FOLLOWING THE POPPY TRAIL
ORIGINS AND CONSEQUENCES OF MEXICAN DRUG CARTELS*

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Abstract

Drug cartels are one of the most conspicuous forms of criminal organizations, yet the large and growing literature on organized crime has almost exclusively focused on mafia-type organizations. Although undoubtedly sharing many characteristics with mafias, groups engaged in the production and distribution of illicit drugs are likely to have different nature, functioning, and effect on society. This paper contributes to this debate by studying the origins, and economic and social consequences of some of the most prominent drug trafficking organizations in the world: the Mexican cartels. It first traces the current location of cartels to the places where Chinese migrated at the beginning of the 20th century, discussing and documenting how both events are strongly connected. Information on Chinese presence at the beginning of the 20th century is then used to instrument for cartel presence today, to identify the effect of cartels on society. Contrary to what seems to happen with other forms of organized crime, the IV estimates in this study indicate that at the local level there is a positive link between cartel presence and better socioeconomic outcomes (e.g. lower marginalization rates, lower illiteracy rates, higher salaries), better public services, and higher tax revenues, evidence that is consistent with the known stylized fact that drug lords tend have great support in the local communities in which they operate.

Keywords: Drug trade; Chinese migration; Mexico; Illegal markets; Organized crime.

JEL classification: N36; O15.

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1. Introduction

Illicit drug trade organizations, colloquially known as 'drug cartels',[1] have become one of the most pervasive and successful forms of organized crime in the world. They are at the center of public policy debate both in the developed and developing world, feature prominently in the press, and contribute to a substantial part of the economic activity of many countries. Yet, save for some recent exhaustive historical accounts (e.g., Astorga, 2015, 2016; Valdés Castellanos, 2013) and solid journalistic pieces (e.g., Chabat, 2005; Grillo, 2011; Wainwright, 2017), the academic literature on drug cartels is in good proportion new and limited (see e.g., Dell, 2015; Dube *et al*., 2016; Holland and Rios, 2017; Sviatschi, 2017a; Robles *et al*., 2018). We are only beginning to understand the factors fostering the creation, persistence, and consequences of illicit drug trade organization. Our paper contributes to this debate, discussing the causes and consequences of drug cartels in Mexico that, because they supply the largest single market in the world (the U.S.), are among the most notorious of this type of organizations.

We begin by studying the historical origins of the emergence drug cartels in Mexico. The distribution of cartel activities in Mexico is, of course, the result of many different factors, some which are better understood than others. Here we document the particular claim made by some authors (e.g., Astorga, 2015; Grillo, 2011; Valdés Castellanos, 2013) that one of these factors is the Chinese immigration to Mexico at the turn of the 19th century, and provide evidence that its influence persists until today. A series of events justify this connection. Drug prohibition (mainly in the U.S.) created the market that illicit organizations eventually filled. Yet the time in which this took place (the 1910s) made Chinese migration relevant, particularly the one that settled in Mexico around the turn of the 20th century. During

[1] As pointed out by some authors (e.g., Dell, 2015: 1745), using the term 'cartel' to refer to drug trafficking organizations is technically not accurate, as these firms rarely form stable coalitions that allow them to behave as such. The terminology 'drug cartel' is, however, so widespread to describe those organizations in common usage, that makes little sense to evade it, so we are using the two terms indistinctively.

the 19th century many Chinese emigrated and sought refuge in the Americas. For the most part, this flow directed towards the U.S., but in the early 1880s the U.S. introduced restrictions on immigration aimed at Chinese people, many of which end up settling in Mexico. This event is important to understand the onset of drug trade in the region, as there are good reasons to believe the Chinese had a comparative advantage in that trade. One of them is that, outside alcohol and tobacco, the main 'recreational' drug consumed at the time was opium. Opium was ubiquitous then in Chinese society (Yangwen, 2005), and Chinese migrants brought to the Americas with them the raw material (poppy seeds), the know-how on production and consumption (smoking), and their initial demand for opium, which was locally satisfied. But, along with an advantage in the production of a good whose market remained largely unregulated until the 1920s, Chinese arguably also had developed an advantage on the distribution of illegal goods across the border. With the restriction on Chinese immigration by the U.S., many Chinese south of the border began to gather specialized knowledge on an activity that will prove useful with the introduction of drugs prohibition: smuggling Chinese into the U.S. (see, e.g., Schiavone Camacho, 2012). In this context, the timing of regulation on drugs on the U.S. created a 'perfect storm'. Chinese immigrants, some who had developed strategies to smuggle (people) into the American territory, witness the increase in the value of a product they have the know-how and resources to produce, and which was still not regulated in Mexico (at least, till the 1920s). And this takes place against the backdrop of weak institutionalization following the recent Mexican revolution. We provide different pieces of evidence that support this narrative, including some that suggests that part of the well-recorded sinophobia that eventually lead to the expulsion of most Chinese from Mexico was influenced by criminals wanting to gain control of this lucrative business. Yet perhaps the most interesting feature we are able to show is the degree of per-

sistence of this event: places where more Chinese migrated at the turn of the 20th century, nowadays are more likely to show cartel activity.

