectors had wall contructions, resulting in a total of 84 miles of border wall. One concern here is that sector characteristics that encourage migrant border crossings, such as elevation, rainfall and temperature for example, also impact the where border walls are built, thus biasing the estimate upwards. Another possibility is to use border personnel as an alternative gauge of the intensity of border enforcement. However, border patrol personnel data is only available from 1992 at the sector level and hence unsuitable for our analysis.

Acknowledging these challenges, we control for the implementation dates and location of two major boarder operations: Operation Gatekeeper and Operation Hold the Line. These operations combined a host of border sector-specific enforcement and patrol activities, including fencing, border patrols, as well as new border enforcement technologies. In addition, these Operations began only in the early to mid 1990s, years after the peak of illegal border crossings in the late 1980s, thus providing variations in enforcement intensities over time and across border sectors that are arguably unrelated to unobserved drivers of crossing frequencies throughout the sample.

5 Estimation

From (1), the expected utility function depending on choice of crossing location k is:

$$V_{ik}(V_i^o) = p_k^s V_i^s + (1 - p_k^s - p_k^a) V_i^o - C_{ik} \equiv \mu_{ik} + (1 - \rho_k) V_i^o + \epsilon_{ik}.$$

Starting with migration cost, C_{ik}, we introduce both sector-specific, and individual-specific characteristics as controls. On sector-specific characteristics, we include (i) distance from the border sector to migrant communities (*mindistmex*) and from the border sector to migrant destination (*mindistus*), (ii) border enforcement efforts in the form of organized enforcement operations (e.g.

Operation Gatekeeper and Operation Hold the Line), and (iii) border walls in cumulative miles of fencing along the border, as controls.

Migration cost is likely also dependent on whether credit constraints bind:

$$C_{ik} = c_{ik} + rI_{ik}(c_{ik} - s_i)$$

Thus, individual-level savings s_i will decrease the cost of migration if and only if the credit constraint binds ($I_{ik} = 1$), otherwise, savings will have no effect. We proxy for prior period savings using a time varying shift-share measure of lagged exposure to import competition respectively in agriculture, as well as in manufacturing, or lagged annual average rainfall shocks. Since the cost of migration differs by crossing location, savings will arguably decrease the cost of migration for high cost crossings, and has no impact on the cost of migration for low cost crossings, we expect savings to have an alternative-specific effect on the border crossing choices.

To control for V_i^o – the expected utility of an individual who stays behind – we allow for both individual- and community-specific determinants. Individual characteristics include years of education and gender. To the extent that V_i^o should capture the long term prospects associated with staying behind at the community level, we leverage two permanent trade shocks, including the NAFTA agreement in 1994, or the accession to the GATT in 1986, interacted with employment intensities $Post_{1994,t} \times Agshare_t$, and $Post_{1986,t} \times Agshare_t$. We note that the extent to which an increase in V_i^o will impact the expected utility of crossing at k depends on ρ_k, the risk-reward profile of crossing sector k. Thus, we expect our individual- and community-level controls to have different impact on the gains from crossing at k.

Summarizing, our list of sector-specific controls, x_k, includes distance from origin communities, distance to destination, as well as border enforcement proxies. For individual-specific controls y_i, we use proxies for prior period savings (including shift-share measures of lagged industry-specific import exposure, and lagged rainfall shocks), and controls to account for the long term prospects of migrant if they stay behind (including education, gender, and permanent trade shocks interacted with local industry-level employment intensities).

Estimation is based on the alternative-specific conditional logit specification of the McFadden choice model (McFadden 1974), where individual-specific controls are interacted with indicator variables of each of the choice alternatives in a conditional logit model. We perform the estimation using all nine border sectors as potential alternatives. In all specifications, standard errors are clustered at the origin community level.

As a first specification, we employ a minimalist approach and only use the year of migration (with 1980 as the base year) as individual characteristic controls. For sector-specific controls, we use distance to origin community, and distance to destination (*mindistmex* and *mindistus*) as controls. San Diego is the base alternative in this as well as all subsequent specifications.

We start by focusing on the time pattern of border crossing choices to ascertain any general and sustained shifts in the crossing sector preferences over time, controlling for distance from each of the nine border sectors. The full set of coefficient estimates is reported in the Appendix and the key coefficient and confidence interval estimates are displayed in Figure 3. Evidently, the shift in migrant preference favoring Tucson relative to the base San Diego alternative began in 1994, and this shift is persistent, statistically significant from 1994 - 2004. This evidence suggests that the short-lived Mexican peso crisis is an unlikely culprit for this long term shifts in migrant crossing preferences. Henceforth, we will therefore focus on the 1994 permanent trade shock as a candidate for the shift in crossing preferences.

For the remaining specifications, we relegate the full set of sector-specific, as well as individual-specific coefficients for each sector to the appendix. Rather, we show the regression estimates associated with the three most commonly selected border sectors, namely San Diego, Tucson and El Paso. We will discuss both regression coefficients as well as marginal effect estimates.

Border Enforcement Triggers

Table 3 displays findings from our main specification, where we introduce Operations Gatekeeper and Operation Hold the line in the San Diego and El Paso sectors respectively to account for major shifts in border enforcement regimes. We show both the estimated coefficients as well as the associated marginal effects. In particular, Operations Gatekeeper is negatively associated with the likelihood of migrant crossing. In terms of marginal effects, the implementation of Operations Gatekeeper in the San Diego sector gives rise to a reduction in the likelihood that San Diego is the selected crossing sector by 0.216, and a corresponding increase in the probability that Tucson and El Paso are chosen by 0.129 and 0.044 respectively.

By contrast, however, Operations Hold the Line is not associated with a statistically significant change in crossing likelihoods. One possible reason for this observation is that El Paso is much less popular compared to San Diego as a migrant crossing location and consequently, far fewer migrants are directly affected by this policy shift.

The estimates associated with the distance variables are also telling. Distance from crossing sector within Mexico has a statistically insignificant impact on migrant's choice of crossing location, although the coefficients and the marginal effects have the anticipated signs. These suggest that conditions at the border crossing may be a consideration of greater importance than the need to travel longer distances to reach the crossing place. Distance between crossing place and US destination does have a significant and negative impact on crossing location choice. Specifically, an increase in the distance from US destination to the San Diego sector by one mile decreases the likelihood that San Diego is the selected crossing sector by 0.0004 points, and increases the likelihood that Tucson and El Paso are selected respectively by 0.0003 and 0.0001 points respectively.

Individual-Level Triggers

Table 3 also shows that individual-level triggers matter. An increase in the number of years of education is associated with a lower likelihood that the Tucson sector is sector is selected relative to the San Diego sector. The coefficient is statistically significant at the 1% level. Consistent with our theoretical message, therefore, individuals that have better long run economic prospects in migrant origins tend to prefer safer alternatives, even if they come with a lower likelihood of success. The role of gender is mixed, however, and indeed, not statistically significant. It is important to note that an overwhelming majority ($> 95\%$) are male, and as such any gender-related trigger may be harder to ascertain in our context.

Community-Level Triggers

Turning now to community-level triggers, our proxy for a long run wage shock in Mexico is the NAFTA trade agreement variable interacted with the share of agricultural employment. Evidently, NAFTA has a positive and statistically significant effect on the likelihood that the Tucson sector is the chosen crossing place relative to San Diego. The effect of NAFTA on the choice of El Paso over San Diego is of the same sign but statistically insignificant. These tendencies are borne out in the marginal effects as well, and show that Mexican migrants responded to the NAFTA trade shock by selecting the high risk high reward Tucson sector. This is particularly true for migrants where agricultural employment was the mainstay. Taken together these observations are consistent with a NAFTA-induced negative shock to the long term economic prospects of workers in Mexican in agriculture.

We capture idiosyncratic shocks to migrant earnings using two shift share measures. The first, $IMag$, measures the one-year lagged import competition exposure for workers in agriculture, and $IMmanu$, by contrast measures the one-year lagged import competition exposure for workers in manufacturing. These are our proxies for changes in prior period savings by agricultural and manufacturing sector workers. Our findings are nuanced. In particular, lagged import exposure in agriculture *decreases* the likelihood that workers will choose Tucson over San Diego, but *increases* the likelihood that workers will choose El Paso over San Diego. The picture displayed here is consistent with one of credit constrained migration in the Tucson sector for migrants in agriculture. A reduction in prior period savings effectively increases the cost of migrating through Tucson if alternative sources of finance are costly. In response, migrants resort to other less promising crossing places than Tucson.

