I Z A Institute
of Labor Economics

Initiated by Deutsche Post Foundation

DISCUSSION PAPER SERIES

Immigration Policy and the Rise of Self-Employment among Mexican Immigrants

Catalina Amuedo-Dorantes
Magnus Lofstrom
Chunbei Wang

I Z A Institute of Labor Economics

Initiated by Deutsche Post Foundation

Immigration Policy and the Rise of Self-Employment among Mexican Immigrants

Catalina Amuedo-Dorantes
University of California, Merced and IZA

Magnus Lofstrom
Public Policy Institute of California and IZA

Chunbei Wang
University of Oklahoma

ABSTRACT

Immigration Policy and the Rise of Self-Employment among Mexican Immigrants

Over the past two decades, the U.S. has seen a drastic growth in self-employment among Mexican immigrants, the largest immigrant population in the country. This is an interesting yet puzzling trend, in stark contrast to the stagnated growth of self-employment among other disadvantaged minority groups such as blacks and even a significant decline among whites. Little is known of what drives that growth. We propose that the expansion of interior immigration enforcement, a characteristic of the U.S. immigration policy during that time span, might have contributed to this unique trend by *pushing* Mexican immigrants into self-employment as an alternative livelihood. Exploiting temporal and geographic variation in immigration enforcement measures from 2005 to 2017, we show that tougher enforcement has been responsible for 10 to 20 percent of the rise in Mexican self-employment. The impact mainly concentrates among likely undocumented immigrants. It is mainly driven by *police-based enforcement measures* responsible for most deportations, as opposed to *employment-based enforcement*. Our results suggest that apprehension fear, instead of lack of employment opportunities, is the main push factor.

Corresponding author:
Catalina Amuedo-Dorantes
Economics and Business Management
University of California Merced
5200 North Lake Rd.
Merced, CA 95343
USA
E-mail: camuedo-dorantes@ucmerced.edu

1.   Introduction

The low business ownership rate among Mexican Americans has been a well-documented finding in the entrepreneurship literature. For instance, using data covering the period spanning from the late 1990s to the early 2000s, several studies have shown that only four to five percent Mexican-American men are self-employed business owners –about half the rate of non-Hispanic white men (Fairlie, 2004; Lofstrom and Wang, 2009; Fairlie and Woodruff, 2010). Because entrepreneurship and business ownership are seen as important mechanisms for upward mobility and poverty reduction among minority groups (Bates, 1997; Fairlie, 2004; Fairlie and Lofstrom, 2009), researchers have tried to understand the factors responsible for the large business ownership gap between Mexican-Americans and non-Hispanic whites. In that vein, Lofstrom and Wang (2009) and Fairlie and Woodruff (2010) identify low educational attainment and wealth as key barriers preventing Mexican-Americans to start businesses, especially in the case of Mexican immigrants, who account for the vast majority of the Mexican-American population.

Despite these persistent barriers, this decade has witnessed a drastic increase in Mexican immigrants' business ownership. Davila *et al*. (2014) document that the number of Mexican immigrant entrepreneurs has increased more than five-fold from 1990 to 2012, becoming responsible for the exponential growth of Hispanic entrepreneurs in the United States. Similarly, using data from the American Community Survey 5-year sample from 2011 to 2015, Fairlie (2018) shows that the business ownership rate among Hispanic immigrants is now comparable to the rate among non-Hispanic whites.[1] This is in stark contrast to the stagnated growth of self-employment among blacks and even a decline among whites. The growth has been interpreted as a success story of economic advancement among the Hispanic community, which is of particular interest to

---

[1] This trend is also noticed among news media and research institutes, for example, see Mills *et al*. (2018).

policymakers given that large amount of public resources are set aside to help small businesses. Yet, to date, little is known about the driving forces behind such growth. In this study, we point out that the picture may not be as rosy as it seems. We hypothesize that part of this growth can be attributed to intensified immigration enforcement over the past two decades, which has pushed many Mexican immigrants (the largest immigrant population that comprises the largest share of undocumented immigrants during that period) into self-employment as an alternative livelihood. As such, the growth of "business ownership" does not necessarily signal improvement in the economic status of a disadvantaged group nor their contribution to the economy but, instead, suggests a shift toward the underground economy.[2]

Indeed, immigration enforcement has tightened significantly in the United States since the terrorist attacks of September 11, 2001. The increase has been made evident through several metrics, including increased work-place raids and deportations following the adoption of more stringent immigration enforcement policies by state and local governments, such as employment verification mandates, the signing of 287(g) agreements between local enforcement agencies and Immigration Customs Enforcement (ICE), or the rollout of the Secure Communities program from 2008 through 2014. In all instances, the adopted initiatives have been aimed at curtailing unauthorized immigration by limiting the labor market prospects of undocumented immigrants and making life in the United States increasingly difficult. Correspondingly, the literature has documented the adverse impacts of tougher immigration enforcement on the labor market outcomes of many migrant groups afflicted by the aforementioned measures, such as Mexican

---

[2] Business ownership is typically broadly defined using nationally representative survey datasets, such as the Census, the American Community Survey (ACS), or the Current Population Survey (CPS). Its definition is based on a self-reported class-of-worker status question asking the respondent if s/he is self-employed in her/his own business, which can consist of an incorporated, unincorporated, employer (who hires employees), or non-employer (without employees) firm. Therefore, the growth in Mexican immigrants' business ownership rates could be driven by any of these types of businesses, especially the non-employer firms.

immigrants who comprise the majority of the undocumented population (Orrenius and Zavodny, 2009; Amuedo-Dorantes and Bansak 2012, 2014; Bohn and Lofstrom, 2013). Likewise, research has documented other significant impacts on these immigrants' lives, altering their marriage patterns, fertility, household formation and mobility patterns (Amuedo-Dorantes *et al*., 2013, 2018; Amuedo-Dorantes and Arenas-Arroyo, 2017; Amuedo-Dorantes, Arenas-Arroyo, and Wang, 2020; Bohn, Lofstrom, and Raphael, 2014; Hoekstra and Orozco-Aleman, 2017; Wang and Wang, 2012).

Faced with an increasingly uncertain immigration environment, a growing number of undocumented immigrants and related family members might have turned to self-employment (Bohn and Lofstrom, 2013; Wang, 2019). Both employment- and police-based immigration enforcement policies might have contributed to the choice of self-employment as an alternative livelihood among many Mexican migrants. Employment-based enforcement policies –namely, E-Verify, might have deteriorated the job prospects of undocumented immigrants in the formal wage-sector through various channels. First, as immigration enforcement tightened, some firms might have chosen to replace undocumented workers with employees who are eligible to work. Other firms might have lowered their compensation to undocumented migrants to offset the increased risk they are exposed to when hiring someone who is not eligible to work. Second, firms might have also increasingly engaged in statistical discrimination to reduce the hiring costs involved with hiring someone who turns out to be not eligible to work. For instance, if employers believe that Mexican immigrants are more likely to be undocumented, they might avoid hiring Mexican immigrants altogether. Through any of the abovementioned mechanisms, the demand for Mexican labor would likely decrease as interior immigration enforcement intensifies. Mexican immigrants

unable to find work or discriminated against in the formal labor market might have turned to self-employment as an alternative employment option.

In addition to the abovementioned channels, police-based enforcement as captured by 287(g) agreements between local law enforcement agencies and ICE, Secure Communities or omnibus immigration laws allowing police officers to request proper documentation from anyone at any point in time, may instigate fear and insecurity among undocumented migrants. They might try to minimize their exposure to law enforcement by limiting their work commutes and driving, which could possibly limit their employment opportunities and induce them to look for alternative, more flexible work options. Self-employment provides autonomy and flexibility in terms of both location and schedule, conceivably reducing exposure to law enforcement.

In sum, either because of the desire to lower exposure to law enforcement or because of worsened employment options in the formal sector, Mexican immigrants might have turned to self-employment as an alternative work option as immigration enforcement tightened. Using a quasi-experiment approach, we exploit the temporal and geographic variation in MSA-level interior immigration enforcement to examine the impact that tightened immigration enforcement might have had on Mexican immigrants' self-employment. Specifically, using 2005-2017 data from the American Community Survey, along with MSA-level interior immigration enforcement data during that period, we find that immigration enforcement indeed raises the self-employment of Mexican immigrants. A one standard deviation increase in immigration enforcement increases their self-employment between 4 and 11 percent. This finding, which proves robust to several specification and identification checks, is unique to Mexican immigrants and primarily results in self-employment in low-skill occupations characteristic of one-man businesses. Policy-wise, the

growth in self-employment is mainly driven by police-based immigration enforcement, suggesting that apprehension fear might have been a key push factor.

The analysis herein contributes to the literature in important ways. *First*, it adds to the *entrepreneurship literature* by pinpointing immigration policy as an important factor contributing to: 1) the growth of the business ownership rate among Mexican immigrants and the Hispanic community in recent years; and 2) the heterogeneous patterns of business ownership across disadvantaged minority groups. To the best of our knowledge, this is the first paper to directly evaluate the role of immigration policies in explaining the recent drastic growth in Mexican immigrants' self-employment rate. *Second*, the paper contributes to the *immigration enforcement literature* by providing robust evidence of how self-employment is yet another response to tightened immigration enforcement policies. *Third,* by considering an array of local immigration enforcement initiatives, we can gauge the differential impact of employment-based enforcement policies (partially reflective of employers' hiring practices and demand) and police-based enforcement policies (more directly linked to deportations and apprehension fear) in driving the self-employment decisions of Mexican immigrants. As such, the analysis informs about immigrants' response to various types of enforcement measures.

2.   Literature Review

The study of how immigration policy affects immigrants' self-employment choices is related to three strands of literature: 1) one on self-employment amid worsened labor market conditions; 2) another one identifying the determinants of self-employment, and 3) a literature evaluating immigrants' response to intensified immigration enforcement.

2.1 Self-Employment Amid Worsened Labor Market Conditions

Self-employment has long been recognized as an alternative labor market choice amid deteriorated labor market conditions. The so called "unemployment push" effect suggests that high unemployment rates during economic downturns push people into self-employment due to limited opportunities in the formal wage-salary sector. As a result, numerous studies have documented business creation resulting from the unemployment push effect during recessions, triggering a countercyclical pattern in business startup rates (Blau, 1987; Highfield and Smiley, 1987; Hamilton, 1989; Evans and Leighton, 1990; Storey, 1991; Alba-Ramirez, 1994; Blanchflower and Meyer, 1994; Farber, 1999; Audretsch *et al.*, 2002; Parker, 2004; Koellinger and Thurik, 2012; Constant and Zimmermann, 2014; Fairlie and Fossen, 2018).

Recent papers reveal that the unemployment push is even stronger among immigrants due, in part, to their strong labor market attachment. In this regard, Lofstrom and Wang (2019) document the continuous growth of self-employment among immigrants during the Great Recession, whereas that of natives stagnated. Similarly, Catron (2017) shows that Mexican immigrant men are more likely to become self-employed during economic downturns than natives.

Our paper adds to this literature by pointing out that tightened local immigration policy serves as an additional push factor into self-employment for groups more likely to include undocumented immigrants, such as Mexican immigrants. This insight partially explains the recent growth in self-employment among Hispanics, despite them facing similar business cycle conditions as other demographic groups.

2.2 Determinants of Self-employment

When analyzing the determinants of self-employment, the literature tends to focus on three sets of factors: 1) micro-economic, 2) macro-economic, and 3) institutional factors. Micro-

economic factors include individual traits responsible for some of the variance in self-employment choices, such as gender, age, marital status, children, family background, personality traits, education, experience, health, nationality, ethnicity, abilities, liquidity constraints or locational choices, *e.g.* residing in an ethnic enclave (Le, 1999; Simoes and Crespo, 2016). Macro-economic factors refer to aggregate conditions explaining differences in self-employment rates across countries over time, such as economic booms and busts captured by business cycles, changes in technology and industrial structure, or different stages of economic development (Blau, 1987; Meager, 1992; Acs, Audretsch, and Evans, 1994). Finally, institutional factors involve a wide range of government policies, including tax policy, unemployment benefits, social security retirement benefits, and other public policies (Blau, 1987; Folster, 2002; Parker ad Robson, 2004; Acs *et al*., 2016).

Studies consistently find that micro-economic factors, such as low educational attainment and wealth constraints, play a major role in explaining low self-employment rates among Blacks and Hispanics (Fairlie 1999, 2018b; Fairlie and Woodruff, 2010; Lofstrom and Bates, 2013). However, the past decade has seen diverging patterns of self-employment between these two groups, despite enduring financial and human capital constraints faced by both demographics. Given the intensification of immigration enforcement that characterized the past two decades, as well as the higher share of undocumented immigrants who were Hispanic during that period, we hypothesize that tightened immigration enforcement might have contributed to their growth in self-employment. Our results confirm this hypothesis and, thereby, contribute to our understanding of the factors responsible for the drastic growth in self-employment among Hispanics.

2.3   Immigration Enforcement Literature

Immigration enforcement grew at an unprecedented pace after the 9/11 terrorist attacks. A rapidly growing literature has examined the effect of intensified immigration enforcement on a variety of immigrant and native outcomes in the communities where they both reside –outcomes that range from their employment and earnings, to their migration and marital patterns, children's educational attainment and living arrangements, fertility or criminal engagement (Orrenius and Zavodny, 2009; Amuedo-Dorantes and Bansak, 2012, 2014; Bohn and Lofstrom, 2013; Amuedo-Dorantes *et al*., 2013, 2018; Amuedo-Dorantes and Arenas-Arroyo, 2017; Bohn, Lofstrom, and Raphael, 2014; Hoekstra and Orozco-Aleman, 2017; Wang and Wang, 2012; Wang, 2019).

Recently, researchers have grown interested in learning about the role of tightened immigration policies in explaining undocumented immigrants' choices. Several major response mechanisms have been identified, including migrating out of states with tightened enforcement, marrying U.S. citizens with the intent of adjusting their immigration status, or engaging in income-generating criminal activities (Amuedo-Dorantes, Arenas-Arroyo, and Wang, 2020; Bohn and Lofstrom, 2013; Bohn, Lofstrom, and Raphael, 2014; Freedman *et al*., 2018; Wang and Wang, 2012).