The paper then explores how cartel presence affects socioeconomic outcomes. Using data at municipality level, we estimate the consequences of cartels in a two-stage least squares (2SLS) setup using Chinese presence in 1930 as an excluded instrument for modern-day cartel presence. We argue that Chinese presence in 1930 is not correlated with unobservables influencing the outcomes of interest after conditioning on a rich set of controls, that includes local population growth in the period 1920 to 1930 (as a measure of development), distance to the U.S., distance to Mexico City, distance to the closest port, municipality surface, population, population density, an indicator variable for municipalities that host the capital city of the state, how suitable is the area for poppy cultivation, precipitation, and temperature. Crucially, we also control for German presence in 1930, a variable that captures any remaining unobserved heterogeneity related to immigrants picking the best locations (and/or the locations with highest potential for development). Aside from including a large and rich set of controls, we further validate the exclusion restriction by showing that Chinese presence in the U.S. is not correlated with better socioeconomic outcomes today, increasing our confidence in this instrumental-variables strategy. Our main finding in this part of the analysis is that cartel presence is strongly associated with good socioeconomic outcomes, such as lower marginalization rates, lower illiteracy rates, higher salaries, and better public services. We also report that cartel presence is associated with higher tax revenues, in line with what is reported in Mexican literature.

Our work relates to at least two strands of literature. Firstly, it is related to the literature on the historical origins of organized crime. Many studies look into the origins of Sicilian mafia. Following the seminal contribution by Gambetta (1993), recent works have placed their focus on how the presence of natural resources—such as mines (Buonnano *et al*., 2015)

or lemons (Dimico *et al.*, 2017)—and weak institutions (Gambetta, 1993; Bandiera, 2003; Pinotti, 2015; Acemoglu *et al.*, 2017) contributed to the rise of the mafia. In our case, weak institutions do play a role, but it is the creation of the illegal market combined with the presence of individuals with a comparative advantage in that market that fosters the activity.

Secondly, our paper also relates to the literature on the consequences of organized crime. This small and relatively new literature has looked at the impact of organized crime at different levels. First, at macro level, Pinotti (2015) provides cross-country evidence that organized crime is associated with significantly lower levels of economic output. Second, at a micro level, Sviatschi (2017a) documents that children growing up in regions of Peru with illegal *narco* activity are more likely to become criminals in adulthood. In a similar vein, a related paper by Sviatschi (2017b) also reports that children in El Salvador exposed to gangs in their regions are more likely to be involved in gang-related crimes when they are adults. Lastly, at local level Acemoglu *et al*. (2017) document a negative short-term impact of mafia presence on literacy and public goods provision. Our results are certainly not at odds with the first two lines of research. The local positive effects we find can be consistent with negative results at macro level, as the whole Mexican economy could be negatively affected by the presence of cartels, but within the country localities with activity in the sector could be doing relatively better. And this could happen simultaneously with negative micro results in terms of 'career choice' of young peoples. To think about the apparent incompatibility with the third line of research it is important to note that those results on the mafia –if extended to cartels– are somewhat difficult to reconcile with the well-known support some drug kingpins have in local communities. The evidence presented in this paper perfectly aligns with this stylized fact. The encompassing view we propose suggests different types of criminal organizations have significantly different impact on the local economies. In particular, the negative impact the mafia has at local level is in sharp contrast with our findings for

Mexican cartels. It is hard to say why this is the case, but we can speculate that this may be explained by the different nature of these criminal organizations. While early mafias in Italy mainly sold protection (a non-tradable good), and their operation typically generated income redistribution at local level (and the conflicts associated with such a zero-sum game), cartels in Mexico commercialize illegal drugs (a tradable good) that generates net income in the region they operate (not obviously leading to local conflict, most likely a non-zero-sum game). Another plausible story involves the fact that although both activities are illegal, the success of drug production and distribution relies on being able to go largely undetected. This requires the complicity of the local community, and the people involved in the trade have more incentives to transfer recourses to this community to maintain this complicity. In either case, our study suggests the presence of drug cartels is then somehow compensated with higher resources that allow local communities to decrease their level of marginalization, which might explain why drug cartels are so difficult to fight.