By contrast, coefficient estimates of the impact of lagged import exposure in the manufacturing sector are of opposite signs, and are statistically insignificant. Put another way, temporary wage shocks in the manufacturing sector does not appear to trigger binding credit constraints, and furthermore, these shocks do not seem to have a significant impact on migrants border crossing strategies.

5.1 Additional Checks

In Tables 4 - 11, we provide additional checks to substantiate our interpretation of the main findings in Table 3. Table 4 adds cumulative miles of border fencing as an additional border enforcement variable. Our goal is to determine whether the role of Operations Gatekeeper and Operations Hold the line remain significant after controlling for the added mileage of border walls, and fencing was a part of these border enforcement operations. Interestingly, while cumulative border fencing does have a negative impact on the likelihood of migrant crossing, fencing alone does not replace the role of the displacement effects of the broad based measures implemented by

Operation Gatekeeper. These observations suggest, not surprisingly, that successful displacement of migrants depends on a combination of policies and tools.

Spatial Considerations

Table 5 introduces regional fixed effects, to account for possible spatial origins of community-level crossing triggers. These spatial factors are arguably particularly important in the Mexican context, as migration experiences in the US are highly differentiated across origin communities. Specifically, we account for four Mexican regions, including Historical, Border, Central and Southeast. Interestingly, migrants from the border, central, as well as Southeastern origin communities are more likely than migrants from historical migrant origin communities to select Tucson over San Diego, even accounting for individual- and community-level triggers. These suggest that a history of migration experiences discourage migrants from embarking on a journey to the US through the high risk Tucson border crossing. Alternatively, however, this observation may simply be an indicator of path dependence in the choice of crossing locations. What is important to note at this point is that our conclusions in Table 3 remain qualitatively unaffected by the introduction of Mexican regional fixed effects.

Weather as Idiosyncratic Shocks

Table 6 seeks to further elaborate our findings based on the import exposure proxies by comparing them to other commonly used measures of idiosyncratic productivity shocks. We use one-year lagged average rainfall shock for this purpose. Interestingly, an increase in average rainfall *increases* the likelihood that Tucson is selected relative to San Diego, and decreases the likelihood that El Paso is selected relative to San Diego. These findings suggest that a temporary positive shock to agricultural productivity switches migrants away from the relatively low migration cost, and low rewards El Paso sector to the high risk high reward Tucson sector. This is indeed what we would expect if credit constraints are at play for migrants in agriculture who would otherwise prefer the Tucson sector. Of course, average rainfall is coarse measure of productivity shocks (Ortiz-Bobea, Knippenberg and Chambers 2018), and as such our estimates may lack precision. That said, while our coefficient estimates in Table 6 is of the right sign by statistically insignificant, the marginal effects are of the right sign and statistically significant.[15]

Alternative Permanent Trade Shocks

Table 7 presents an analysis that introduces Mexico's accession to the GATT, interacted with the share of agricultural employment, as an alternative permanent trade shock to the Mexican economy.[16] Evidently, not all trade shocks are alike. In particular, the more broad-based GATT, where in fact Mexican was able to use Special and Differential Treatment to delay tariff reductions, had negligible impact on migrant's choice of migration location. We note, that this result is also to be expected since Mexico's accession to GATT took place in 1986, before the major border enforcement operations that displaced migrants from the San Diego sector in 1994.

Is Tucson a High-Risk High Reward Crossing Location?

Our analysis so far implicitly assumes that migrants perceive the Tucson sector as high-risk and high reward. This assumption needs to be checked. To start, the literature offers a number of different estimates of the likelihood of successful border crossing along the Mexican-US border, ranging between 30 - 40% (Massey, Durand, and Malone 2003). These estimate do not discriminate between the crossings at different border sectors. Given the diversity of geo-climatic conditions at various point at the border, and the observations from our model indicating the critical role that crossing-success likelihoods play in crossing decisions, we use data from the MMP to re-estimate the success rate by border sector.

Specifically, the survey records the number of deportations an individual migrant workers experienced for each year migration attempt was recorded. We calculate the total number of migration trials each year, conditional on at least one such successful attempt, as one plus the number of deportations. We then determine the least square estimates of the total number of

[15] Marginal effects are presented in Tables 8 and 9.

[16] In 1986, Mexico acceded to the General Agreement on Tariff and Trade. Mexico gained access to the markets of 91 developed and developing countries at Most Favored Nation tariff rates. Under the auspices of special and differential treatment principle of the GATT for developing countries, Mexico was able to bind its customs duties at the relatively high level of 50 percent.

migration trials per successful attempt, henceforth denoted N_{it}:[17]

$$N_{it} = \alpha_o + \sum_{j=1,\ldots,9} \alpha_j D_{ij} + D_t + \sum_{i=1,\ldots,K} \beta_i x_i + \epsilon_{it}$$

where D_{ij} is a binary variable equaling unity if migrant i crossed the border via sector j. D_t represents the year fixed effects. x_i is a vector of individual characteristics including age at migration, gender, and the number of years of education, distance from migrant's community to the border, and family ties in the US proxied by having a father who has had migration experience to the US. To rule out learning related spillover effects, we restrict our analysis to first time migrants. Also, to rule out the impact of immigration policy reforms that began since 1986, we restrict our analysis to the decade before that from 1975-1985. Table 10 shows the average predicted number of trials from the fitted model and the associated probability of success per trial in each of the nine sectors. Evidently, the probability of success associated with migration from the Tucson sector – evaluated as the inverse of the predicted number of trials – is the highest, where it should be understood that the information is provided by individuals who survived to tell the tale about the journeys. The estimated probabilities of success present a wide range, from 20.45% (El Centro) to 93.90% (Tucson), averaging across border sectors at 32.87%.

It remains to be checked that the Tucson sector is a high risk crossing location. There is substantial variability in terrain and climate conditions along the US-Mexican border, ranging from urban towns in San Diego and El Paso to the Sonoran Desert on the west and the Baboquivari Mountains on the east for migrants crossing in the Tucson sector. We use data from the U.S. Custom and Border Protection, as well as data sourced from Eschbach, Hagan and Rodíguez (2003). Table 10 displays the average number of deaths by sector, and the average number of deaths per apprehended individual by sector.[18] Evidently, the probability of fatality conditional on crossing at Tucson is strictly greater than the historically popular San Diego sector.

Alternative Border Enforcement Adjustments

To further investigate the role of changes in the risk-reward profiles of border crossings due to changes in border enforcement regimes, we leverage the 2006 Secure Fence Act, in which the

[17] Alternatively, we have also conducted 2SLS estimates and arrive at similar rankings in likelihood of success using the Mexican region fixed effects, US destination region fixed effects, and year of first trip as instruments.

[18] 1985 is the earliest year we are able to obtain data on migrant deaths by border sector.

Tucson sector was specifically targeted for border enforcement reinforcements, as a falsification test. Table 11 shows the results of the same estimation conducted in our main specification, with the only exception being that we use data starting from 2006. One limitation for doing so is that this leads to a vastly smaller number of observations in the sample. That said, we find that education as an individual-level trigger is no longer a significant determinant of migrants crossing preference of Tucson over San Diego. Our shift-share measure of import exposure in agriculture remains statistically significant but has changed signs indicating that a negative shock to agricultural wages to due to import exposure tilts migrants' crossing preference in favor of San Diego, instead of Tucson. This is what we would expect if the likelihood of migration success through Tucson has been significantly offset due to the measures implemented based on the Secure Fence Act. We check this by performing the same regression we did for Table 10, using post-2006 data. During this period, our findings shows that crossing via Tucson appears to offer no statistically significant migration success advantage relative to the San Diego sector (Appendix Table 2).