Very few studies have considered self-employment as a response to immigration enforcement. Bohn and Lofstrom (2013) analyze the effects of the 2007 Legal Arizona Workers Act (LAWA) and show that such an employment-based enforcement policy increased the self-employment rate among non-citizen low-skilled Hispanic immigrants (a proxy for undocumented immigrants) in Arizona. Wang (2019) and Wang and Lofstrom (2019) use 9/11 as a natural experiment to gauge the impact of a tightened immigration environment on Mexican immigrants' self-employment dynamics. They show that the post-9/11 period is characterized by an increase

in entries into "necessity" self-employment (defined as transitions from unemployment into self-employment) among Mexican immigrants.

While these studies suggest that tightened immigration policy environment could increase self-employment among undocumented immigrants, the evidence is far from conclusive. Bohn and Lofstrom (2013) focus on only one specific policy and state (an employment-based immigration policy, LAWA, in Arizona) in a period that preceded much of the widespread adoption of tougher police-based interior immigration enforcement at the state and local levels. The response in the latter case might have differed from the response when other policies were not in place. For instance, if only one state is adopting tougher measures, one can foresee migrants moving from the tougher to more lenient states. However, when multiple localities are adopting a tougher stand on enforcement, migration may be less of a viable option and self-employment might emerge as an alternative. In addition, the focus on a narrower period (*i.e.* two years) limits the ability to inform about these policies' contribution to the rising trend in self-employment among Mexican immigrants. On the other hand, Wang (2019) and Wang and Lofstrom (2019) solely focus on the change in self-employment from before to after 9/11, utilizing the post-9/11 period as a proxy for tightened immigration environment. Since they do not *directly* evaluate the effect of specific immigration policies, the interpretation of the post-911 effect as immigration enforcement effect is potentially left open for debate. Furthermore, it does not inform about which set of enforcement policies are at work – federal, state, local, employment-based, or police-based.

Our paper contributes to this strand of literature in important ways. *First*, we *directly* evaluate the effects of an array of employment- and police-based immigration initiatives implemented at the state and local levels by exploiting temporal and geographic (MSA-level) variation in the immigration policy environment. Our analysis provides a more precise estimation

and identification of the effects of expanding immigration enforcement countrywide, and of the type of policies responsible for such effects. *Second,* we examine a period in which most employment- and police-based immigration policies were implemented throughout the United States (*i.e.* 2005 – 2017) –a period that coincides with the largest growth of self-employment among Mexican immigrants. This allows for an assessment of the role that immigration policy might have played in the self-employment growth among Mexican immigrants –an important trend drawing the attention of policy makers in recent years.

3.   Data

To assess the role that intensified interior immigration enforcement on Mexican immigrants' business entrepreneurship, we rely on two data sources. The first one consists of microdata from the American Community Survey (ACS) for the 2005 through 2017 period (Ruggles *et al*. 2019). The ACS interviews about 2 million households, representing 1 percent of the U.S. population, every year. It contains detailed labor market and demographic information, allowing us to examine self-employment. Its large sample size and nationally representative nature are also especially useful when analyzing minority groups, such as Mexican immigrants, and less frequent labor market outcomes, as is the case with self-employment. In addition, over the period under consideration, it provides consistent MSA definitions, allowing us to examine MSA-level enforcement impacts.

The second source of data refers to gathered information on several local and state level immigration enforcement initiatives in place in each MSA over the timer period under consideration. Specifically, it includes employment verification mandates, 287(g) local- and state-level agreements, Secure Communities, and omnibus immigration laws. We use data on these initiatives to construct an annual enforcement index at the MSA level that provides a

comprehensive measure of the intensity of immigration enforcement to which individuals in the MSA might have been exposed. In what follows, we explain how the enforcement index is constructed. Subsequently, we discuss sample restrictions and how our dependent variable is defined.

3.1 Immigration Enforcement Data

Since 9/11, and in the absence of a comprehensive immigration reform, many local and state governments have taken matters into their own hands enacting several policies aimed at targeting undocumented immigration. Our goal is to gauge the impact of the tougher climate created by a compendium of interior immigration enforcement measures on the self-employment propensity of Mexican immigrants. Note that, not only employment-based immigration enforcement measures, such as employment verification mandates, may affect the self-employment decision of migrants but, also, police-based enforcement measures responsible for most migrant apprehensions. Migrants may view self-employment as an opportunity to gain control over their jobs and work schedules, enabling them to work from home, arrange work hours, client encounters, or any driving needed for work purposes to minimize potential encounters with law enforcement personnel.

Hence, we gather historical and current data on the implementation of the interior immigration enforcement initiatives described in Table A in the appendix –namely, 287(g) agreements between local and state police and ICE, Secure Communities, Omnibus Immigration Laws, and employment verification (E-Verify) mandates. Data on 287(g) agreements are gathered from the ICEs 287(g) Fact Sheet website, from Amuedo-Dorantes and Bansak (2014), and from

Kostandini *et al*. (2013).[3]   Data on the rolling of the Secure Communities program at the county level is compiled from ICE's releases on activated jurisdictions.[4]   Finally, data on state level omnibus immigration laws and employment verification mandates is gathered from the National Conference of State Legislatures.[5]

To better capture the overall climate created by the measures cited above, we construct an immigration enforcement index.[6]   The index has two important advantages. *First*, it provides a tractable way of gauging the impact of the tougher climate created by the diversity of interior immigration enforcement initiatives put in place. Because self-employment often involves a more volatile and uncertain income-generating livelihood, it is unlikely to be a decision taken lightly in response to a single enforcement initiative but, rather, by the tougher environment created by multiple policies. Therefore, a comprehensive enforcement index is a better proxy for such a climate change. In subsequent heterogeneity analyses, we distinguish between *police-based* and *employment-based* enforcement measures given the distinct resources they rely upon (police vs. employers), as well as their different consequences.[7]

---

[3] Since the ICE website contains only a list of the current active agreements, we review old websites and prior research using these agreements to ensemble a complete dataset spanning over the period under consideration. Once we have the start date of each 287(g) agreement, we calculate the period during which these agreements have been in place.

[4] See: https://www.ice.gov/doclib/secure-communities/pdf/sc-activated.pdf

[5] See: http://www.ncsl.org/documents/statefed/omnibus_laws.pdf

[6] It is worth noting that the index is a proxy of the intensity of immigration enforcement to which respondents in an MSA might be exposed to. It is not comprehensive of all immigration enforcement measures, *e.g.* it does not include data on the more seldomly conducted raids. Additionally, how any given enforcement measure is implemented ultimately varies across jurisdictions depending on who oversees its implementation or other unobserved local traits. To partially account for those factors, we include area fixed-effects, as well as area-specific time trends.

[7] We group the above-mentioned immigration enforcement measures based on their objectives and operability into *police-based* and *employment-based* immigration enforcement. Police-based immigration enforcement, as captured by 287(g) agreements, Secure Communities or police enforcement included in Omnibus Immigration Laws, is generally aimed at identifying and apprehending undocumented immigrants. The various programs involve either the local and/or state police, and function similarly from a migrant's perspective. Migrants can be stopped by the police, inquired about their immigration status, and their fingerprints entered in a database shared by the FBI and DHS to confirm their immigration status. If they are undocumented, they can be held back to be picked up by ICE. These programs have been responsible for the largest share of interior removals. In contrast, the goal of employment-based enforcement, as epitomized by E-Verify mandates, is to ensure the work eligibility of prospective employees. Unlike police-based enforcement, migrants are generally alerted of whether the prospective employer e-verifies. The

Second, immigration enforcement in the United States is best described as an interconnected system of initiatives administered by federal, state, and local agencies with overlapping procedures and missions. This is particularly true of police-based immigration enforcement measures, which, as noted above, build on each other and, for practical matters, do not differ much in their operability. Given the correlation among the various measures, the index seems a more adequate way of gauging the overall impact of intensified immigration enforcement.

In constructing the index, we take into consideration the distinct geographic coverage and adoption timing of the various immigration enforcement initiatives. As noted in Table A1 in the appendix, some of the enforcement initiatives were adopted at the county level. It could be the case that one county in the MSA activated a 287(g) agreement, whereas other counties in the MSA did not. In those instances, some of the respondents in the MSA were affected by the measure, whereas others were not. In addition, some of the measures might have been in place for only a few months during the year if the initiatives were activated midyear. To address these issues, we construct a population-weighted index that accounts for both the distinct geographic coverage of the enforcement measures, as well as the number of months each measure was in place during the year. In that manner, it allows us to better capture the exposure likelihood and the intensity of immigration enforcement to which migrants' employment choices are more likely to respond.

For each county-level policy *z*, we first construct the following MSA-year level index:

(1) $\quad EI_{m,t}^z = \frac{1}{P_{m,2000}} \sum_{c \in m}^{m} \frac{1}{12} \sum_{i=1}^{12} \mathbf{1}\left(EI_{c,i,t}^z\right) P_{c,2000}$

where *z* refers to one of the following county-level policies: 287(g) local or Secure Communities; *m* refers to MSA, and *t* refers to year. $\mathbf{1}\left(EI_{c,i,t}^z\right)$ is an indicator function that is equal to one if

---

employer, as opposed to a local or state level police, gathers information that is entered in an electronic program. The program alerts the employer if there is any anomaly that needs to be resolved prior to legally hiring the migrant, and the employee is given roughly a week to resolve those issues.

policy z is implemented in county c, in month i and year t. The indicator function is multiplied by $P_{c,2000}$ –namely, the population of county c based on the 2000 Census (that is, prior to the rollout of any interior immigration enforcement initiative). In this manner, we capture the share of the population affected by each policy.

In the case of state-level measures, such as state-level 287(g), omnibus immigration laws or employment verification mandates, all MSAs in the state receive a 1, which is then weighted by the number of months in that particular year during which the measure in question was in place.

After constructing a proxy for the MSA-exposure to each immigration policy, we aggregate the indices for the various policy measures as follows:

(2) $\qquad EI_{m,t} = \sum_{z \in Z}^{Z} EI_{m,t}^{z}$

The enforcement index in equation (2) ranges from 0 (no enforcement) to 5 (when all initiatives were in place). To gain a better sense of where the variation in the index is stemming from, it is worth noting that 50 percent of all MSA-year cells in the sample have a positive enforcement index value. Of those cells, about 97 percent have a positive value for police-based enforcement (*i.e.* 287(g) agreements, Secure Communities and Omnibus Immigration Laws), and roughly 42 percent have an employment-based enforcement initiative (*i.e.* E-Verify mandate) in place.

Figure 1 shows the trend in immigration enforcement as captured by the index detailed in equation (2). In 2005, the enforcement index averaged about 0.2 across all MSAs. From 2007, the index grew rapidly coinciding with the rollout of Secure Communities by the Department of Homeland Security (DHS), rising to about 1.6 in 2012. Since then, it slightly dropped to 1.4 in 2017. Figure A1 in the appendix displays the distribution of changes in the enforcement index across MSAs from 2005 to 2017. We calculate the difference between the maximum and the minimum values of the enforcement index in each MSA over the period under consideration and

plot the distribution in a bar chart. As can be seen therein, the majority of MSAs (about 85 percent) experienced an increase in the enforcement index in the range of 1 to 3 units for an index varying between 0 and 5. In the same figure, we also separate the index into two components –an employment-based enforcement index and a police-based enforcement index. Both indices show upward trends, with the police-based index showing larger increases over time.

Finally, Figure 2 includes the heat maps for the intensity of the enforcement index at the beginning of our sample period (2005) and at the end (2017). This graph is generated at the Public Use Microdata Areas (PUMA) level using the CPUMA0010 variable from IPUMS-ACS that consistently identifies PUMAs from 2000 onward. As can be seen from the maps, the intensity of immigration enforcement rose over the period in a large set of MSAs.

3.2   American Community Survey Data

Our focus is on the impact of immigration enforcement on the self-employment outcomes among Mexican immigrants –a group accounting for roughly half of all unauthorized immigrants in the United States from 2005 through 2017 (Passel and Cohn, 2019). However, the impact of intensified immigration enforcement may extend beyond undocumented immigrants to reach legal immigrants. Therefore, we examine self-employment patterns of both naturalized immigrants, as well as non-citizens –our *treatment* groups. In addition, we consider several immigrant groups as a comparison (*control* groups), including non-Mexican Hispanic immigrants, non-Hispanic immigrants, and immigrants from Europe (Northern, Western, and Southern), Canada, Australia, and New Zealand. Finally, two native-born populations are also used as main comparison groups: whites with 12 or fewer years of education, and blacks.

We restrict our attention to individuals between the ages of 18 and 64, who do not live in group quarters, and are not enrolled in school. Mexican immigrants, especially the undocumented,

are known to present an unbalanced sex ratio, with more males than females. In addition, they are often part of so-called "traditional families," where men are the main breadwinners and, in turn, display higher labor force participation rates than women (Borjas, 2017). Hence, we focus on men and drop observations with missing information on key demographic traits, such as birthplace, education, or employment status.

Our key dependent variable is a self-employment dummy equal to one if an individual is self-employed and equal to zero, otherwise. Self-employment information is based on the class of worker question indicating if respondents worked for their own enterprise(s) or for someone else as employees. If a worker has multiple sources of employment, the type of employment in which he spent the most time during the reference week is used. This definition includes all types of businesses: incorporated and unincorporated, as well as businesses with or without employees. Since we keep those not in the labor force or unemployed, our measure captures the self-employment rate of the adult population. Later, we also show that the results prove robust to focusing on employed individuals only.