Credit Constraints and Coyote Costs

Arguably, due to the difficult terrain of the Tucson sector, and the need to hire experienced coyote smugglers, the cost of migration will be high. This need to pay a high cost of migration is key reason behind the short-run credit constraints facing migrants. We check this assumption using data on the cost of hiring a coyote in the MMP. Given stark differences in terrain and climate conditions, it is natural to expect that the cost of hiring a smuggler is sector-specific. In addition, we focus on the cost paid by first time migrants to stave off issues related to path dependence. To account for inflation over time, we take logs of the cost of hiring a coyote, and regress it against border sector fixed effects using San Diego as the base alternative, and year fixed effects from 1980 - 1994, the period prior to the shift in crossing patterns favoring Tucson, before any reactions in border enforcement intensities may have occurred. Figure 4 plots the estimated coefficients associated with the sector fixed effects. Consistent with expectations, crossing the border via Tucson is, on average, a costlier proposition than San Diego. Big Bend is notably the lowest cost option.

Notably, such coyote cost differences may reflect crossing deterrents such as sector-specific likelihood of capture, or accessibility associated with the terrain differences. Costs differences may also reflect demand side factors such as nearness to towns. Such unobserved differences makes coyote cost a poor control for the crossing cost. Our purpose for highligh the difference in coyote cost by sector, nonetheless, is to reinforce that if migrants are credit-constrained, the sector of crossing where the credit-constraint will likely bind is the Tucson sector.

6 Conclusion

Why do migrants embark on dangerous border crossing journeys? In this paper, we use the Mexican-U.S. border as a particularly salient case in point, featuring stark differences in the risks that migrants take must take into account along the border. These include the risks of injuries and death, and the risk of border apprehension. The Mexican-U.S. story also provides an ideal case wherein there were major changes in enforcement regimes at the border, and landmark macro-economic reforms that induced idiosyncratic and permanent variations in worker well-being at their origin communities.

Using a simple model of border crossing decision-making, we illustrate the interplay between crossing decisions, risks at the border, as well as migrant well-being at their origin communities. We make two observations. First, migrants with poor long term economic prospects at home are more tolerant of crossing places offering high reward and high risks. Second, lagged idiosyncratic shocks that temporarily decrease migrant earnings may require migrants to switch away from high cost crossing places promising high rewards and/or high risks when migrants are credit constrained. These observations showcase different forces at work governing temporary as opposed to more permanent shifts in crossing locations. Furthermore, border enforcement policies that shifts the risk-cum-reward profile of a crossing location are able to disproportionately increase the likelihood that poor migrants engage in risky border crossing behavior.

Our empirical estimation leverages variations in enforcement intensity at the border, and economic prospects at migrant origins in Mexico during the period 1980-2005. The evidence suggests that border enforcement policies during this period, through Operation Gatekeeper and associated selective fencing in the San Diego sector, appeared to have shifted the relative migration success likelihood to favor the Tucson sector, rendering Tucson a high-risk, and high reward crossing location. We find that individuals with low economic prospects at origin communities (e.g. low education levels, or exposure to negative import shocks) are favorably selected in such high-risk, high-reward locations. In addition, migrants in the agricultural sector appear to be credit constrained, and as such temporary wage shocks impede their ability to take on a hazardous and high-cost crossing place such as Tucson.

To our knowledge, this is a first in depth analysis of the determinants of hazardous border-crossing accounting for border-specific, individual-, as well as community-level triggers. We show consistent with previous analyses that border enforcement policies have displacement effects. In addition to these insights, we furthermore show that migrants are differentially impacted by these border enforcement policies depending on their long term economic prospects at their origin communities. Border crossing responses to local economic shocks are furthermore determined by the juxtaposition of the risk-reward profiles of border locations, as well as the nature of the shocks, whether permanent and idiosyncratic.

We believe that this is but the beginning of the inquiry into the determinants of border-crossing behavior. For example, local wage shocks are just one reason for cross-border migration. Indeed, family reunion, crimes, and long term climate change, are just a few other reasons that drive international migration flows. Which of these migration motivations are more likely associated with hazardous border crossings? Future research on these questions can facilitate a rethinking of border enforcement designs to incorporate proactive responses to shocks facing migrant origin communities that result in a change in the trajectory of a migrant's journey.

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Table 1: Migrant Characteristics by Crossing Choice and Period

Variables	Crossing Choice and Year: 1980-1992 All Choices	1980-1992 Tucson	1980-1992 Not Tucson	1993-2005 All Choices	1993-2005 Tucson	1993-2005 Not Tucson	All Years All Choices
Education (years, avg.)	6.29	6.73	6.26	7.08	7.20	6.97	6.58
Age at First Crossing (years, avg)	27.29	26.55	27.33	29.68	28.97	29.62	28.16
% Female (Male=0, Female=1, %)	5.09%	9.09%	4.85%	4.75%	6.16%	4.60%	4.96%
% with US Family Connections (%)	45.07%	34.09%	45.72%	37.46%	36.66%	37.42%	42.29%
Total # of US Family Connections	1.00	0.80	1.01	0.75	0.73	0.77	0.91
N	1,573	88	1,482	905	253	652	2,478

Notes. 1. Source: Mexican Migration Project. 2. A US family connection is defined as having a parent or a sibling living in the US prior to the migrant's first crossing attempt. 3. Total US family connection is a count of the number of family members (parents and siblings) who have lived in the US prior to the migrant's first crossing attempt.

Table 2: Deviation of Actual Total Distance from Minimal Total Distance By Origins and Destinations (miles)

	Pre-1994						
	Borderlands	Deep South	Great Lakes	Northeast	Northwest	Plains	Southeast
Border	52.94	.	.	.	206.00	8.00	39.30
Central	53.73	615.33	1334.49	1770.80	137.00	720.67	1131.69
Historical	78.02	624.33	886.36	1390.03	136.98	597.60	926.72
Southeast	181.49	.	1308.40	.	119.00	1113.50	239.00
	Post 1994						
	Borderlands	Deep South	Great Lakes	Northeast	Northwest	Plains	Southeast
Border	78.69	163.00	37.50	17.20	39.00	46.64	43.33
Central	111.07	1695.17	1065.53	1443.29	78.58	737.84	1100.20
Historical	140.93	1116.67	688.69	1137.44	108.50	638.28	824.15
Southeast	167.85	1267.00	1068.26	1187.57	99.63	652.00	1337.44

Notes. 1. Source: Mexican Migration Project and Google Map. 2. Actual Total Distance: regional average of the shortest road distance from origin communities in Mexico to US destination via the chosen border crossing location. 3. Minimum Total Distance: regional average of the shortest road distance from origin communities in Mexico to US destination via the border crossing that minimizes total road distance. 4. Regional Classification for Mexico: Historical (Aguascalientes, Colima, Durango, Guanajuato, Jalisco, Michoacán, Nayarit, San Liu Potosi), Central (Distrito Federal, Guerrero, Hidalgo, México, Morelos, Oaxaca, Puebla, Queretar, Tlaxcala), Border (Baja California, Chihuahua, Coahuila, Nuevo León, Sinaloa, Sonora, Tamaulipas) and Southeast (Campeche, Chiapas, Quintana Roo, Tabasco, Vercruz, Yucatán). 5. Regional Classification for the US: Borderlands (Arizona, California, New Mexico, Texas,), Northwest (Idaho, Nevada, Oregon, Utah, Washington), Great Lakes (Illinois, Indiana, Michigan, Ohio, Wisconsin), Northeast, Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, Pennsylvania, Rhode Island, Vermont, Wyoming), Southeast (District of Columbia, Florida, Georgia, Maryland, North Caroline, South Carolina, Virginia, West Virginia), Deep South (Alabama, Arkansas, Kentucky, Louisiana, Mississippi, Tennessee), Plains (Colorado, Iowa, Kansas, Minnesota, Missouri, Montana, Nebraska, North Dakota, Oklahoma, South Dakota). See Massey, Durand and Pren (2016).

Table 3: Main Specification

	Coefficients (Base Alternative: San Diego)			Marginal Effects (dp/dx)		
	Common	Tucson-Specific	El Paso-Specific	San Diego (Prob = 0.7420)	Tucson -Specific (Prob =0.1543)	El Paso-Specific (Prob = 0.0529)
(Case Specific Variables)						
Years of Educ.		-0.0004***	-0.0138	0.0023**	0.0004*	-0.0001
		(0.0001)	(0.0232)	(0.0010)	(0.0002)	(0.0010)
Gender		0.5105	0.6142*	-0.0779	0.0626	0.0269
(1=male, 2=female)		(0.3503)	(0.3480)	(0.0529)	0.0458)	(0.0206)
IMag		-3817.1870***	2437.724**	308.904	-524.616***	150.893***
(lagged 1 yr)		(1646.51)	(1109.689)	(211.263)	(211.01)	(54.7605)
IMmanu		53.2142	-53.7921	2.8790	8.8074	-2.6388
(lagged 1 yr)		(45.6991)	(62.9909)	(7.9362)	(5.7611)	(2.9508)
$Post_{1994}\times$		66.3518***	10.0702	-7.5449**	8.6668***	-0.0052
$agshare$		(25.1368)	(19.9434)	(3.6637)	(3.1758)	(0.9105)
Constant		-2.4008***	-3.8258***	.	.	.
		(0.4849)	(0.5757)			
(Sector Variables)						
$mindistmex$	-0.0010			-0.0002	0.0001	0.0000
	(0.0008)			(0.0001)	(0.0001)	(0.0000)
$mindistus$	-0.0023***			-0.0004***	0.0003***	0.0001***
	(0.0002)			(0.0000)	(0.0000)	(0.0000)
Op. Gatekeeper	-1.1284***			-0.2160***	0.1292***	0.04427***
	(0.1734)			(0.0350)	(0.0252)	(0.0149)
Op. Hold the Line	0.0583			-0.0023	-0.0005	0.0029
	(0.2268)			(0.0087)	(0.0018)	(0.0111)
Clustered SE				X		
(Group=Community)						
Num. of Obs				21933		
Num. of Migrants				2437		
Num. of Sectors				9		

Notes. 1. Standard errors at clustered at the community level. 2. $IMag$ ($IMmanu$) is the agricultural (manufacturing) import exposure index in Mexico – an interaction term using the share of community i' worker in agriculture (manuacturing) relative to the total number of workers in agriculture (manufacturing) across all communities, and the share of agricultural import as a fraction of GDP. 3. $mindistmax$ ($mindisus$) measures the shortest road distance from the migrant's community (border sector) to the border sector (migrant's destination). 4. *** p<0.01, ** p<0.05, * p<0.1.

Table 4: Robustness Check: Cumulative Fencing

	Coefficients (Base Alternative: San Diego)		
	Common	Tucson -Specific	El Paso-Specific
(Case Specific Variables)			
Years of Education		-0.0004***	-0.0138
		(0.0000)	(0.0231)
Gender (1=male, 2=female)		0.5171	0.6022*
		(0.3482)	(0.3522)
IMag (lagged 1 year)		-3702.68**	2399.81**
		(1625.81)	(1118,87)
IMmanu (laged 1 year)		54.6026	-53.0816
		(45.7805)	(63.8049)
$Post_{1994} \times agshare$		61.4566***	8.9847
		(23.9625)	(19,6413)
Constant		-3.8132***	-3.8132***
		(0.4839)	(0.57794)
(Sector Variables)			
mindistmex	-0.0009		
	(0.0001)		
mindistus	-0.0023***		
	(0.0002)		
Op. Gatekeeper	-0.6869***		
	(0.2450)		
Op. Hold the Line	-0.1460		
	(0.2300)		
Cum. Fencing (miles)	-0.0176*		
	(0.0095)		
Clustered SE (Group = Community)		X	
Number of Obs		21933	
Number of Migrants (Cases)		2437	
Number of Sectors (Alternatives)		9	

Notes. 1. Standard errors at clustered at the community level. 2. *IMag* (*IMmanu*) is the agricultural (manufacturing) import exposure index in Mexico – an interaction term using the share of community *i*' worker in agriculture (manuacturing) relative to the total number of workers in agriculture (manufacturing) across all communities, and the share of agricultural import as a fraction of GDP. 3. *mindistmax* (*mindisus*) measures the shortest road distance from the migrant's community (border sector) to the border sector (migrant's destination). 4. *** p<0.01, ** p<0.05, * p<0.1.

Table 5: Robustness Check: Mexican Regional Fixed Effects

	Coefficients (Base Alternative: San Diego)		
	Common	Tucson -Specific	El Paso-Specific
(Case Specific Variables)			
Years of Education		-0.0001	-0.0003**
		(0.0011)	(0.0001)
Gender (1=male, 2=female)		0.5697*	0.1273
		(0.3358)	(0.3867)
IMag (lagged 1 year)		-2348.52**	1809.916**
		(1204.12)	(751.435)
IMmanu (laged 1 year)		80.4685	-120.03
		(45.1964)	(76.5970)
$Post_{1994} \times agshare$		44.9067**	20.2989
		(19.7687)	(24.6849)
Mexregion=Border		1.3324***	3.5525***
		(0.6404)	(0.8016)
Mexregion=Central		0.8475***	-1.3923***
		(0.3009)	(0.3890)
Mexregion=Southeast		1.3764***	-0.7893
		(0.3908)	(0.4886)
Constant		-3.8472***	-3.8132***
		(1.0315)	(0.57794)
(Sector Variables)			
mindistmex	-0.0028		
	(0.0023)		
mindistus	-0.0023***		
	(0.0001)		
Op. Gatekeeper	-1.1075***		
	(0.1716)		
Op. Hold the Line	0.3388		
	(0.2262)		
Clustered SE (Group = Community)		X	
Number of Obs		21933	
Number of Migrants (Cases)		2437	
Number of Sectors (Alternatives)		9	

Notes. 1. Standard errors at clustered at the community level. 2. *IMag* (*IMmanu*) is the agricultural (manufacturing) import exposure index in Mexico – an interaction term using the share of community *i*' worker in agriculture (manuacturing) relative to the total number of workers in agriculture (manufacturing) across all communities, and the share of agricultural import as a fraction of GDP. 3. *mindistmax* (*mindisus*) measures the shortest road distance from the migrant's community (border sector) to the border sector (migrant's destination). 4. *** p<0.01, ** p<0.05, * p<0.1.

Table 6: **Robustness Check: Lagged Rainfall Shock**

	Coefficients (Base Alternative: San Diego)		
	Common	Tucson -Specific	El Paso-Specific
(Case Specific Variables)			
Years of Education		-0.0004***	-0.0013
		(0.0001)	(0.0230)
Gender (1=male, 2=female)		0.6695*	0.6374*
		(0.3423)	(0.3543)
IMag (lagged 1 year)		-3970.82**	2452.871**
		(1730.63)	(1050.51)
IMmanu (laged 1 year)		55.6432	-91.1208
		(44.5174)	(63.5374)
$Post_{1994} \times agshare$		68.4145***	11.4086
		(26.3500)	(20.3718)
annual mean rainfall (lagged)		0.0004	-0.0027***
		(0.0003)	(0.0008)
Constant		-2.7935***	-2.2190
		(0.5474)	(0.8128)
(Sector Variables)			
$mindistmex$	-0.0008		
	(0.0007)		
$mindistus$	-0.00233***		
	(0.0001)		
Operation Gatekeeper	-1.1124***		
	(0.1716)		
Operation Hold the Line	0.2021		
	(0.2409)		
Clustered SE (Group = Community)		X	
Number of Obs		20664	
Number of Migrants (Cases)		2096	
Number of Sectors (Alternatives)		9	

Notes. 1. Standard errors at clustered at the community level. 2. $IMag$ ($IMmanu$) is the agricultural (manufacturing) import exposure index in Mexico – an interaction term using the share of community i' worker in agriculture (manuacturing) relative to the total number of workers in agriculture (manufacturing) across all communities, and the share of agricultural import as a fraction of GDP. 3. $mindistmax$ ($mindisus$) measures the shortest road distance from the migrant's community (border sector) to the border sector (migrant's destination). 4. *** p<0.01, ** p<0.05, * p<0.1.