Three time-varying MSA-level variables are added to the data: the average annual unemployment rate in the MSA, the share of immigrants in the MSA, and the share of Hispanics in the MSA. The unemployment rate is gathered from the Bureau of Labor Statistics (BLS) Local Area Unemployment Statistics (LAUS). The shares of immigrants and Hispanics in the MSA are created using the ACS. Educational attainment is converted from a categorical to a continuous variable indicative of years of schooling.[8] Finally, person weights are used throughout the analysis.

---

[8] The following is how we convert the education variable to years of education. No schooling completed, Nursery school, Kindergarten (0); 1st to 11th grade (1-11); 12th grade, no diploma (11); High school diploma or GED (12); Some college, less than one year (13); 1 or more years of college credit, no degree (14); Associate degree (15); Bachelor's degree (16); Master's degree (18); Professional or Doctorate degree (21).

Figure 3 shows recent self-employment trends for Mexican immigrants and native-born non-Hispanic whites. The self-employment rate among Mexican immigrants rose steadily from 7.3 percent in 2005 to 10.8 percent in 2017 –an increase of 48 percent. In contrast, native-born whites' self-employment rate was much higher in 2005 –at 12.1 percent, but declined during the Great Recession to 10 percent, where it has stood at thereafter. This is consistent with the large increase in self-employment/entrepreneurship among Mexican immigrants documented in the literature –an increase that fueled the growth in Hispanic entrepreneurs in recent decades (Davila, Mora, and Zeitlin, 2014). In addition, the gap in self-employment rates between Mexican immigrants and native whites narrowed by 5-percentage-points from 2007 onwards to completely disappear after 2013. In fact, the self-employment rate among Mexican immigrants surpassed that of whites since 2015, exceeding it by about 1 percentage point in 2017.

Table 1 presents the summary statistics of the main variables of interest and other control variables for three groups: Mexican immigrants and two comparison native-born populations: less-educated whites and blacks. The self-employment rate among Mexican immigrants averaged 8.96 percent over the period under examination –a rate similar to the one exhibited by less-educated whites, but more than double the rate among blacks. The enforcement index averaged close to one. Finally, Mexican immigrants were younger, less educated, and more likely to be married and to speak little English than the other two comparison groups. They had resided an average of 19 years in the United States, and 77 percent were non-citizens. Geographically, Mexican immigrants concentrated in MSAs with high Hispanic and immigrant ratios, as well as slightly higher unemployment rates.

4.   Methodology

To evaluate how changes in interior immigration enforcement may have impacted Mexican immigrants' self-employment rate, we use a quasi-natural experimental approach that exploits the intensification of immigration enforcement in certain MSAs but not others. We estimate a general difference-in-differences (DD) model with a continuous treatment variable (*e.g.* Duflo, 2001) using the following equation:

(3) $SE_{i,m,t} = \beta_0 + \beta_1 \, EI_{m,t} + D'_{i,m,t} \, \beta_2 + G'_{m,t} \, \beta_3 + \beta_4 B_{m,t} + M_m + T_t + \varepsilon_{i,m,t}$

where $SE_{i,m,t}$ equals one if the *i*th respondent in MSA *m* and year *t* is self-employed, and zero otherwise. As mentioned earlier, our sample includes individuals out of the labor force, as well as the unemployed. As such, our measure captures the self-employment rate of the Mexican immigrant adult population. The advantage of this measure is that it is not affected by transitions across other labor force statuses (such as transitions between wage-employment and unemployment or out of the labor force). Nevertheless, as we shall show, the results prove robust to focusing on employed individuals.

$EI_{m,t}$ is the index serving as a proxy for the immigration enforcement climate in MSA *m* and year *t*. As noted earlier, an advantage of the $EI_{m,t}$ is that it is a better proxy for the geographic and temporal variation in the immigration enforcement environment to which immigrants are exposed. The coefficient of interest is β_1, which measures the impact of a tightened immigration enforcement on the self-employment of Mexican immigrants by comparing changes in their self-employment in MSAs that intensified immigration enforcement to the changes experienced in MSAs that did not, before and after the toughening of enforcement. In order to gain a better understanding of which sets of policies drive the results, we also distinguish between employment-

based and police-based immigration enforcement by using two separate indices in subsequent analyses.

We control for a vector of demographic characteristics, $D_{i,m,t}$, which includes information on age, age squared, years of education, years since migration, marital status, English speaking ability, and citizenship status. Controlling for these variables captures the possibility for immigration enforcement changes to be associated with substantial changes in the demographic composition of Mexican immigrants in an MSA. For example, the literature has suggested that older, more educated immigrants who are proficient in English are more likely to become self-employed. If immigration enforcement alters the composition of the Mexican immigrant pool, it may also affect their self-employment proclivity. By controlling for these characteristics, we reduce the impact of this possibility and focus on behavioral changes in response to intensified immigration enforcement.

We also account for aggregate time-varying traits of the MSA potentially influencing the self-employment rate of Hispanic immigrants in the community, $G_{m,t}$, such as the presence of ethnic enclaves as captured by the share of Hispanics and the share of immigrants. Ethnic enclaves play an important role in an immigrant's decision to become self-employed, as their businesses often cater to other immigrants. Thus, failure to account for the size of the enclave could bias the estimated impact of immigration enforcement. Economic opportunity is another important factor to consider when modeling business entrepreneurship. We account for the business cycle with the variable, $B_{m,t}$, which captures the unemployment rate in MSA m in year t. Nonetheless, we will present the estimates from specifications with and without these controls.

Finally, we include year and MSA fixed effects. Year fixed effects (T_t) capture national trends common to all MSAs, such as nationwide changes in business startup policies or economic

conditions. MSA fixed effects (M_m) capture unobserved time-invariant MSA heterogeneity, such as the degree to which the area is business friendly.[9] When examining a population subgroup with a variety of origins, we also include country of origin fixed-effects to account for differences in entrepreneurship culture across origin countries. Standard errors are clustered at the MSA level.

5.   Immigration Enforcement and the Self-Employment of Mexican Immigrants

In what follows, we first present the findings from our main specification –a DD estimation followed by various specification checks, including: (1) controlling for differential trends across MSAs; (2) using alternative samples and definitions of self-employment; (3) analyzing various immigration groups as a falsification test, and (4) examining the rise of sharing economy, the role of the Great Recession, or the relevance of the construction sector (employing large shares of immigrants) as potential confounding factors. Subsequently, we discuss heterogeneous effects of different types of enforcement policies. We confirm the findings from an event study and triple differences estimations addressing any concerns regarding pre-treatment trends and the endogenous nature of immigration enforcement with regards to immigrant self-employment. We conclude with additional identification checks gauging simultaneous changes in the location or composition of the Mexican immigrant pool on account of intensified immigration enforcement. Throughout, the results consistently support the hypothesis that enforcement boosted Mexican immigrants' self-employment, particularly police-based enforcement.

---

[9] We do not include controls of MSA-specific time trends as it is heavily debated whether they should be included as controls in a difference-in-differences estimation. There is growing evidence suggesting that such controls may remove much of the valid identifying information (Neumark *et al*., 2014; Meer and West, 2016). In our robustness checks, we further include the interactions between pre-treatment characteristics at the MSA level and time trend to control for differential trends between MSAs that could be spuriously correlated with the implementation of the policies and show that the results remain the same. In addition, we use a triple-differences estimation, which allows us to further rule out any unobserved MSA-specific trends.

5.1 Difference-in-Difference Estimates

Table 2 shows the results from estimating equation (3). We start with Model 1, which has no additional control variables, to gradually include demographic traits (Model 2), controls for the presence of ethnic enclaves (Model 3), business cycle (Model 4), MSA fixed effects (Model 5), and year fixed effects (Model 6). Throughout, immigration enforcement displays a positive and statistically significant effect on Mexican immigrants' self-employment. Controlling for demographic characteristics, ethnic enclaves, business cycles, and MSA fixed effects (Models 2 to 5) only slightly lowers the estimate of interest. According to the estimates from Model 5, a one standard deviation increase in immigration enforcement raises the self-employment proclivity of Mexican immigrants by 8.6 percent.[10] This is a sizable impact, considering that the vast majority of MSAs experienced an increase of one to three units in the immigration enforcement index over the sample period under consideration. As such, the average increase in immigration enforcement between 2005 and 2017 (an increase of 1.2 units) would have contributed to raising the self-employment rate of Mexican immigrants by roughly 11 percent. According to summary statistics, Mexican immigrants' self-employment rate rose by 48 percent during this period, which means immigration enforcement would have explained about 20 percent of that growth.

Adding year fixed effects in Model 6 significantly lowers the magnitude of the estimated impacts of interior immigration enforcement. This is not surprising, as year fixed-effects capture changes in federal immigration enforcement measures and other macroeconomic conditions that may be correlated with local immigration enforcement. Nevertheless, immigration enforcement still appears to significantly raise Mexican immigrants' self-employment, with a one standard

---

[10] A one standard deviation increase in the immigration enforcement index equals 0.95 –approximately the average enforcement index during our sample period. The estimated percentage change is computed as follows: $\frac{1 \text{ standard deviation increase in } EI * \beta_1}{Dependent\ Variable\ Mean} = \frac{0.95*0.0081}{0.0896} = 0.086.$

deviation increase in the immigration enforcement index raising the self-employment likelihood of Mexican immigrants by a non-negligible 3.7 percent.[11] After including all controls, state and local immigration enforcement would be responsible for 10 percent (=3.7*1.2/48) of the growth in the Mexican immigrant self-employment rate over the examined period.

5.2 Specification Checks

We next conduct several specification checks aimed at assessing the reliability of our findings. *First*, we evaluate whether the results are sensitive to controlling for differential trends across MSAs (Panel A of Table 3). *Second*, we assess if our results are sensitive to the sample used and how self-employment is measured (Panel B of Table 3). *Third*, we conduct several placebo checks using alternative groups potentially less impacted by tougher immigration enforcement owing to the traditionally lower share of undocumented immigrants among them (Panel C of Table 3). *Finally*, we test if the results are driven by confounding factors, such as changes in self-employment due to the rise of the sharing economy, the Great Recession or cyclicality in the construction sector (Panel D of Table 3).

A) Controlling for Differential Trends across MSAs

We first address the concern of differential trends across MSAs being spuriously correlated with the implementation of tougher interior immigration enforcement policies by interacting pre-treatment MSA traits (*e.g.* the share of non-citizens, the share of people voting for Republican, and the unemployment rate in 2000) with time trends (Hoynes and Schanzenbach, 2009; Amuedo-

---

[11] Other estimates confirm some well-known and expected results. For example, there is a nonlinear relationship between age and the self-employment rate of Mexican immigrants, with self-employment first increasing with age, and decreasing later in life. Married individuals are more likely to be self-employed, whereas those who limited English skills are less prone to be self-employed than their English proficient counterparts. Interestingly, non-citizen Mexican immigrants are more likely to be self-employed than their citizen counterparts, consistent with the more limited labor market opportunities available to this group. Educational attainment and number of years residing in the United States do not seem to play an important role in the self-employment decisions of Mexican immigrants.

Dorantes *et al*., forthcoming). As shown in Panel A of Table 3, our results prove robust to the inclusion of these additional controls.

B) **Using Alternative Samples and Self-Employment Definitions**

Thus far, our sample includes all working-age male Mexican immigrants, regardless of their labor market status. As mentioned earlier, measuring self-employment rate in this manner enables us to abstract from switches across labor market statuses that would, otherwise, impact the rate of self-employment, such as entries and exits from the workforce. However, our measure of self-employment could suffer from between-MSA flows. For example, if the unemployed or out of the labor force in the MSA were to move out of the MSA, the self-employment rate (measured as the ratio of self-employment out of the Mexican immigrant adult population in the MSA) would rise, even if the share of self-employed to those employed in the MSA remains the same. To check the extent to which our findings might be affected by this type of geographic transitions, we restrict our sample to those already at work. Column 1 in Panel B of Table 3 shows the results from this exercise. The impact of intensified immigration enforcement remains similar, suggesting the transitions noted above are not significantly affecting our main estimate.

Next, we pay attention to the definition of self-employment itself. In our main specification in Table 2, a respondent is self-employed if he reports self-employment as the main job during the reference week, regardless of the hours involved. This definition allows us to capture self-employment that occurs because of the inability to find other work, as could be the case amid intensified immigration enforcement. However, some might be concerned about this classification of self-employment if the individual is only working in this category a limited number of hours. To examine if that is the case, in column 2 of Table 3, Panel B, we redefine self-employment to

include individuals working for at least 15 hours a week.[12] Our main estimate remains practically unchanged.

Finally, as a final sample composition test, we also explore if our findings are driven by self-employment in the agricultural sector. Mexican immigrants are highly concentrated in this sector, and self-employment is rather common among farm helpers and farmers. To gauge if the results are mainly driven by individuals employed in this sector, we experiment with excluding those working in agriculture from the self-employment definition. The estimates in column 3 of Panel B suggest the findings are not driven by the agriculture sector.

C)   Placebo Checks

Next, in Panel C of Table 3, we conduct a number of robustness checks aimed at gauging if the increase in self-employment among Mexican immigrants is driven by undocumented immigrants targeted by intensified enforcement within the treatment group. To that end, we repeat our analysis using alternative populations with different shares of undocumented immigrants. First, in column 1 of Panel C, Table 3, we experiment with using as our treatment group European/Canadian/Australian/New Zealand immigrants –who are mostly legal and unlikely influenced by the tightening of enforcement. Indeed, the result shows that enforcement has no impact on their self-employment rate. In column 2, we experiment with using non-Hispanic immigrants –a group with a lower share of the undocumented population and find no effect either. At last, we focus on native-born Hispanics, a group with language and cultural affinities to Mexican immigrants; however, they are natives who are not affected by enforcement, and again find no significant effect (column 3).

---

[12] We also re-estimate this using the more restrictive sample of *employed* Mexican immigrants and the result is comparable to that in column 1.

Overall, the results in Panel C of Table 3 reveal that intensified immigration enforcement does not significantly alter the self-employment propensity of these other groups. The unique impact among Mexican immigrants is symptomatic of the impact of tougher immigration enforcement on undocumented immigrants contained within that demographic group.

D)   The Sharing Economy, the Great Recession, and the Construction Sector

During the time period under study, two major events may have affected the self-employment rate among Mexican immigrants: 1) the rise of the sharing economy since Uber launched in San Francisco in 2010, rapidly expanding across the country thereafter; and 2) the Great Recession from December 2007 to June 2009. In addition, during much of the period, the construction sector, which employs many immigrants, witnessed significant fluctuations. Here, we evaluate the role of these confounding factors and show that the effect of immigration enforcement on Mexican immigrants' self-employment is not driven by them.

The rise of the sharing economy in the past few years substantially increased the number of self-employed workers in the United States, especially among immigrants. The difference-in-difference specification should be able to address the role played by this potentially confounding factor. Nevertheless, to address any concerns, we repeat the analysis excluding the period of fastest growth of the sharing economy, which started with Uber's launch in San Francisco in 2010. Column 1 of Panel D, Table 3, repeats the analysis excluding San Francisco from the 2010 sample as well as all other MSAs from 2011 onwards. Despite the much smaller sample, our results prove robust, suggesting the effect is not likely driven by the rise of sharing economy.

An even more important event during the period under analysis was the Great Recession spanning from 2008 to 2009. As mentioned earlier, the Great Recession affected Mexican immigrants' self-employment differently when compared to other demographic groups (Lofstrom

and Wang, 2019; Catron, 2017). Because of its macroeconomic nature, it should be accounted for by year fixed effects and the use of a difference-in-difference methodology, unless immigration enforcement at the MSA was correlated to the intensity of the downturn in that location. To ensure our results are not driven by the Great Recession, we exclude the Great Recession period (2008 and 2009) and re-estimate our model. Furthermore, we consider the possibility that the economic consequences of the recession lasted beyond 2009, especially in the construction sector, where undocumented immigrant workers are prevalent. To capture that possibility, we experiment with estimating our model after excluding the Great Recession period (2008 and 2009) and the construction sector from 2010 onward. Our main finding (column 2 of Panel D) prevails.

Finally, in column 3 of Panel D, we experiment with excluding both the period corresponding to the rise of the sharing economy and the Great Recession –this implies using only 2005, 2006, 2007 and 2010. Our estimate also proves robust to this exclusion. Overall, then, we can conclude that the impact of intensified immigration enforcement on the self-employment propensity of Mexican immigrants does not appear to be driven by the rise of the sharing economy, the Great Recession or fluctuations in the construction sector.

5.3   Heterogeneous Impacts by Type of Immigration Enforcement

Immigration enforcement policies can be loosely categorized into two categories: (1) *police-based* enforcement that directly involves law enforcement and is responsible for most deportations, as is the case with 287(g) agreements between local enforcement agencies and Immigration Customs Enforcement (ICE), Secure Communities, or omnibus immigration laws; and (2) *employment-based* enforcement, as typified by employment verification mandates (*i.e.* E-Verify), which involves employers and primarily consists in checking the work eligibility of prospective hires or existing employees. Because of the involved parties in each case, the

consequences of each type of enforcement and the uncertain vs. predictable nature of each type of enforcement, it is worth distinguishing between the two sets of policies.

As we have noted earlier, Mexican immigrants' self-employment could be the response to increased police-based enforcement given the higher likelihood of being questioned about one's immigration status during regular traffic stops or after minor traffic violations –a situation shown to have escalated to deportation in several instances (Thomson and Cohen, 2014). Unlike regular wage and salary work, which typically involves commuting and regular work hours, self-employment provides greater flexibility, allowing individuals to work from or close to their homes, possibly avoiding much exposure to law enforcement.

Yet, it is also possible for self-employment to be the response to restricted wage and salary opportunities brought about by hiring restrictions imposed by employment verification mandates. The increased use of E-Verify may lower the demand for Mexican immigrant labor as firms engage in statistical discrimination to avoid the hiring costs involved in failed searches (Amuedo-Dorantes and Pozo, 2019). As a result, Mexican immigrants may turn to self-employment as an alternative labor market option.

In sum, a priori, both sets of policies could be responsible for the increase in self-employment among Mexican immigrants. For policy implications, however, it is important to understand how immigrants respond to different types of policies. Thus, we re-estimate the model using two separate immigration enforcement indices –one for employment-based enforcement, and the other one for police-based enforcement. As can be seen in Panel A of Table 4, employment-based enforcement does not appear to have significantly altered Mexican immigrants' self-employment at conventional levels. Rather, our findings appear to be driven by police-based enforcement policies, supporting the notion that deportation fear and the desire to

avoid contact with law enforcement might have played a key role in the recent growth in Mexican self-employment.[13]

We further explore the possibility that, in light of intensified immigration enforcement, Mexican immigrants either move away from jobs in the formal wage-sector (perhaps suggesting precautionary actions) or, if unemployed, transition from unemployment (suggesting being pushed into self-employment involuntarily) into self-employment. As can be seen in Panel B of Table 4, immigration enforcement (in particular, police-based enforcement) reduces the propensity to have a job in the wage and salary sector among Mexican immigrants, but has no significant impact on their unemployment propensity. As such, the results are suggestive of Mexican immigrants switching from the wage and salary sector to the self-employment sector in response to tougher enforcement.

6.   Identification Checks

In this section, we conduct further identification checks to ensure the correct interpretation of our results. Specifically, we conduct an event-study analysis, a triple differences estimation, and address any concerns stemming from the non-random location and composition of the Mexican migrant pool. These checks consistently arrive at the same conclusion, providing strong support for our main findings.

6.1   Identification Check #1: Event-Study Estimates

The validity of our difference-in-differences estimation relies on the assumption that the increasing trend does not predate the implementation of enforcement policies. To test whether there exist differential pre-trends in the self-employment rate across MSAs before the adoption of

---

[13] We also conduct all the robustness checks in Table 3 using the separate immigration enforcement indices. All the results consistently point to police-based policies being responsible for the increase (see Table A2 in Appendix).

enforcement initiatives, we complement the main DD estimations with an event study. This also allows us to examine the dynamics of these effects over time.

Since our treatment is a continuous variable measuring the intensity of enforcement, we estimate an event-study model following the recent literature that similarly exploits a continuous treatment (*e.g.* Clemens et al, 2018 and Goodman-Bacon, 2018). Specifically, we define the leads as the periods before the index first turned positive and interact the lags with the index to capture the intensity effect. The event-study model takes the following form:

$$(4) \quad SE_{i,m,t} = \beta_0 + \sum_{x=-4}^{-1} \delta_x I_{m,t}^x + \sum_{x=1}^{9} \gamma_x \cdot [I_{m,t}^x \cdot EI_{m,t}] + D'_{i,m,t} \beta_2 + G'_{m,t} \beta_3 +$$

$$\beta_4 B_{m,t} + M_m + T_t + \varepsilon_{i,m,t}$$

where $SE_{i,m,t}$ is a dummy variable indicating whether individual i in MSA *m* and year *t* is self-employed. The indicator function $I_{m,t}^x = 1$ in the *x*th year before or after the immigration enforcement index first turned positive in the MSA. Periods five years prior to the enforcement index turning positive are used as reference. The coefficients in the vector δ_x capture pre-trends, whereas those in γ_x reflect the dynamics of immigration enforcement impacts. We drop the year when the enforcement index first turned positive as it is unclear if self-employment during that year started before or after the adoption of tougher immigration enforcement.

Table 5 shows the event-study estimates using the overall immigration enforcement index (column 1), as well as by type of immigration enforcement policy (columns 2 and 3). Figure 4 depicts the coefficients in column 1, along with 95 percent confidence intervals. There is no pre-existing upward trend in Mexican self-employment in the four years prior to the immigration enforcement index first turning positive, providing strong support for the DD estimation. In fact, self-employment does not seemingly rise until 7 years after the adoption of tougher immigration enforcement.

A potential explanation might reside in the differing impacts of police-based vs. employment-based immigration enforcement.[14] Therefore, in columns 2 and 3, we distinguish between the two and plot the estimated coefficients in Figures 5 and 6. As shown therein, while the impact of employment-based policies seems to be imprecisely estimated, only altering the self-employment rate of Mexican immigrants in a statistically significant manner by the seventh year after it is set in place, police-based policies have an almost immediate impact on Mexican immigrants' self-employment rate. At two years after its adoption, we observe a clear break that only seems to magnify over time. Hence, not only there is no evidence of a differential pre-trend in Mexican self-employment but, in addition, the impact of intensified immigration enforcement, driven by police-based enforcement, only strengthens over time.

6.2   Identification Check #2: Triple Differences Estimates

An additional concern with the difference-in-differences estimates is the possibility for our estimates to be driven by unobserved MSA-specific time trends correlated with increased immigration enforcement, such as business startup policies or changes in demand for goods and services. To address this concern, we use a triple differences (DDD) framework that compares the self-employment propensity exhibited by Mexican immigrants (our *treatment* group) to the self-employment proclivity of other individuals in a control group, in MSAs that have implemented tougher immigration enforcement policies versus MSAs that have not, before and after escalation in enforcement. By choosing our control and treatment groups within the same MSA, we are able to account for unobserved MSA-specific time trends affecting everyone in the MSA, such as

---

[14] Another explanation might be that it takes time for the intensity of enforcement to build up to the point of significantly impacting employment. However, based on Figure A2, immigration enforcement builds up rather quickly once it turns positive.

changes in business startup policies or changes in demand for goods and services within the MSA
over time.

Our main *control* group is composed of less educated (12 or fewer years of education)
native-born whites. This control group satisfies two important conditions: 1) they are not targeted
by immigration enforcement; and 2) they exhibit a self-employment pre-trend similar to the one
displayed by Mexican immigrants, possibly due to their comparable educational attainment and
labor market opportunities –as we shall discuss, identification checks confirm the parallel trends
assumption. We also experiment with using native-born blacks, who display similar human capital
and wealth constraints to that of Mexican immigrants on average, as an alternative control group.

The triple-differences model takes the following form:

(5) $\qquad SE_{i,m,t} = \beta_0 + \beta_1\,EI_{m,t} * MexImm_i + \beta_2\,EI_{m,t} + \beta_3\,MexImm_i + X\varDelta + \varepsilon_{i,m,t}$

where $MexImm_i$ is equal to one if individual i is in the treatment group, *i.e.*, a Mexican
immigrant, and zero if in the control group. The coefficient of interest is β_1. The vector X includes
the same control variables as in equation (3), the interactions of our remaining regressors
($i.e.\ D_{imt}, G_{mt}, B_{mt}$) with a Mexican immigrant dummy to allow for differential effects on
Mexican immigrants' self-employment, and heterogeneous MSA and year fixed effects by
treatment and control groups.

Panel A of Table 6 shows our triple differences estimates using the above-mentioned
control groups: low-skilled whites and blacks. The coefficient of interest is the one on the
interaction term. We look at the overall impact of intensified immigration enforcement (columns
1 and 2), as well as by the impact of the various types of enforcement in the remaining columns.
In line with our prior findings, the estimates in Panel A uncover a significant impact of intensified
immigration enforcement on the self-employment propensity of Mexican immigrants. A one

standard deviation increase in the immigration enforcement index raises the self-employment rate among Mexican immigrants by 5.3 percent more than for less-educated whites, and by 4.7 percent more than for blacks. As shown in columns 3 to 6, these effects are driven by police-based enforcement.

The validity of the triple differences estimates discussed above relies on the assumption that our treatment and control groups exhibit similar self-employment trends prior to the implementation of tougher enforcement measures. We check this assumption by comparing such trends. First, we identify the year when the immigration enforcement index first turns positive in the MSA to, subsequently, define dummies indicative of one, two, three, and four years prior to the implementation date. We, then, include those dummies, which are also interacted with the Mexican immigrant dummy in the model, to assess if the self-employment of Mexican immigrants differed from that of their control counterparts one to four years prior to the implementation of tougher immigration enforcement measures by the MSA.[15] Panel B of Table 6 displays the results from this empirical exercise. As can be seen therein, we are unable to find any evidence of differential self-employment trends between our treatment and controls groups prior to the adoption of stricter enforcement measures by the MSAs, supporting the use of less-educated whites and blacks as control groups.

Yet, one remaining concern is that immigration policies might have spillover effects on these two groups who appear to serve as close substitutes of Mexican immigrants in terms of skill. Immigration enforcement may open job opportunities for less-educated whites or blacks, reducing their self-employment propensity. In that case, then the DDD estimates may overstate the effect of enforcement on Mexican immigrants' self-employment rate. To explore the legitimacy of this

---

[15] Observations corresponding to four or more years prior are used as reference.

concern, we experiment with using alternative control groups, including more-educated whites, less-educated natives, more-educated natives, and native-born Hispanics. As shown in Panel A of Table 7, the DDD estimates consistently point to a significant increase in the self-employment propensity among Mexican immigrants, regardless of the lower or higher skill of the control group.[16] Policy heterogeneity analyses in Panel B of Table 7 further confirm that the effects are driven by police-based enforcement.

6.3   Identification Check #3: Non-Random Location and Compositional Changes

Finally, we address the possibility for the non-random location and composition of the Mexican migrant pool to be biasing our estimates. This could occur if Mexican immigrants (especially if undocumented) choose to reside in localities with lesser immigration enforcement, live in areas enduring more deportations, or are more reticent to respond to surveys in localities with stronger enforcement. Note, however, that in all instances, our estimates would be biased downwards, providing a lower bound estimate of the true impact of intensified immigration enforcement. Furthermore, we already account for several individual and MSA level traits likely capturing any changes in the population composition of the MSAs due to selective residential choices made by respondents. Nevertheless, we assess if immigration enforcement has altered MSAs' population composition by examining if the ratio of non-citizens to citizens among Mexican immigrants and their demographic characteristics differ across MSAs based on their immigration enforcement.