Table 7: Robustness Check: Alternative Trade Agreement 1986

	Coefficients (Base Alternative: San Diego)		
	Common	Tucson -Specific	El Paso-Specific
(Case Specific Variables)			
Years of Education		-0.0004***	-0.0013
		(0.0001)	(0.0230)
Gender (1=male, 2=female)		0.5101	0.6163*
		(0.3523)	(0.3484)
IMag (lagged 1 year)		-3516.72*	2934.53**
		(2099.52)	(1241.62)
IMmanu (laged 1 year)		46.2816	-63.0395
		(47.6245)	(64.9124)
$Post_{1994} \times agshare$		69.0267***	17.9370
		(28.2752)	(21.2325)
$Post_{1986} \times agshare$		-6.0321	-12,8569
		(31.7444)	(19.1923)
Constant		-2.4080***	-3.8346***
		(0.4850)	(0.5678)
(Sector Variables)			
mindistmex	-0.0009		
	(0.0008)		
mindistus	-0.00231***		
	(0.0002)		
Op. Gatekeeper	-1.1300***		
	(0.1745)		
Op. Hold the Line	0.0523		
	(0.2279)		
Clustered SE (Group = Community)		X	
Number of Obs		21993	
Number of Migrants (Cases)		2437	
Number of Sectors (Alternatives)		9	

Notes. 1. Standard errors at clustered at the community level. 2. *IMag* (*IMmanu*) is the agricultural (manufacturing) import exposure index in Mexico – an interaction term using the share of community *i*' worker in agriculture (manuacturing) relative to the total number of workers in agriculture (manufacturing) across all communities, and the share of agricultural import as a fraction of GDP. 3. *mindistmax* (*mindisus*) measures the shortest road distance from the migrant's community (border sector) to the border sector (migrant's destination). 4. *** p<0.01, ** p<0.05, * p<0.1.

Table 8: Marginal Effects

	With Cumulative Fencing			With Mexican Region Fixed Effects		
	San Diego (Prob = 0.7420)	Tucson -Specific (Prob =0.1543)	El Paso-Specific (Prob = 0.0529)	San Diego (Prob = 0.7618)	Tucson -Specific (Prob =0.0863)	El Paso-Specific (Prob = 0.0604)
(Case Specific Variables)						
Yrs of Educ.	0.0023**	0.0004*	-0.0006	0.0017*	0.0001	0.0001
	(0.0010)	(0.0002)	(0.0010)	(0.0009)	(0.0001)	(0.0001)
Gender	-0.0785	0.0636	0.0264	-0.0235	0.0465*	0.0058
(1=male, 2=female)	(0.0530)	0.0456)	(0.0207)	(0.0480)	(0.0253)	(0.0212)
IMag	297.506	-510.929***	148.765***	47.4323	-197.376**	113.161***
(lagged 1 yr)	(209.843)	(208.948)	(54.7083)	(127.443)	(97.0289)	(43.6912)
IMmanu	2.5334	8.97922	-2.6376	10.5272	8.1400**	-6.4198
(lagged 1 yr)	(8.008)	(5.7696)	(2.9964)	(8.5914)	(3.3315)	(4.5284)
$Post_{1994} \times agshare$	-6.8430**	8.08453***	-0.0124	-3.6149	3.4672**	0.9401
	(3.4995)	(3.0220)	(0.9060)	(3.0218)	(1.5297)	(1.3378)
Clustered SE (Group= Community)		X			X	
Number of Obs		21933			21933	
Number of Migrants		2437			2437	
Number of Sectors		9			9	

Notes. 1. Standard errors at clustered at the community level. 2. *IMag* (*IMmanu*) is the agricultural (manufacturing) import exposure index in Mexico – an interaction term using the share of community *i*' worker in agriculture (manuacturing) relative to the total number of workers in agriculture (manufacturing) across all communities, and the share of agricultural import as a fraction of GDP. 3. *mindistmax* (*mindisus*) measures the shortest road distance from the migrant's community (border sector) to the border sector (migrant's destination). 4. *** p<0.01, ** p<0.05, * p<0.1.

Table 9: Marginal Effects (cont'd)

	With Lagged Annual Rainfall			With Post 1986 Effects		
	San Diego (Prob = 0.7454)	Tucson -Specific (Prob =0.1582)	El Paso-Specific (Prob = 0.0437)	San Diego (Prob = 0.7430)	Tucson -Specific (Prob =0.1548)	El Paso-Specific (Prob = 0.0530)
(Case Specific Variables)						
Yrs of Educ.	0.0016*	0.0003	0.0000	0.0021**	0.0004*	-0.0006
	(0.0010)	(0.0002)	(0.0009)	(0.0010)	(0.0002)	(0.0010)
Gender	-0.0959*	0.0856*	0.0222	-0.0792	0.0625	0.0270
(1=male, 2=female)	(0.0538)	(0.0456)	(0.0164)	(0.0530)	(0.0461)	(0.0206)
IMag	363.423	-551.060**	128.472***	148.547	-513.438*	166.066**
(lagged 1 yr)	(229.115)	(227.633)	(51.2584)	(268.823)	(272.274)	(71.062)
IMmanu	5.7528	10.026*	-3.6434	7.7779	8.7848	-2.7853
(lagged 1 yr)	(8.110)	(5.9570)	(2.7968)	(9.1852)	(5.9039)	(3.0539)
$Post_{1994} \times agshare$	-8.7913**	8.9572***	-0.0169	-11.2885***	8.3335**	0.1454
	(3.9523)	(3.2925)	(0.7277)	(4.1872)	(3.5908)	(1.0796)
ann. mean rainfall	0.0001	0.0001*	-0.0001**			
(lagged)	(0.0001)	(0.0000)	(0.0000)			
$Post_{1986} \times agshare$				5.4226	0.1960	-0.2945
				(4.0730)	(4.1682)	(1.0796)
Clustered SE		X			X	
(Group = Community)						
Num. of Obs		20664			21993	
Num. of Migrants		2096			2437	
Num. of Sectors		9			9	

Notes. 1. Standard errors at clustered at the community level. 2. *IMag* (*IMmanu*) is the agricultural (manufacturing) import exposure index in Mexico – an interaction term using the share of community *i*' worker in agriculture (manuacturing) relative to the total number of workers in agriculture (manufacturing) across all communities, and the share of agricultural import as a fraction of GDP. 3. *mindistmax* (*mindisus*) measures the shortest road distance from the migrant's community (border sector) to the border sector (migrant's destination). 4. *** p<0.01, ** p<0.05, * p<0.1.

Table 10: Mexico-US Border Sector Characteristics

Sectors	Average Num. Of Trials per Successful Crossing (1975-1985)	Predicted Probability of Crossing per Trial (1975-1985)	Death Rate per 1000 (1985-1994)
San Diego	3.27	30.59%	0.153
El Centro	4.89	20.45%	0.949
Yuma	2.60	38.46%	0.210
Tucson	1.07	93.90%	0.272
El Paso	2.38	42.02%	0.125
Big Bend	1.86	53.85%	0.317
Del Rio	1.49	67.16%	0.228
Laredo	1.63	61.39%	0.310
Rio Grande	2.38	41.98%	0.479
Total	3.04	32.87%	0.226