As can be seen in Panel A of Table 8, tougher immigration enforcement, whether employment- or police-based, does not seem to be significantly correlated to the ratio of non-

---

[16] Note that the coefficients of MexImm alone cannot be interpreted as how Mexican immigrants compare to the control groups when EI=0 because we include in the model the interaction terms of Mexican immigrant dummy and all control variables.

citizens to citizens Mexican migrants in the MSA. In Panel B of Table 8, we further check whether key average demographic characteristics, including the educational attainment and the duration of the migration spell among Mexican immigrants, have changed alongside immigration enforcement. Once more, we fail to find evidence of such a pattern. Overall, the results seem to suggest that, despite ongoing deportations, the composition of the Mexican migrant population in the MSA remained unaffected by its enforcement.

A related concern refers to a potentially changing selectivity of recently arrived Mexican immigrants. Tightened immigration policy might have altered the composition of new Mexican immigrant cohorts and their self-employment rate. For instance, if newly arrived undocumented Mexican immigrants are relatively risk averse, they may proactively search for labor market options, such as self-employment, to avoid detection. If, instead, they are less risk averse and more entrepreneurial, we might also observe an increase in the self-employment rate. Alternatively, if the new pool of Mexican immigrants is more likely documented, this could also impact their self-employment rate. Note, once more, that the DD identification strategy should address these issues if the selection pattern in question is common across MSAs. Nonetheless, to address any remaining concerns, we conduct the analysis using two different samples of recently arrived immigrants –those arriving after 2001 (Panel C of Table 8), and those arriving within the past 5 years (Panel D of Table 8). Overall, immigration enforcement has no significant impact on the self-employment propensity of recent arrivals but, rather, only affects that of immigrants who arrived more than 5 years ago and those arriving prior to 2001. As such, changes in the composition of recent arrivals are not driving our results. The effects on previous arrivals are again driven by police-based enforcement.

7. Underscoring the Relevance of Legal Immigration Status

Thus far, we have shown that Mexican immigrants are more likely to be self-employed when immigration enforcement, particularly police-based enforcement, tightens. Several robustness and identification checks confirm this finding, pointing at the unique impact of police-based enforcement on Mexican immigrants' self-employment rate. We attribute the effect to the fact that, over the period under consideration, Mexican immigrants displayed a higher propensity of being unauthorized than immigrants from other groups. Therefore, tougher immigration is likely to have pushed them out of the formal wage and salary sector into self-employment to a greater extent than immigrants from groups not directly targeted by enforcement. In this section, we further explore this mechanism by assessing if the presence of undocumented immigrants is contributing to the found impacts.

We start by differentiating between those who are very likely documented or legal immigrants, and the rest. To that end, following Borjas (2017), we first identify Mexican immigrants who are most likely documented, as would be the case with those who are citizens, arrived before 1980, receive public benefits, work in the government sector or in occupations that require licensing, are veterans, or have U.S. citizen spouses. We then conduct our analysis using that sample of Mexican immigrants, as well with the remaining Mexican immigrants in the sample –a group more likely to contain unauthorized Mexican immigrants.

Panel A of Table 9 shows the results from this exercise. Tougher immigration enforcement does not have a significant impact on the sample of most likely documented Mexican immigrants. However, immigration enforcement (specifically police-based enforcement) displays a strong significant impact on the remaining sample of Mexican immigrants –a sample more likely to contain any undocumented Mexican immigrants. These results strongly endorse the notion that

Mexican immigrants' higher self-employment tendency is mainly driven by the response of undocumented immigrants to tightened police-based enforcement.

An alternative way to differentiate between documented and undocumented Mexican immigrants is by their skill level. When we distinguish Mexican immigrants according to whether they have more than high school degree or not (see Panel B of Table 9), we also find that intensified immigration enforcement solely raises the self-employment proclivity of less-educated Mexican immigrants, not that of their more educated counterparts.

If Mexican immigrants' increase in self-employment is partially in response to tightened immigration policies, their business startups might not be necessarily guided by profit opportunities but, rather, by their desire to avoid identification and apprehension. They might be more poorly planned and likely concentrated in industries that do not require large amounts of capital or skills. In Panel C of Table 9, we use two measures of occupational status to gauge the type of work being done by the self-employed Mexican immigrants when enforcement tightens. One measure is the occupational education score –constructed to measure the percentage of people in the respondent's occupational category that has completed one or more years of college (the *edscor90* variable in IPUMS). The other one is the Hauser and Warren Socioeconomic Index (SEI) score, which is a measure of occupational status based upon the earnings and educational attainment associated with each occupational category (the *hwsei* variable in IPUMS). We regress these two outcomes on the intensity of immigration enforcement to which self-employed Mexican immigrants are exposed. The estimates support the notion that, as police-based immigration enforcement tightens, the occupations taken up by self-employed Mexican immigrants require fewer skills and have lower socioeconomic status, even after controlling for their own educational level.

Overall, the findings in Table 9 support the notion that tightened immigration enforcement (in particular, police-based enforcement) pushes undocumented Mexican immigrants into self-employment, raising their ownership of businesses requiring less capital and skills.

8. Summary and Conclusions

In this paper, we rely on a quasi-experimental approach to analyze how state and local level immigration enforcement might have contributed to Mexican immigrants' self-employment over the 2005 through 2017 period. This was a period characterized by a significant increase in Hispanic self-employment rates, as well as intensified interior immigration enforcement. We show that tougher immigration enforcement has been an important contributing factor to the growth in Mexican self-employment during the past one and a half decades. Specifically, the expansion of immigration enforcement over the 2005 through 2017 period might have contributed to raising Mexican immigrants' self-employment between 4 and 11 percent and, in turn, it might have been responsible for about 10 to 20 percent of the increase in Mexican immigrants' self-employment rate during that period. The impact of intensified immigration enforcement on self-employment, which proves unique to Mexican immigrants, concentrates among likely undocumented immigrants, and appears to be mainly driven by police-based initiatives responsible for most deportations. Overall, the results support the notion that apprehension fear and the desire to avoid contact with authorities might have pushed Mexican immigrants into self-employment.

In sum, the analysis identifies state and local immigration enforcement as a significant push factor in Mexican immigrants' self-employment, contributing to its growth in recent years. As immigration enforcement intensifies, further attention to its labor market and entrepreneurial impacts is well warranted, not only because of its implications for immigrants, their families and the communities where they reside, but also because of the possible association of self-

employment with a shift toward an underground economy –a shift with important tax revenue ramifications.

References

Acs, Zoltan.J., David B. Audretsch, and David S. Evans. 1996. Why does the self-employment rate vary across countries and over time? *Frontiers of Entrepreneurship Research*.

Acs, Zoltan.J, Thomas Åstebro, David Audretsch, and David T. Robinson. 2016. "Public policy to promote entrepreneurship: a call to arms." *Small Business Economics*, 47(1), pp.35-51.

Alba-Ramirez, A., 1994. "Self-employment in the midst of unemployment: the case of Spain and the United States." *Applied Economics*, 26(3), pp.189-204.

Amuedo-Dorantes, Catalina, and Cynthia Bansak. 2012. "The Labor Market Iimpact of Mandated Employment Verfication Systems," *American Economic Review Papers and Proceedings* 102(3): 543-548.

———. 2014. "Employment Verification Mandates and the Labor Market of Likely Unauthorized and Native Workers." *Contemporary Economic Policy*, 32 (3): 671–80.

Amuedo-Dorantes, Catalina, and Esther Arenas-Arroyo. 2017. "Immigrant Fertility in the Midst of Intensified Enforcement." GLO Discussion Paper 1.

Amuedo-Dorantes, Catalina, Esther Arenas-Arroyo, and Almudena Sevilla. 2018. "Immigration Enforcement and Economic Resources of Children with Likely Unauthorized Parents." *Journal of Public Economics*, 158: 63–78.

Amuedo-Dorantes, Catalina, Esther Arenas-Arroyo, and Chunbei Wang. 2020. "Is Immigration Enforcement Shaping Immigrant Marriage Patterns?" IZA Discussion Paper No. 12876.

Amuedo-Dorantes, Catalina and Susan Pozo. 2019. "The Aftermath of Tougher Immigration Enforcement: E-Verify and Perceptions of Discrimination among Hispanic Citizens." *American Behavioral Scientist*, 63(63): 1299-1330.

Amuedo-Dorantes, Catalina, Thitima Puttitanun and Ana P. Martinez-Donate. 2013. "How Do Tougher Immigration Measures Affect Unauthorized Immigrants?" *Demography* 50 (3): 1067–91.

Audretsch, David B., A. Roy Thurik, Ingrid Verheul and Sander Wennekers. 2002. "Entrepreneurship: Determinants and Policy in a European-US Comparison," Boston/Dordrecht: Kluwer Academic Publishers.

Bates, Timothy. 1997. *Race, Self-Employment & Upward Mobility: An Elusive American Dream*, Washington, D.C.: Woodrow Wilson Center Press and Baltimore: John Hopkins University Press.

Blanchflower, Danny and Bruce Meyer. 1994. "A Longitudinal Analysis of Young Entrepreneurs in Australia and the United States." *Small Business Economics*, 6(1): 1-20.

Blau, David M., 1987. "A Time Series Analysis of Self Employment in the United States." *Journal of Political Economy*, 95(3): 445-467.

Bohn, Sarah, and Magnus Lofstrom. 2013. "Employment Effects of State Legislation against the Hiring of Unauthorized Immigrant Workers." In *Immigration, Poverty, and Socioeconomic Inequality*, edited by David Card and Steven Raphael. Russell Sage.

Bohn, Sarah, Magnus Lofstrom, and Raphael Steven. 2014. "Did the 2007 Legal Arizona Workers Act Reduce the States Unauthorized Immigrants?" *The Review of Economics and Statistics* 96 (2): 258–69.

Borjas, George J. 2017. "The labor supply of undocumented immigrants." *Labour Economics*, 46, pp.1-13.

Catron, Peter. 2017. "Prosperity-Pull or Recession-Push?: Mexican Immigrant Self-Employment Across the Business Cycle." Available at SSRN: https://ssrn.com/abstract=2894473 . [Accessed on November 21, 2019].

Constant, A.F. and Zimmermann, K.F., 2014. "Self-employment against employment or unemployment: Markov transitions across the business cycle." *Eurasian Business Review*, 4(1), pp.51-87.

Davila, Alberto, Marie T. Mora, and Angela Marek Zeitlin. 2014. "How Hispanic Entrepreneurs Are Beating Expectations and Bolstering the U.S. Economy." Partnership for a New American Economy.

Duflo, E., 2001. Schooling and labor market consequences of school construction in Indonesia: Evidence from an unusual policy experiment. American economic review, 91(4), pp.795-813.

Evans, D.S., and B. Jovanovic. 1989. "An Estimated Model of Entrepreneurial Choice under Liquidity Constraints." *Journal of Political Economy* 97(4), 808–827.

Evans, David S. and Linda Leighton. 1990. "Small Business Formation by Unemployed and Employed Workers." *Small Business Economics*, 2(4): 319-330.

Fairlie, Robert W. 1999. "The Absence of the African-American Owned Business: An Analysis of the Dynamics of Self-Employment." *Journal of Labor Economics*, 17: 80-108.

———. 2004. "Does Business Ownership Provide a Source of Upward Mobility for Blacks and Hispanics" in Douglas Holtz-Eakin (ed.) *Entrepreneurship and Public Policy*, Cambridge, MA, MIT Press, 634-59.

Fairlie, Robert W., and Magnus Lofstrom. 2015. "Immigration and Entrepreneurship." *Handbook on the Economics of International Immigration*, Barry Chiswick and Paul Miller (eds.), Elsevier, pp. 877-911

Fairlie, Robert W., and H.A. Krashinsky. 2012. "Liquidity Constraints, Household Wealth, and Entrepreneurship Revisited." *Review of Income and Wealth* 58(2), 279–306

Fairlie, Robert W. and Woodruff, C.M. 2010. "Mexican-American Entrepreneurship." *The BE Journal of Economic Analysis & Policy*, 10(1).

Fairlie, Robert W. 2018a. "Latino Business Ownership: Contributions and Barriers for U.S.-born and Immigrant Latino Entrepreneurs." *Small Business Administration report*.

———. 2018b. "Racial inequality in business ownership and income." *Oxford Review of Economic Policy*, 34(4), pp.597-614.

Farber, H.S. 1999. "Alternative and Part-time Employment Arrangements as a Response to Job Loss." *Journal of Labor Economics* 17(4), Part 2, S142–S169.

Fölster, S. 2002. "Do lower taxes stimulate self-employment?" *Small Business Economics*, 19(2), 135–145.

Freedman, Matthew, Emily Owens, and Sarah Bohn. 2018. "Immigration, Employment Opportunities, and Criminal Behavior." *American Economic Journal: Economic Policy*, 10(2):117-151.

Fritsch, M., A. Kritikos, and K. Pijnenburg. 2015. "Business Cycles, Unemployment and Entrepreneurial Entry–Evidence from Germany." *International Entrepreneurship and Management Journal* 11, 267-286

Hamilton, Robert T. 1989. "Unemployment and Business Formation Rates: Reconciling Time Series and Cross Section Evidence," *Environment and Planning*, 21: 249-255.

Highfield, R. and Robert Smiley. 1987. "New Business Starts and Economic Activity: An Empirical Investigation," *International Journal of Industrial Organization*, 5: 51-66.

Hoekstra, M. and S. Orozco-Aleman. 2017. "Illegal Immigration, State Law, and Deterrence." *American Economic Journal: Economic Policy*, 9(2): 228-252.

Hoynes, H. W., & Schanzenbach, D. W. 2009. "Consumption responses to in-kind transfers: Evidence from the introduction of the food stamp program." *American Economic Journal: Applied Economics*, 1(4): 109-39.

Koellinger, P.D., and A.R. Thurik. 2012. "Entrepreneurship and the Business Cycle." *Review of Economics and Statistics* 94(4), 1143-1156.

Le, Anh T. 1999. "Empirical Studies of Self-Employment." *Journal of Economic Surveys*, 13(4): 381-416.

Lofstrom, Magnus and Chunbei Wang. 2009. "Mexican-American self-employment: a dynamic analysis of business ownership." In *Ethnicity and Labor Market Outcomes* (pp. 197-227). Emerald Group Publishing Limited.

———. 2019. "Immigrants and Entrepreneurship." *IZA World of Labor*.

Lofstrom, Magnus and Timothy Bates. 2013. "African Americans' pursuit of self-employment." *Small Business Economics*, 40(1), pp.73-86.

Meager, N., 1992. "Does unemployment lead to self-employment?" *Small Business Economics*, 4(2), pp.87-103.

Meer, J. and West, J., 2016. "Effects of the minimum wage on employment dynamics" *Journal of Human Resources*, 51(2): 500-522.

Mills, Claire Kramer, Jessica Battisto, Scott Lieberman, Marlene Orozco, Lliana Perez, and Nancy S. Lee, 2018. "Latino-Owned Businesses Shining a Light on National Trends" Stanford Business School report, https://www.gsb.stanford.edu/sites/gsb/files/publication-pdf/slei-report-2018-latino-owned-businesses-shinging-light-national-trends.pdf.

Neumark, D., Salas, J.I. and Wascher, W., 2014. "Revisiting the Minimum Wage—Employment Debate: Throwing Out the Baby with the Bathwater?" *ILR Review*, 67(3_suppl), pp.608-648.

Orrenius, Pia M. and Madeline Zavodny. 2009. "The Effects of Tougher Enforcement on the Job Prospects of Recent Latin American Immigrants." *Journal of Policy Analysis and Management*, 28(2): 239-257.

Parker, Simon C. 2004. *The Economics of Self-Employment and Entrepreneurship*, Cambridge, UK: Cambridge University Press.

Parker, Simon.C. and Martin T. Robson. 2004. "Explaining international variations in self-employment: evidence from a panel of OECD countries." *Southern Economic Journal*, 71(2), pp.287-301.

Pew Research Center, 2019. "Unauthorized Immigrant Population Trends for States, Birth Countries and Regions." Accessed May 2, 2020. https://www.pewresearch.org/hispanic/interactives/unauthorized-trends/

Radford, J. and Budiman, A., 2019. "Facts on US Immigrants, 2017: Statistical Portrait of the foreign-born population in the United States." Pew Research Center accessed May 2, 2020. https://www.pewresearch.org/hispanic/2019/06/03/facts-on-u-s-immigrants/.

Ruggles, Steven, Sarah Flood, Ronald Goeken, Josiah Grover, Erin Meyer, Jose Pacas, and Matthew Sobek. 2019. "IPUMS USA: Version 9.0 [Dataset]." Minneapolis, MN: IPUMS. 2019. https://doi.org/https://doi.org/10.18128/D010.V9.0.

Simoes, N., Crespo, N. and Moreira, S.B., 2016. "Individual determinants of self-employment entry: What do we really know?" *Journal of Economic Surveys*, 30(4), pp.783-806.

Storey, David J. 1991. "The Birth of New Firms – Does Unemployment Matter? A Review of the Evidence." *Small Business Economics*, 3(3): 167-178.

Thomson, Ginger and Sarah Cohen. 2014. "More Deportations Follow Minor Crimes, Records Show." *The New York Times*, April 6. Available at: https://www.nytimes.com/2014/04/07/us/more-deportations-follow-minor-crimes-data-shows.html [Accessed on November 21, 2019].

Wang, Chunbei. 2019. "Tightened Immigration Policies and the Self-Employment Dynamics of Mexican Immigrants" *Journal of Policy Analysis and Management*.

Wang, Chunbei and Magnus Lofstrom. 2019. "September 11 and the Rise of Necessity Self-Employment Among Mexican Immigrants" *Eastern Economic Journal*, pp.1-29.

Wang, Chunbei, and Le Wang. 2012. "The Effects of 9/11 on Intermarriage between Natives and Immigrants to theh U.S." *Review of Economics of the Household*, 10(2): 171-192.

Table 1: Summary Statistics

Column	(1)	(2)	(3)
Sample	**Mexican Immigrants**	**Less-Educated Native Whites**	**Native Blacks**
Self-Employment Rate	0.0896	0.0918	0.0434
	(0.286)	(0.289)	(0.204)
Enforcement Index (EI)	1.069	0.999	1.101
	(0.951)	(0.988)	(0.932)
Age	38.99	42.18	40.67
	(11.19)	(13.13)	(12.82)
Years of Education	9.442	11.47	12.97
	(4.081)	(1.625)	(2.512)
Years Since Migration	18.69		
	(11.39)		
Married	0.623	0.478	0.365
	(0.485)	(0.500)	(0.481)
Does Not Speak English Well	0.488	0.00115	0.00114
	(0.500)	(0.0339)	(0.0337)
Non-citizen	0.771		
	(0.420)		
Share of Hispanics in MSA	0.343	0.139	0.156
	(0.180)	(0.133)	(0.138)
Share of Immigrants in MSA	0.296	0.148	0.178
	(0.119)	(0.112)	(0.125)
MSA Unemployment Rate	7.150	6.452	6.504
	(3.120)	(2.439)	(2.323)
N	388842	1342189	514570

Table 2
The Impact of Immigration Enforcement on Mexican Immigrants' Self-Employment

Specification	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
EI	0.0106***	0.0083***	0.0093***	0.0107***	0.0081***	0.0035**
	(0.0028)	(0.0024)	(0.0021)	(0.0023)	(0.0011)	(0.0015)
Age		0.0100***	0.0102***	0.0103***	0.0102***	0.0102***
		(0.0006)	(0.0006)	(0.0006)	(0.0006)	(0.0005)
Age Squared		-0.0104***	-0.0109***	-0.0109***	-0.0110***	-0.0109***
		(0.0006)	(0.0006)	(0.0006)	(0.0006)	(0.0006)
Years of Education		0.0006	0.0003	0.0003	0.0001	0.0000
		(0.0004)	(0.0003)	(0.0003)	(0.0002)	(0.0002)
Years Since Migration		0.0001	-0.0002	-0.0002	-0.0001	-0.0001
		(0.0001)	(0.0001)	(0.0001)	(0.0002)	(0.0002)
Married		0.0144***	0.0132***	0.0131***	0.0128***	0.0131***
		(0.0027)	(0.0017)	(0.0017)	(0.0015)	(0.0015)
Does Not Speak English Well		-0.0194***	-0.0227***	-0.0223***	-0.0219***	-0.0216***
		(0.0032)	(0.0024)	(0.0024)	(0.0024)	(0.0024)
Non-citizen		0.0092***	0.0095***	0.0093***	0.0086***	0.0083***
		(0.0027)	(0.0025)	(0.0025)	(0.0024)	(0.0023)
Share of Hispanics in MSA			0.1076***	0.1240***	0.1301**	-0.1516**
			(0.0335)	(0.0320)	(0.0620)	(0.0636)
Share of Immigrants in MSA			-0.0150	-0.0097	-0.1261	-0.0085
			(0.0244)	(0.0219)	(0.0791)	(0.0482)
MSA Unemployment Rate				-0.0036***	-0.0011***	0.0012
				(0.0006)	(0.0003)	(0.0009)
MSA FE	N	N	N	N	Y	Y
Year FE	N	N	N	N	N	Y
DV Mean				0.0896		
N				388842		

Notes: Standard errors are clustered at MSA level. Significance levels: * 0.10, ** 0.05, *** 0.01.

Table 3: Specification Checks

Panel A: Controlling for Differential MSA-Trends

Dependent Variable	Self-Employment
EI	0.0035***
	(0.0015)
Control Variables	All control variables + Interactions between MSA-level pre-treatment characteristics in 2000 (share of non-citizens, share of people voting Republican, and unemployment rate) and time trend
DV Mean	0.1031
N	386,900

Panel B: Alternative Samples and Self-Employment Definitions

Alternative Sample/Self-employment Definition	Self-employed using only those employed	Self-employed for 15+ hrs/wk using only those employed	Self-employed after excluding agriculture production industry
EI	0.0050***	0.0045**	0.0039***
	(0.0019)	(0.0018)	(0.0015)
DV Mean	0.1031	0.1031	0.0940
N	333,566	333,566	363,715

Panel C: Placebo Tests

Sample	European/Can/AU/NZ Immigrants	Non-Hispanic Immigrants	Native-born Hispanics
EI	-0.0032	-0.0009	-0.0015
	(0.0033)	(0.0011)	(0.0010)
DV Mean	0.1486	0.1279	0.0580
N	98,857	539,105	494,783

Panel D: Confounding Factors

Specification	Exclude Period of Rising Sharing Economy	Exclude Great Recession & Construction Sector from 2010-	Exclude Periods of Rising Sharing Economy & Great Recession
EI	0.0038**	0.0058***	0.0037*
	(0.0017)	(0.0020)	(0.0020)
DV Mean	0.0790	0.0771	0.0764
N	181,771	271,904	121,853

Notes: The full set of control variables includes: MSA and year fixed effects, demographic characteristics (age, age squared, years of education, years in the U.S., marital status, English speaking ability, and citizenship status), MSA control variables (MSA-year level share of Hispanics and share of immigrants), business cycle control (MSA-year level unemployment rate), and country of origin fixed effect for samples involving multiple countries of origin. Standard errors are clustered at the MSA level. Significance levels: * 0.10, ** 0.05, *** 0.01.

Table 4: Heterogeneous Effects by Type of Enforcement

Panel A: Heterogeneous Effects by Type of Immigration Enforcement			
Specification	Model 1	Model 2	Model 3
Employment-Based EI	0.0048		0.0020
	(0.0045)		(0.0045)
Police-Based EI		0.0045**	0.0041*
		(0.0020)	(0.0022)
DV Mean		0.0896	
N		388,842	

Panel B: Type of Enforcement Measures and its Impact on Employment			
Dependent Variable	Wage-Employed	Unemployed	
Employment-based EI	-0.0114	0.0026	
	(0.0081)	(0.0037)	
Police-based EI	-0.0083*	-0.0019	
	(0.0044)	(0.0019)	
Control Variables	All	All	
DV Mean	0.7793	0.0525	
N		388,842	

Notes: The full set of control variables includes: MSA and year fixed effects, demographic characteristics (age, age squared, years of education, years in the U.S., marital status, English speaking ability, and citizenship status), MSA control variables (MSA-year level share of Hispanics and share of immigrants), business cycle control (MSA-year level unemployment rate), and country of origin fixed effect for samples involving multiple countries of origin. Standard errors are clustered at the MSA level. Significance levels: * 0.10, ** 0.05, *** 0.01.

Table 5: Event Study Estimates

Specification	Model 1	Model 2	Model 3
EI Measure	Enforcement Index	Employment-Based Enforcement Index	Police-Based Enforcement Index
Four Years Prior to EI>0	-0.0035	-0.0022	-0.0033
	(0.0056)	(0.0056)	(0.0062)
Three Years Prior to EI>0	-0.0006	-0.0022	0.0017
	(0.0035)	(0.0063)	(0.0037)
Two Years Prior to EI>0	0.0011	-0.0065	0.0053
	(0.0038)	(0.0070)	(0.0048)
One Year Prior to EI>0	-0.0044	-0.0071	0.0015
	(0.0039)	(0.0046)	(0.0050)
One Year After EI>0*EI	-0.0063	-0.0052	0.0014
	(0.0040)	(0.0069)	(0.0032)
Two Years After EI>0*EI	0.0029	-0.0007	0.0080***
	(0.0024)	(0.0084)	(0.0029)
Three Years After EI>0*EI	-0.0018	-0.0053	0.0060
	(0.0025)	(0.0072)	(0.0037)
Four Years After EI>0*EI	-0.0012	0.0055	0.0077**
	(0.0018)	(0.0087)	(0.0037)
Five Years After EI>0*EI	-0.0009	0.0061	0.0062*
	(0.0019)	(0.0097)	(0.0032)
Six Years After EI>0*EI	0.0006	0.0144	0.0089**
	(0.0019)	(0.0091)	(0.0038)
Seven Years After EI>0*EI	0.0026*	0.0205**	0.0113***
	(0.0016)	(0.0100)	(0.0033)
Eight Years After EI>0*EI	0.0023	0.0234	0.0123***
	(0.0026)	(0.0153)	(0.0044)
Nine Years After EI>0*EI	0.0069***	0.0132	0.0187***
	(0.0017)	(0.0115)	(0.0039)
N	359,277	383,134	359,326

Notes: The full set of control variables includes: MSA and year fixed effects, demographic characteristics (age, age squared, years of education, years in the U.S., marital status, English speaking ability, and citizenship status), MSA control variables (MSA-year level share of Hispanics and share of immigrants), and business cycle control (MSA-year level unemployment rate). Observations at least five years prior to EI first turned positive are used as reference. The year when EI first turns positive is dropped. Standard errors are clustered at the MSA level. Significance levels: * 0.10, ** 0.05, *** 0.01.