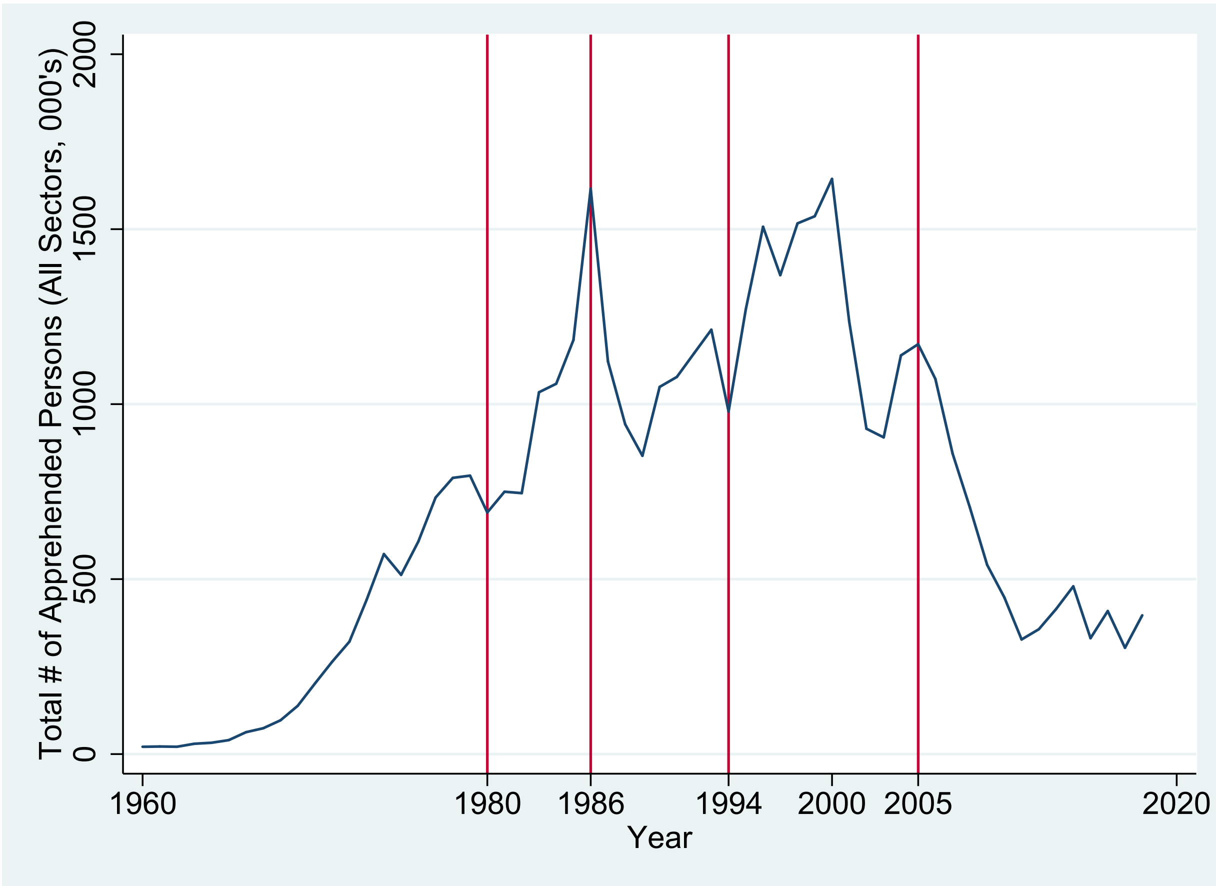
Notes. 1. Source: Mexican Migration Project, Eschbach, Hagan and Rodíguez (2003), and US Customs and Border Protection Apprended Persons data. 2. Average number of trials per successful crossing reports the average linear prediction obtained from a regression which estimates the determinants of the number of trials undertaken per successful migration attempt based on MMP responses from 1975-1985, using the border crossing sector, year fixed effects, and individual characteristics (age at migration, gender, the number of years of education, distance from migrant's community to the border, family ties in the US proxied by having a father who has had migration experience to the US) as controls. 3. Predicted probability of success is equal to the inverse of the predicted average number of trials per successful attempt.

Table 11: Falsification: Post 2005 Sample

VARIABLES	Common	El Centro	Yuma	Tucson	El Paso	Big Bend	Del Rio	Laredo	Rio Grande
Yr. of Educ.		-0.187**	0.0757	-0.0256	-0.149	0.0750	-0.285**	-0.147	0.0746
		(0.0876)	(0.124)	(0.0806)	(0.144)	(0.124)	(0.137)	(0.284)	(0.124)
IMag		87,744***	11,371**	20,513***	6,688	4,195	-125,462	10,901*	-37,497
(lagged 1 yr)		(23,069)	(5,576)	(6,517)	(8,645)	(5,432)	(148,738)	(6,402)	(43,927)
IMmanu		-306,220***	-4,633	-23,370**	-11,640	-3,930	-6,642	-4,462	-4,145
(lagged 1 yr)		(67,941)	(2,999)	(9,824)	(13,209)	(3,014)	(66,152)	(3,615)	(22,294)
mindistmex	0.00180								
	(0.00320)								
*mindistus*_miles	-0.00141***								
	(0.000370)								
Constant		0.0582	-4.204**	0.561	1.173	-16.41***	4.119	0.141	0.651
		(0.841)	(1.910)	(1.723)	(2.029)	(2.313)	(3.218)	(4.528)	(3.598)
Num. of Observations	756	756	756	756	756	756	756	756	756

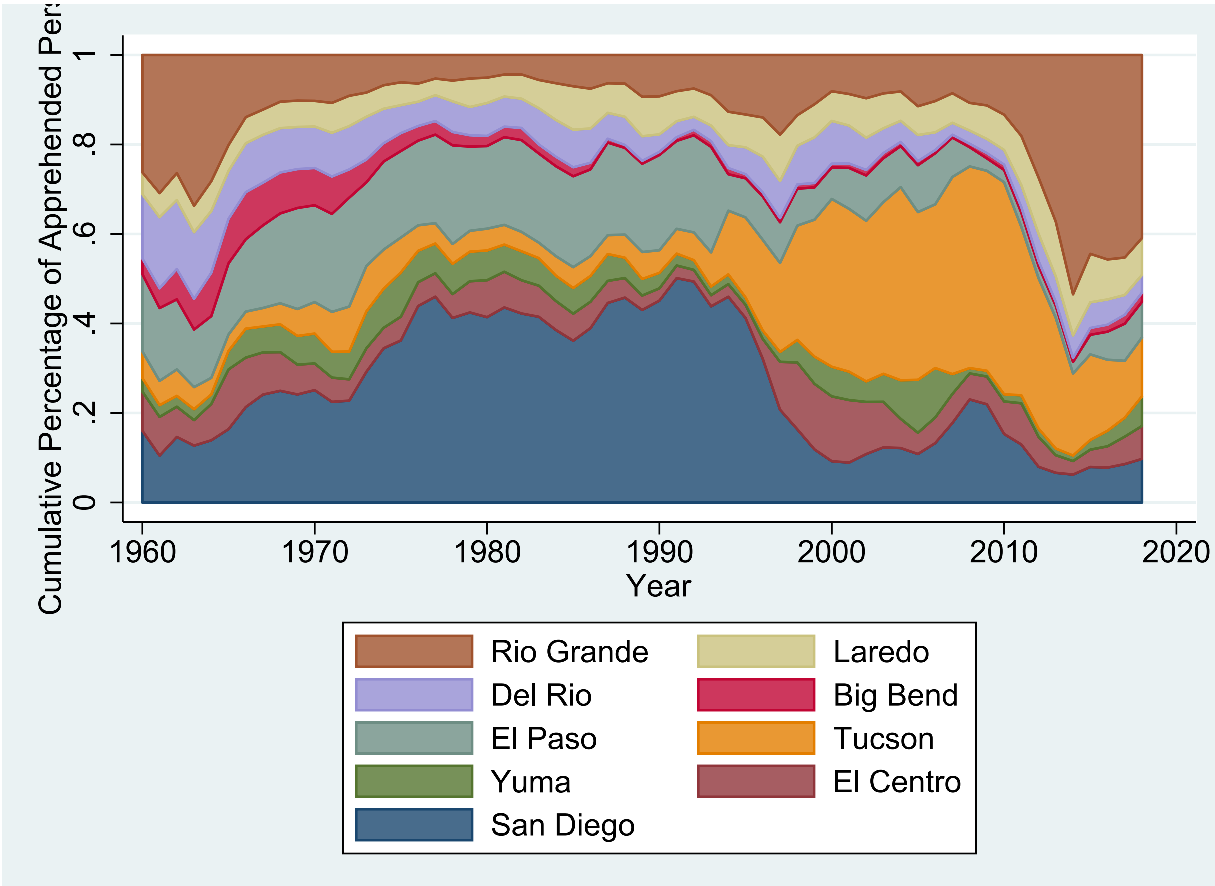
Notes. 1. Standard errors at clustered at the community level. 2. *IMag* (*IMmanu*) is the agricultural (manufacturing) import exposure index in Mexico – an interaction term using the share of community i' worker in agriculture (manuacturing) relative to the total number of workers in agriculture (manufacturing) across all communities, and the share of agricultural import as a fraction of GDP. 3. *mindistmax* (*mindisus*) measures the shortest road distance from the migrant's community (border sector) to the border sector (migrant's destination). 4. *** p<0.01, ** p<0.05, * p<0.1.