Table 6: Triple Differences Estimates

Specification	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
EI Measure	Enforcement Index		Employment-Based Enforcement Index		Police-Based Enforcement Index	
Control Group	Less-Educated Whites	Blacks	Less-Educated Whites	Blacks	Less-Educated Whites	Blacks
Panel A: DDD Estimates						
MexImm	-0.0214	-0.0175	-0.0877	-0.0128	-0.0852	-0.0100
	(0.0496)	(0.0162)	(0.0619)	(0.0193)	(0.0620)	(0.0192)
EI	-0.0015*	-0.0009	-0.0000	-0.0001	-0.0036**	-0.0027*
	(0.0008)	(0.0007)	(0.0017)	(0.0018)	(0.0017)	(0.0015)
MexImm*EI	0.0050***	0.0044***	0.0071	0.0071	0.0100***	0.0090***
	(0.0017)	(0.0015)	(0.0059)	(0.0060)	(0.0029)	(0.0025)
Panel B: DDD-Parallel Trends						
Four Years Prior*MexImm	0.0031	0.0010	0.0019	-0.0052	0.0015	0.0001
	(0.0057)	(0.0059)	(0.0076)	(0.0061)	(0.0056)	(0.0058)
Three Years Prior *MexImm	0.0025	0.0015	-0.0054	-0.0038	0.0023	0.0024
	(0.0039)	(0.0042)	(0.0064)	(0.0074)	(0.0038)	(0.0041)
Two Years Prior*MexImm	0.0032	0.0030	-0.0069	-0.0098	0.0033	0.0031
	(0.0036)	(0.0038)	(0.0073)	(0.0068)	(0.0036)	(0.0039)
One Year Prior*MexImm	0.0014	-0.0018	-0.0066	-0.0057	0.0024	-0.0008
	(0.0041)	(0.0045)	(0.0056)	(0.0051)	(0.0041)	(0.0045)
MexImm*EI	0.0052***	0.0042***	0.0034	0.0024	0.0053***	0.0044***
	(0.0015)	(0.0014)	(0.0022)	(0.0019)	(0.0015)	(0.0014)
Treatment Group DV Mean	0.0896	0.0896	0.0896	0.0896	0.0896	0.0896
Control Group DV Mean	0.0918	0.0434	0.0918	0.0434	0.0918	0.0434
N	1,731,031	903,412	1,731,031	903,412	1,731,031	671,395

Notes: The full set of control variables includes: MSA and year fixed effects, demographic characteristics (age, age squared, years of education, years in the U.S., marital status, English speaking ability, and citizenship status), MSA control variables (MSA-year level share of Hispanics and share of immigrants), business cycle control (MSA-year level unemployment rate), and interactions of all control variables with Mexican immigrant dummy. Standard errors are clustered at the MSA level. Significance levels: * 0.10, ** 0.05, *** 0.01.

Table 7: Triple Differences Estimates Using Alternative Control Groups

Specifications	Model 1	Model 2	Model 3	Model 4
Control Group	More-Educated Native Whites	Less-Educated Natives	More-Educated Natives	Hispanic Natives
Panel A: Enforcement Index				
MexImm	0.0770***	-0.0474***	0.0661***	-0.1164***
	(0.0244)	(0.0161)	(0.0181)	(0.0170)
EI	-0.0010	-0.0015**	-0.0011*	-0.0015
	(0.0006)	(0.0006)	(0.0006)	(0.0010)
MexImm*EI	0.0045***	0.0050***	0.0046***	0.0049***
	(0.0015)	(0.0016)	(0.0015)	(0.0018)
Panel B: Heterogeneous Enforcement Effects				
MexImm	0.0770***	-0.0474***	0.0662***	-0.1163***
	(0.0244)	(0.0161)	(0.0181)	(0.0170)
Employment-Based EI	-0.0006	-0.0007	-0.0008	-0.0027
	(0.0011)	(0.0011)	(0.0010)	(0.0023)
Police-Based EI	-0.0013	-0.0021**	-0.0013	-0.0008
	(0.0010)	(0.0010)	(0.0009)	(0.0013)
MexImm*Employment-Based EI	0.0026	0.0028	0.0029	0.0047
	(0.0048)	(0.0044)	(0.0047)	(0.0046)
MexImm*Police-Based EI	0.0053**	0.0062**	0.0053**	0.0049*
	(0.0023)	(0.0025)	(0.0023)	(0.0026)
Control Variables	All + All*MexImm			
Treatment Group DV Mean	0.0896			
Control Group DV Mean	0.1124	0.0742	0.1017	0.058
N	3,073,822	2,331,086	3,681,313	883,625

Notes: The full set of control variables includes: MSA and year fixed effects, demographic characteristics (age, age squared, years of education, years in the U.S., marital status, English speaking ability, and citizenship status), MSA control variables (MSA-year level share of Hispanics and share of immigrants), business cycle control (MSA-year level unemployment rate), and interactions of all control variables with Mexican immigrant dummy. Standard errors are clustered at the MSA level. Significance levels: * 0.10, ** 0.05, *** 0.01.

Table 8: Assessing Selection Biases in Population Composition

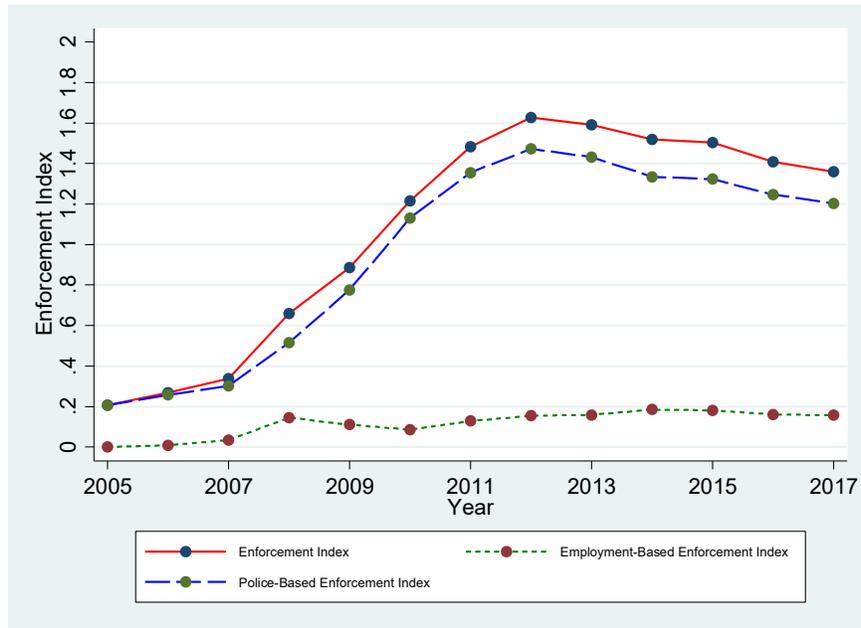| Specification	Model 1	Model 2
Panel A: Selection in MSA Migration Pattern - Noncitizen/Citizen Ratio Among Mexican Immigrants		
Dependent Variable	Number of noncitizens/Number of citizens among Mexican Immigrants	
Employment-Based EI	1.0381	
	(0.9333)	
Police-Based EI	-1.2679	
	(0.8560)	
Control Variables:	MSA and year fixed effects	
N	2,422	
Panel B: Selection in MSA Migration Pattern - Demographic Characteristics of Mexican Immigrants		
Dependent Variable	**Education**	**Years in the U.S.**
Employment-Based EI	-0.1768	0.5659
	(0.1486)	(0.4138)
Police-Based EI	0.0878	-0.3374
	(0.1161)	(0.3382)
Control Variables:	MSA and year fixed effects	
N	3,061	
Panel C: Selection in Recent Arrivals (Arrived after 2001)		
Sample	**Arrived before 2001**	**Arrived after 2001**
Employment-Based EI	0.0010	0.0081
	(0.0047)	(0.0061)
Police-Based EI	0.0049**	0.0016
	(0.0024)	(0.0028)
Control Variables:	All	All
N	316,891	71,951
Panel D: Selection in Recent Arrivals (Arrived within past 5 years)		
	Arrived more than 5 years ago	**Arrived within the past 5 years**
Employment-Based EI	-0.0012	0.0107
	(0.0046)	(0.0082)
Police-Based EI	0.0061**	-0.0038
	(0.0024)	(0.0043)
Control Variables:	All	All
N	349,522	39,320

Notes: In Panels C and D, the full sets of control variables include: MSA and year fixed effects, demographic characteristics (age, age squared, years of education, years in the U.S., marital status, English speaking ability, and citizenship status), MSA control variables (MSA-year level share of Hispanics and share of immigrants), and business cycle control (MSA-year level unemployment rate). Standard errors are clustered at MSA level. Significance levels: * 0.10, ** 0.05, *** 0.01.

Table 9: Presence of Undocumented Immigrants

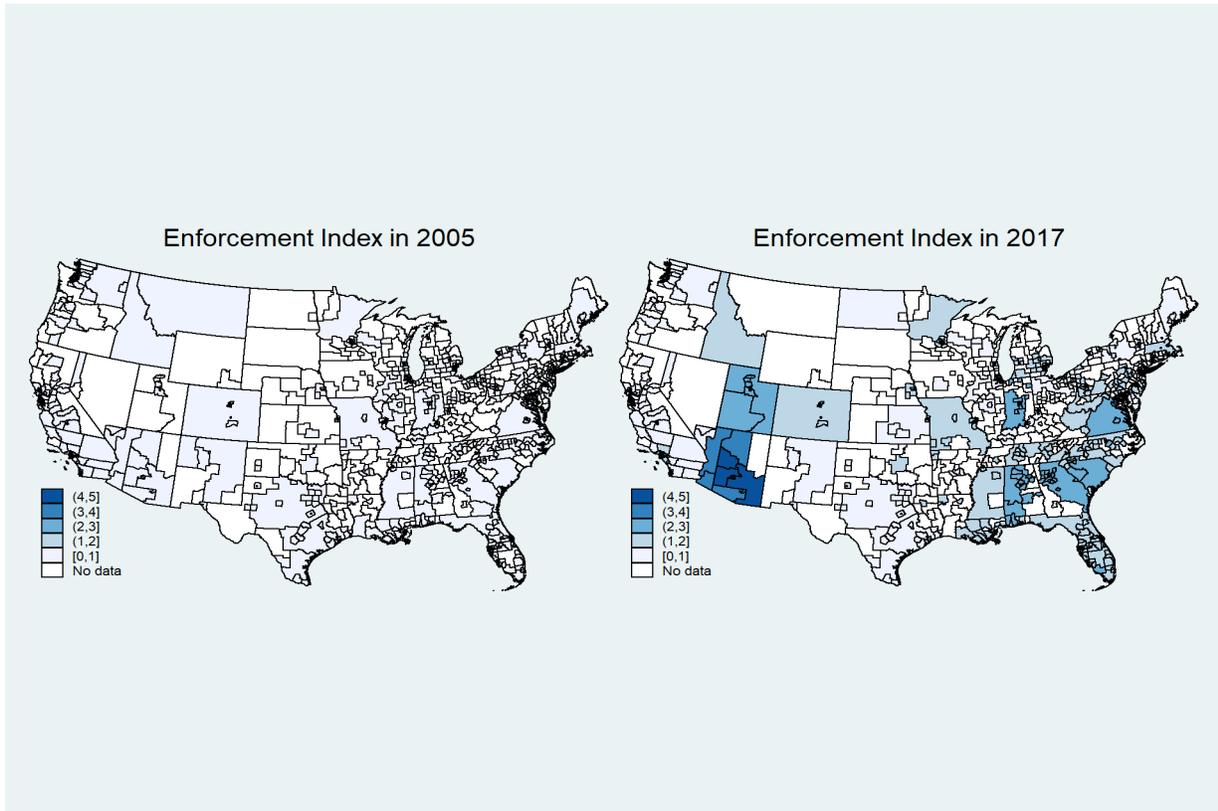| Specification	Model 1	Model 2
Panel A: By Undocumented Status		
Sample	**Documented Mexican Immigrants**	**Likely Undocumented Mexican Immigrants**
Employment-Based EI	-0.0000	0.0018
	(0.0062)	(0.0051)
Police-Based EI	0.0041	0.0049**
	(0.0037)	(0.0020)
DV Mean	0.1014	0.0801
N	195,534	193,308
Panel B: By Education		
Sample	**Low-Skill Mexican Immigrants**	**High-Skill Mexican Immigrants**
Employment-Based EI	0.0016	0.0045
	(0.0047)	(0.0079)
Police-Based EI	0.0041*	0.0036
	(0.0022)	(0.0051)
DV Mean	0.0873	0.1021
N	324,502	64,340
Panel C: Type of Self-Employment		
Dependent Variable	**Occupational Education Score (edscor90)**	**Occupational Socioeconomic Status (hwsei)**
Employment-Based EI	0.2674	0.5751
	(0.8878)	(0.3626)
Police-Based EI	-0.7243**	-0.4127***
	(0.3488)	(0.1286)
DV Mean	77.58	24.59
N	36,439	36,439

Notes: The full set of control variables includes: MSA and year fixed effects, demographic characteristics (age, age squared, years of education, years in the U.S., marital status, English speaking ability, and citizenship status), MSA control variables (MSA-year level share of Hispanics and share of immigrants), and business cycle control (MSA-year level unemployment rate). Standard errors are clustered at the MSA level. Significance levels: * 0.10, ** 0.05, *** 0.01.
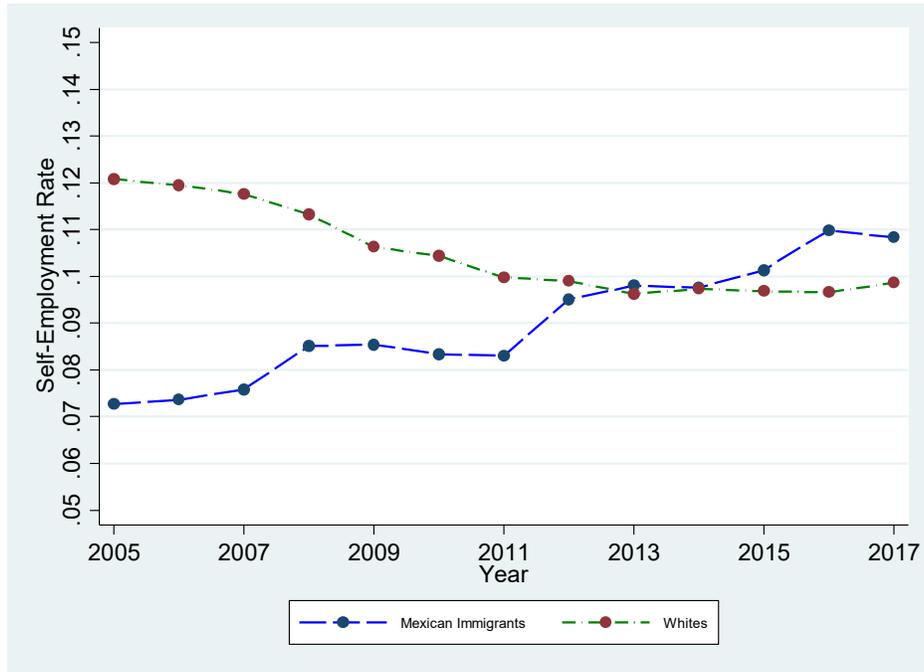
Figure 1: Enforcement Index Change Over Time

Note: Generated using average enforcement index from 2005 to 2017.

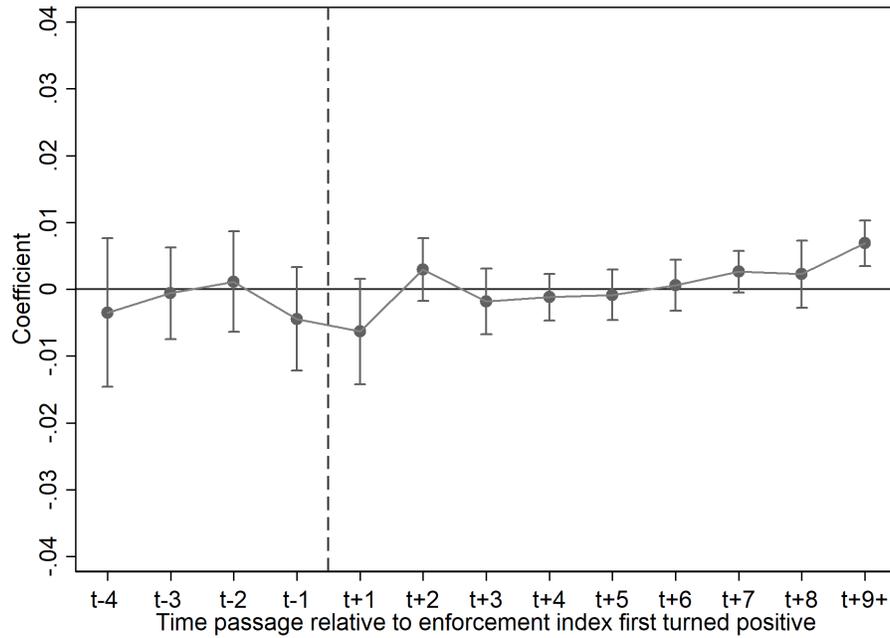**Figure 2: Enforcement Index Map 2005 vs. 2017**

Note: Generated using the shapefile at the Public Use Microdata Areas (PUMA) level using the CPUMA0010 variable from IPUMS-ACS that consistently identifies PUMAs from 2000 onward.

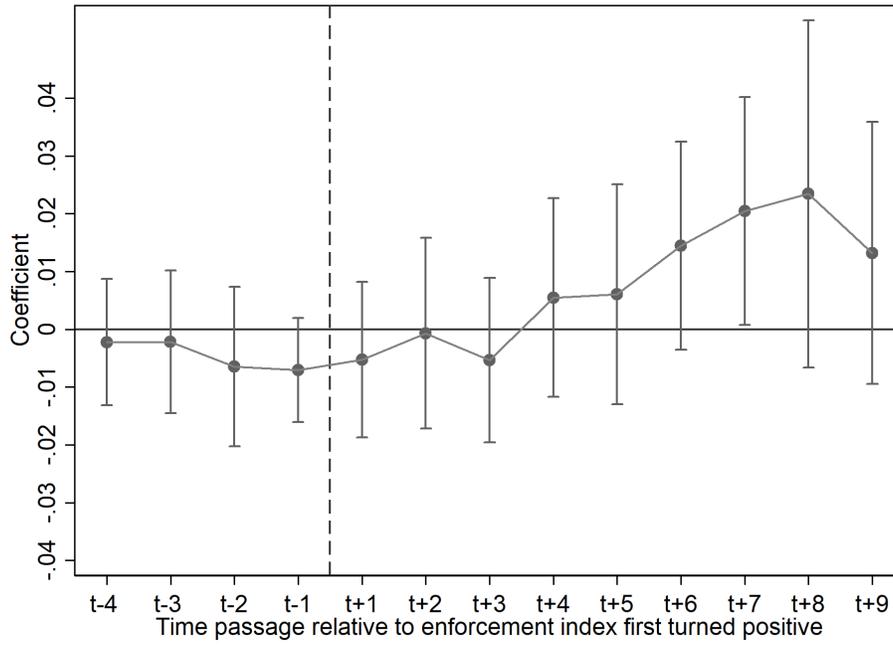**Figure 3: Self-Employment Rates Over Time by Groups**

Note: Generated using ACS samples from 2005 to 2017.

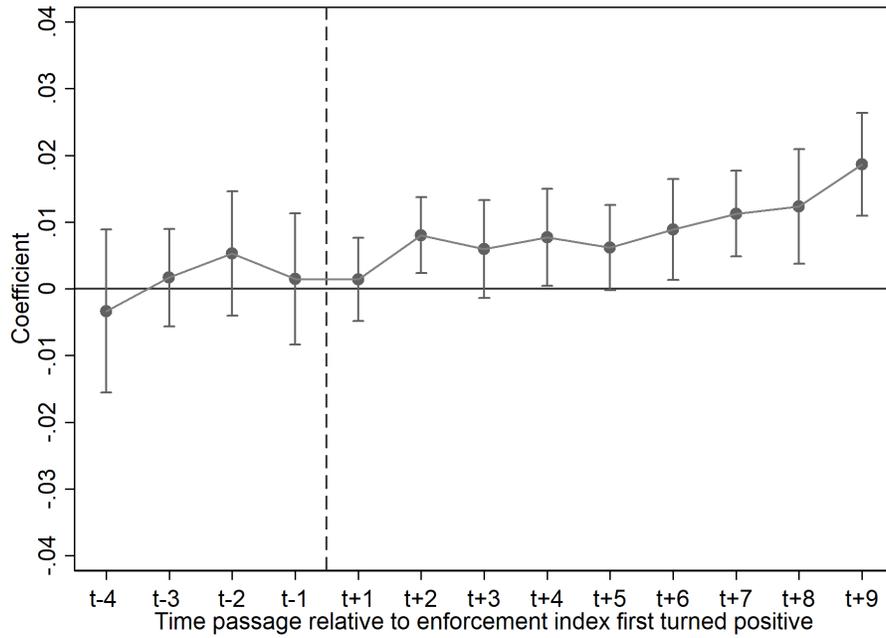**Figure 4: Event Study Coefficient Plot – Enforcement Index**

Note: Period *t* represents the year EI first turned positive in an MSA. It is dropped from the sample because it is not clear whether an observed self-employment in that year occurs before or after a policy was implemented. Periods prior to *t*-4 are used as reference, and periods beyond *t*+9 are binned into that category since the sample size becomes smaller beyond that point.

Figure 5: Event Study Coefficient Plot – Employment-Based Enforcement Index

Note: Period *t* represents the year Employment-Based EI first turned positive in an MSA. It is dropped from the sample because it is not clear whether an observed self-employment in that year occurs before or after a policy was implemented. Periods prior to *t*-4 are used as reference, and periods beyond *t*+9 are binned into that category since the sample size becomes smaller beyond that point.

Figure 6: Event Study Coefficient Plot – Police-Based Enforcement Index

Note: Period *t* represents the year Police-Based EI first turned positive in an MSA. It is dropped from the sample because it is not clear whether an observed self-employment in that year occurs before or after a policy was implemented. Periods prior to *t*-4 are used as reference, and periods beyond *t*+9 are binned into that category since the sample size becomes smaller beyond that point.

Table A1: Immigration Enforcement Programs

Nature of the Law	Law	Years	Where?	Objective	Who implements it?	Scope	Signed by	What it Consists of:
Police-Based Measures	**287(g)**	2002-2012	Street/Jail	Make communities safer by the identification and removal of serious criminals	State and local law enforcement entities	State and Local (County, City or Town)	State and local enforcement entities signed a contract (Memorandum of Agreement - MOA) with the U.S. Immigration and Customs Enforcement (ICE)	There are various functions: **Task Force**: allows local and state officers interrogate and arrest noncitizens during their regular duties on law enforcement operations. **Jail enforcement** permits local officers to question immigrants arrested on state and local charges about their immigration status. **Hybrid model:** which allow participate in both types of programs.
	Secure Communities	2009-2014 2017-	Nation's jail and prisons	Identify noncitizens who have committed serious crime using biometric information	Police	Local (County)	Jurisdictions	The program allows for the submission of biometric information on detainees checked against records in FBI and DHS databases.
	Omnibus Immigration Laws	2010-	Street/Jail	Identification noncitizen	State and local law enforcement entities	State	State governor	Comprehensive laws that may include: • A "show me your papers" clause, enabling the police to request proper identification documentation during a lawful stop. • Require that schools report students' legal status.
Employment Based Measures	**E-Verify**	2001-	Firms	Screen newly hired workers	Firms	State	State governor	Electronic program that allows employers to screen newly hired workers for work eligibility.

Table A2: Specification Checks by Enforcement Type

Panel A: Controlling for Differential MSA-Trends	
Dependent Variable	**Self-Employment**
Employment-Based EI	0.0022
	(0.0045)
Police-Based EI	0.0041*
	(0.0022)
Control Variables	All control variables + Interactions between MSA-level pre-treatment characteristics in 2000 (share of non-citizens, share of people voting Republican, and unemployment rate) and time trend
DV Mean	0.1031
N	386,900

Panel B: Alternative Samples and Self-Employment Definitions			
Alternative Sample/Self-employment Definition	**Self-employed using only those employed**	**Alternative Sample/Self-employment Definition**	**Self-employed using only those employed**
Employment-Based EI	0.0033	0.0034	0.0022
	(0.0052)	(0.0050)	(0.0045)
Police-Based EI	0.0057**	0.0050**	0.0046**
	(0.0026)	(0.0025)	(0.0022)
DV Mean	0.1031	0.1002	0.0940
N	333,566	333,566	363,715

Panel C: Placebo Tests			
Sample	**European/Can/AU/NZ Immigrants**	**Non-Hispanic Immigrants**	**Native-born Hispanics**
Employment-Based EI	-0.0068	-0.0020	-0.0027
	(0.0071)	(0.0029)	(0.0023)
Police-Based EI	-0.0011	-0.0003	-0.0008
	(0.0046)	(0.0016)	(0.0013)
DV Mean	0.1486	0.1279	0.0580
N	98,857	539,105	494,783

Panel D: Confounding Factors			
Specification	**Exclude Period of Rising Sharing Economy**	**Exclude Great Recession & Construction Sector from 2010 Onward**	**Exclude Periods of Rising Sharing Economy & Great Recession**
Employment-Based EI	-0.0041	0.0065	-0.0080
	(0.0069)	(0.0058)	(0.0095)
Police-Based EI	0.0070**	0.0055**	0.0074**
	(0.0030)	(0.0025)	(0.0031)
DV Mean	0.0790	0.0771	0.0764
N	181,771	271,904	121,853

Notes: All models include the full set of control variables: MSA and year fixed effects, demographic characteristics (age, age squared, years of education, years in the U.S., marital status, English speaking ability, and citizenship status), MSA control variables (MSA-year level share of Hispanics and share of immigrants), business cycle control (MSA-year level unemployment rate), and country of origin fixed effect for samples involving multiple countries of origin. Standard errors are clustered at the MSA level. Significance levels: * 0.10, ** 0.05, *** 0.01.

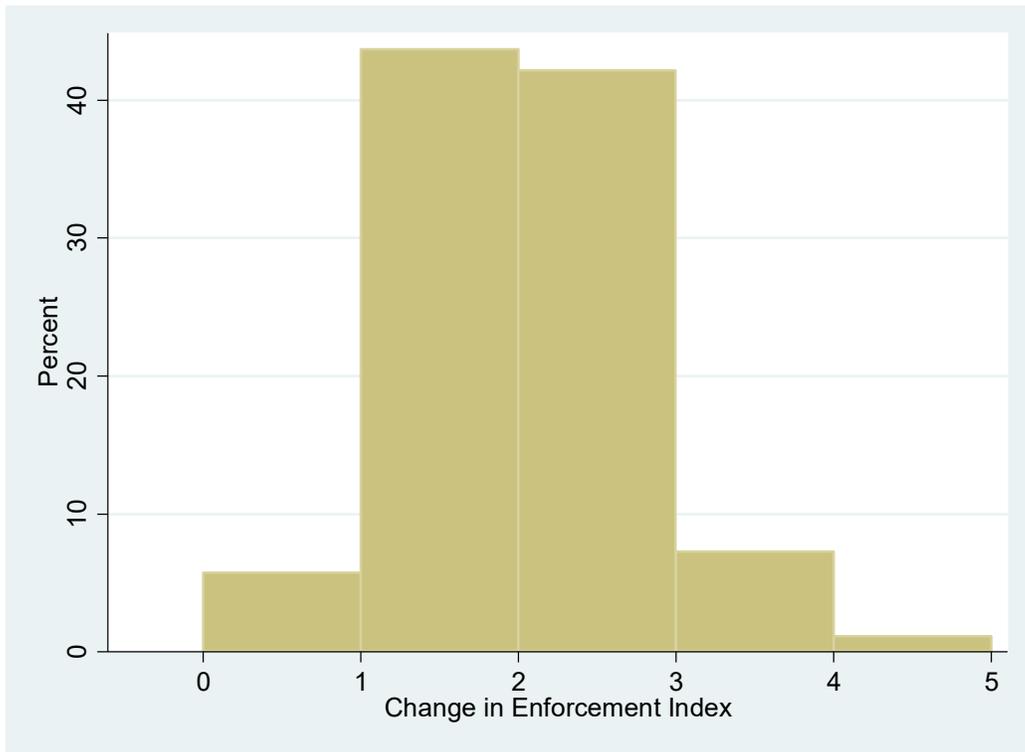**Figure A1: Distribution of Changes in Enforcement Index Across MSA from 2005 to 2017**

Figure A2: Immigration Enforcement Index Trend after Turning Positive