Figure 1: Total Number of Apprehensions at the Mexican-US Border (000s)



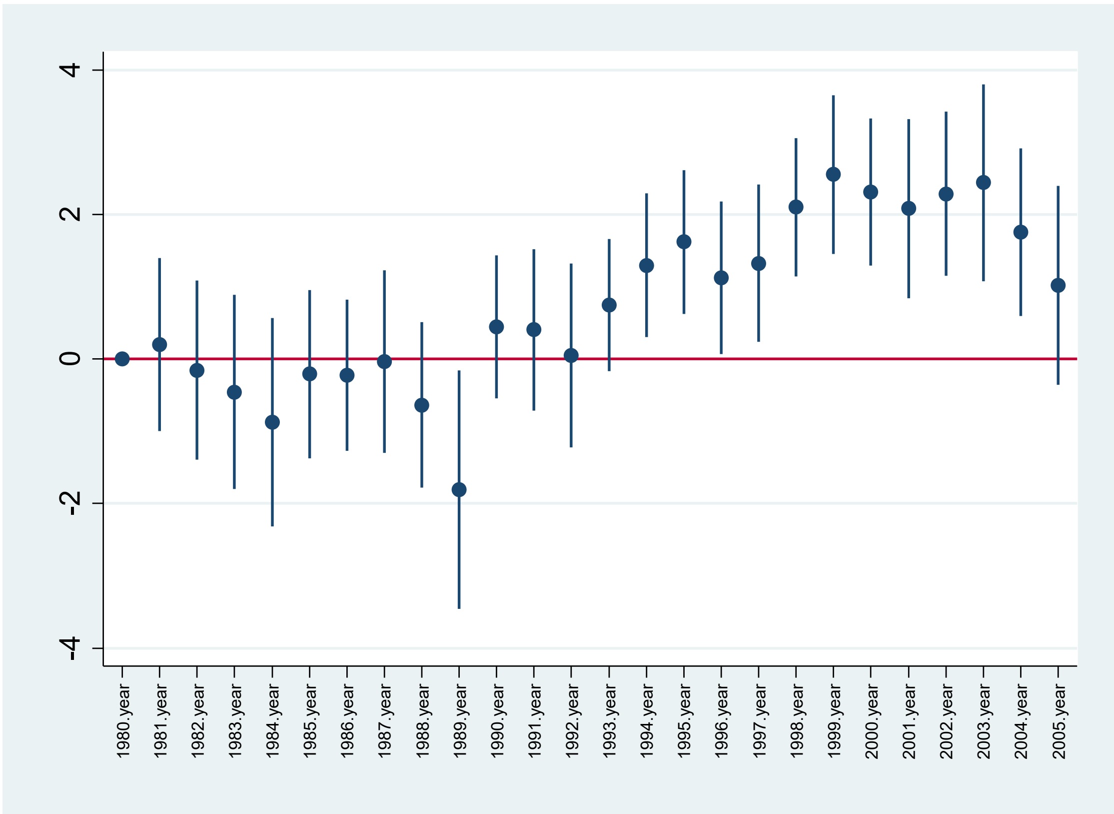
Notes: Data on illegal migrant apprehension are from the US Customs and Border Protection. This figure displays raw time trend of the total number of apprehensions made at the Mexican-US Border in thousands of apprehensions. Data include apprehensions from all border sectors. The figure highlights key dates: 1980 and 2005 respectively mark the first and last years of the time period studied in this paper, while 1986 marks Mexico's accession into the General Agreement of Tariffs and Trade. In 1994, the North American Free Trade Agreement was signed, and Operation Gatekeeper, a major border enforcement operation, was launched.

Figure 2: Distribution Of Apprehensions by Border Sector (%)



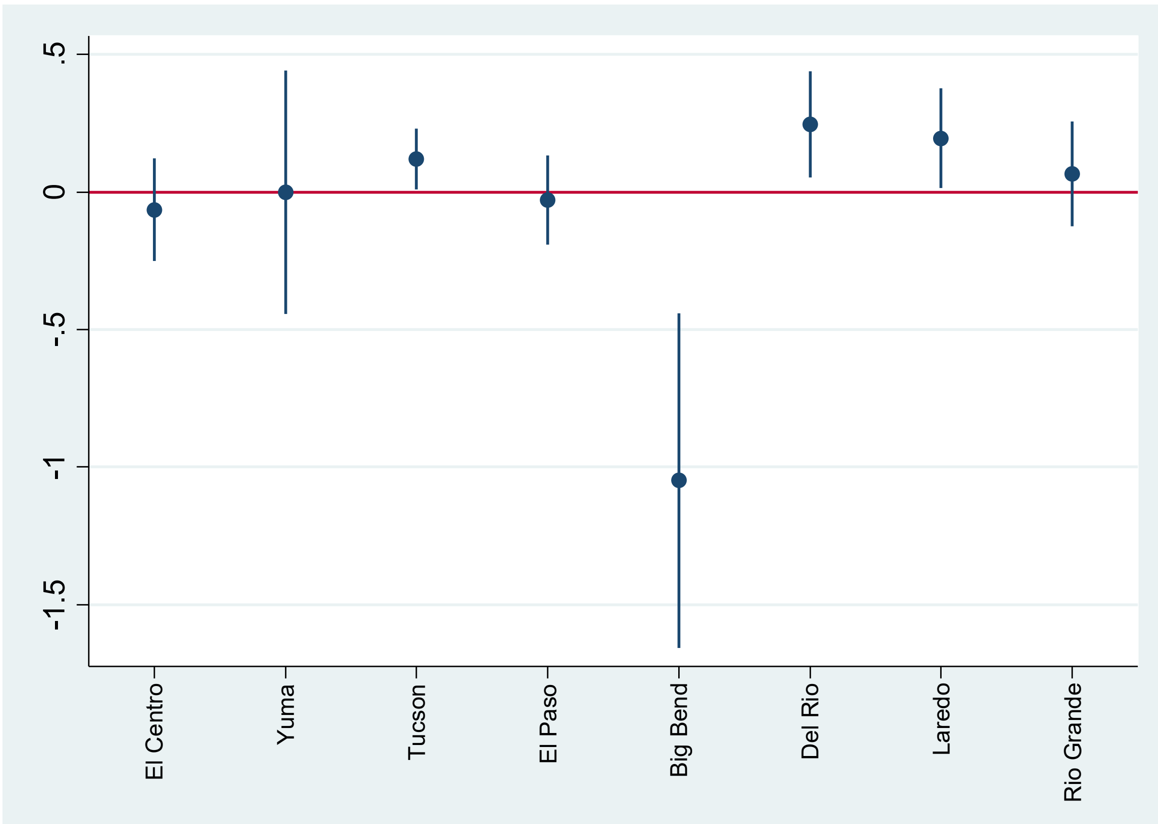
Notes: Data on illegal migrant apprehension are from US Customs and Border Protection. This figure displays the distribution apprehension by sector at the Mexican-US Border, showing the pre-eminence of San Diego and El Paso as the main border crossing location of choice eclipsed by Tucson after the mid-1990's.

Figure 3: Year Fixed Effects Coefficient Estimates of the Likelihood of Tucson Sector Crossing



Notes: Data on individual migrant level crossing trajectories are taken from the MMP (first attempts at over 18 years of age) spanning 1980-2005. The figure is based on an alternative-specific conditional logit specification that estimates the likelihood of crossing at each of the border sectors with San Diego as the base alternative with year fixed effects. The figure displays the year fixed effect coefficients and associated confidence intervals of Tucson sector crossing. The results show an increase in the likelihood of a Tucson sector crossing post-1994 relative to San Diego. The effect is persistent and statistically significant from 1994-2004.

Figure 4: Least Squares Coefficients of Coyote Cost with Border Sector Fixed Effects



Notes: Data on coyote cost per migrant (first attempts at over 18 years of age) are taken from the MMP spanning 1985-2005. The figure displays the coefficients and associated confidence intervals from a least squares regression that estimates the log cost of hiring a coyote per migration trial against border sector fixed effects (San Diego as the base alternative), and year fixed effects from 1980 - 1994. The results show that the cost of Tucson crossing is significantly higher than that of San Diego crossing. Del Rio and Laredo are likewise higher cost crossing locations, while Big Bend is a lower cost crossing location.

Appendix

Table A1: Year Fixed Effects Only, 1980-2005

VARIABLES	Common	El Centro	Yuma	Tucson	El Paso	Big Bend	Del Rio	Laredo	Rio Grande
mindistmex	-0.00136								
	(0.000856)								
mindistus	-0.00229***								
	(0.000157)								
1981.year		0.612	-16.78***	0.200	0.114	-16.56***	0.903	0.255	0.0582
		(0.698)	(0.731)	(0.609)	(0.551)	(1.064)	(0.899)	(0.640)	(0.874)
1982.year		-0.355	-0.366	-0.154	-0.0525	-16.72***	-0.639	-0.665	0.402
		(1.125)	(1.233)	(0.633)	(0.874)	(1.044)	(0.948)	(0.694)	(0.620)
1983.year		0.884	-16.77***	-0.457	-0.574	0.540	0.312	0.285	0.835
		(0.663)	(0.741)	(0.685)	(0.730)	(1.455)	(0.943)	(0.724)	(0.696)
1984.year		0.956*	-0.555	-0.875	-0.0659	0.0457	-0.192	-0.0242	-0.377
		(0.505)	(1.241)	(0.734)	(0.543)	(1.482)	(0.806)	(0.651)	(0.738)
1985.year		0.485	-0.0874	-0.209	-0.434	-17.01***	-0.128	-1.768**	-0.795
		(0.650)	(1.050)	(0.594)	(0.653)	(1.104)	(0.636)	(0.712)	(0.710)
1986.year		-0.444	-16.86***	-0.223	-0.365	-0.460	-0.434	-1.245*	-0.276
		(0.773)	(0.731)	(0.532)	(0.580)	(0.350)	(0.736)	(0.688)	(0.595)
1987.year		0.0334	-0.377	-0.0326	-0.725	-16.95***	-1.106	-1.660**	-0.479
		(0.775)	(1.233)	(0.644)	(0.710)	(1.079)	(0.944)	(0.808)	(0.821)
1988.year		-1.009	-1.033	-0.634	-1.574**	-0.889	-2.630**	-2.203***	-1.851**
		(0.901)	(1.227)	(0.586)	(0.708)	(1.509)	(1.205)	(0.776)	(0.920)
1989.year		-0.911	-16.96***	-1.807**	-1.311**	-17.16***	-1.844**	-1.424**	-0.734
		(0.744)	(0.734)	(0.840)	(0.668)	(1.069)	(0.926)	(0.588)	(0.659)
1990.year		-0.0402	-16.86***	0.446	0.102	-16.95***	-0.348	-3.085***	-1.002
		(0.721)	(0.734)	(0.505)	(0.528)	(1.068)	(0.772)	(1.065)	(0.846)
1991.year		-0.389	-16.89***	0.404	-0.187	-0.238	-1.852	-1.421*	-0.725
		(0.895)	(0.738)	(0.571)	(0.515)	(1.442)	(1.181)	(0.764)	(0.601)
1992.year		-0.930	-16.92***	0.0491	-1.679**	-0.289	-0.928	-1.609**	-0.899
		(0.852)	(0.738)	(0.649)	(0.843)	(1.455)	(0.908)	(0.805)	(0.802)
1993.year		-0.256	-16.87***	0.746	-0.510	-17.01***	-0.685	-1.625*	-0.414
		(0.859)	(0.760)	(0.466)	(0.689)	(1.051)	(0.746)	(0.912)	(0.767)

Table A1. Year Fixed Effects Only, 1980-2005 (cont'd)

VARIABLES		El Centro	Yuma	Tucson	El Paso	Big Bend	Del Rio	Laredo	Rio Grande
1994.year		0.446	0.684	1.298**	-0.0886	-16.92***	-0.809	-0.825	-0.641
		(0.786)	(1.003)	(0.505)	(0.610)	(1.081)	(0.986)	(0.645)	(0.796)
1995.year		-0.144	-0.189	1.619***	0.614	-16.80***	-0.930	-1.456*	0.374
		(0.866)	(1.242)	(0.508)	(0.618)	(1.103)	(0.895)	(0.748)	(0.716)
1996.year		0.844	0.107	1.122**	0.463	0.204	0.112	-1.073	-0.341
		(0.755)	(1.260)	(0.539)	(0.701)	(0.429)	(0.624)	(0.790)	(0.770)
1997.year		0.612	-16.71***	1.322**	0.529	0.0917	-0.200	-1.832**	-0.219
		(0.671)	(0.756)	(0.555)	(0.592)	(1.451)	(0.781)	(0.904)	(0.777)
1998.year		0.836	1.064	2.100***	1.093*	-16.83***	-0.196	-0.925	-1.163
		(0.814)	(1.246)	(0.489)	(0.605)	(1.100)	(0.972)	(0.728)	(0.915)
1999.year		1.261**	0.797	2.555***	0.554	-16.79***	0.334	-0.623	-0.201
		(0.625)	(1.272)	(0.560)	(0.751)	(1.112)	(0.891)	(0.827)	(0.902)
2000.year		0.946	0.494	2.309***	0.676	-16.72***	0.794	-2.239*	0.493
		(0.912)	(1.260)	(0.518)	(0.665)	(1.135)	(0.866)	(1.225)	(0.755)
2001.year		2.065***	-16.49***	2.082***	-0.402	-16.88***	0.545	-0.398	0.216
		(0.718)	(0.812)	(0.632)	(0.966)	(1.154)	(0.797)	(0.867)	(0.963)
2002.year		1.104	-16.74***	2.287***	0.361	-16.97***	1.032	-16.83***	-16.92***
		(0.857)	(0.772)	(0.578)	(0.787)	(1.141)	(0.824)	(0.713)	(0.780)
2003.year		0.811	3.064***	2.439***	-16.72***	-16.73***	1.042	-0.192	-0.681
		(1.196)	(0.953)	(0.695)	(0.679)	(1.165)	(0.936)	(0.964)	(1.292)
2004.year		-16.96***	-17.02***	1.754***	-0.225	-17.44***	-1.080	-17.28***	-17.40***
		(0.613)	(0.790)	(0.590)	(1.031)	(1.146)	(1.281)	(0.713)	(0.798)
2005.year		-16.82***	-16.89***	1.021	0.454	-17.34***	0.0826	-17.23***	-0.241
		(0.640)	(0.808)	(0.703)	(0.872)	(1.175)	(1.014)	(0.747)	(0.926)
Constant		-3.210***	-3.881***	-2.478***	-2.665***	-4.962***	-3.794***	-2.943***	-3.641***
		(0.509)	(0.737)	(0.531)	(0.647)	(1.123)	(0.891)	(0.888)	(0.907)
Observations	22,194	22,194	22,194	22,194	22,194	22,194	22,194	22,194	22,194

Notes. 1. Standard errors at clustered at the community level. 2. *mindistmax* (*mindisus*) measures the shortest road distance from the migrant's community (border sector) to the border sector (migrant's destination). 4. *** p<0.01, ** p<0.05, * p<0.1.

Table 2: Falsification: Determinants of the Number of Trials, Post 2005 Sample

VARIABLES	(1)
El Centro	0.0884
	(0.315)
Yuma	4.829***
	(0.186)
Tucson	0.148
	(0.186)
El Paso	0.833**
	(0.380)
Del Rio	0.828***
	(0.233)
Laredo	0.887***
	(0.303)
Rio Grande	0.509
	(0.407)
mindistmex	0.000413**
	(0.000189)
Constant	-1.035
	(0.939)
Observations	103
R-squared	0.785

Notes. 1. Standard errors at clustered at the community level. 2. Migrant-level controls included are years of education, age at first crossing, and gender. 3. *** p<0.01, ** p<0.05, * p<0.1.