2. Illegal drug trade

Like most types of crime, organized crime has many negative effects on society. Extortion and violence, two of the basic trademarks mafias, are actually *designed* to upset individuals and disturb the relationship between them. And, along with substantial social and psychological costs, organized crime carries considerable economic costs. These are largely direct costs of the criminal activity, but there are also less direct costs, such as increased corruption, negative externalities of illicit goods (e.g., increased medical expenses due to drug rehabilitation), or forgone income from legitimate economic activity deterred by the criminal organization (Drelichman, 2003). The general unobservable nature of criminal behavior and some of these indirect costs, together with potential issues of reverse causality, makes it hard to confidently state any direct influence on economic activity. Yet the little evidence so far is aligned with the idea that the presence of organized crime has a general negative im-

pact on development. Pinotti (2015), for example, evaluates cross-country data using survey answers to create a measure of organized crime. Controlling for a series of covariates to account for geography, initial conditions, and institutions, he finds that a one standard deviation increase in organized crime appears to be associated with a 30% fall in real GDP per capita.

Nowadays, illicit drugs trade represents a sizeable part of global crime and drug cartels –a notorious form of organized crime– play a key role in their functioning. Estimates are inevitably imprecise, but the UNODC (2011) suggests that at the beginning of the 2000s drugs accounted for 20% of all crime proceeds and 50% of organized crime proceeds, about 0.9% of global GDP (circa $ 322 billions). The consumption of largely addictive, illegal substances is widespread, especially in rich economies. An estimate for 2013 (UNODC, 2015) indicates that at least 3% of the world population had consumed some form of illegal drug in the previous year. Good part of the production of drugs happens in poor countries, but the lion's share of this consumption takes place in the developed world, mainly North America (44%) and Europe (33%). Although synthetic drugs (such as methamphetamines) are now the fastest growing sector of the market, the largest part of this consumption is still concentrated on marijuana and the other plant-based drugs that fueled the rise of drug cartels in the last century. And because they have been the main supply of illicit drugs for the United States, the single largest market in the world, Mexican cartels are particularly infamous.

Featuring prominently in the press (as well as in books, movies, documentaries, and TV shows), Mexican cartels have become a synonym of violence and crime. Although recently their business seems to have expanded to extortion (Guerrero Gutiérrez, 2011) and even legal commerce (Wainwright, 2017), most of their activities involve the production and/or trade of illicit drugs into the U.S. Nowadays, these are largely concentrated in marijuana, cocaine, and meth. Yet the consolidation of Mexican drug trafficking organizations

took place in the middle and second part of the 20th century (Medel and Thoumi, 2014), when marijuana, and particularly opiates, dominated the market. Both external and internal factors fostered their initial development. One crucial factor was, of course, the general international movement towards prohibition in the early 20th century, but especially that of its next-door neighbor and substantial consumer, the U.S., that opened profitable opportunities for illicit trade. Mexico's proximity and weak institutions following the recent revolution offered a suitable environment for the rise of this activity. But, beyond geography and institutional characteristics, Mexico also counted with the presence of small community of Chinese immigrants that –we will argue– had a comparative advantage in the production, commercialization and trafficking of opium, the drug of choice at the time of the prohibition.

Opium and the regulation of narcotics

The proximate cause of cartels' appearance was, of course, prohibition. Whereas different forms of organized crime appear in history (Fijnaut, 2014), drug trafficking organizations appeared with the first attempts to regulate or ban altogether the production or consumption of certain narcotics. Many states around the world had occasionally outlawed substances seen as potentially harmful throughout history;[2] but restrictions as we know them today began to form in the late 19th century mostly around opium, arguably the most widespread recreational drug (after alcohol and tobacco) at the time.

The opium poppy (*papaver somniferum*) had been cultivated at least since 3,400 BC and Sumerians already knew that the consumption of its latex (opium) had narcotic effects.[3] Since then, opium has been used in different forms for medical, religious, or recreational purposes, and produced and traded around the world. Evidence is fragmentary, yet it seems

[2] For example, Islamic Sharia law prohibited alcohol and other intoxicants such as hashish; in the 17th century there was a series of attempts in Europe and the Ottoman Empire to forbid coffee; and Qing Imperial China tried to restrict the trade of opium.

[3] To obtain opium, farmers typically make incisions on the immature pods containing the seeds, which produce a milky substance. This then dries to become a brownish gum, which is collected and the processed.

that between the 16th and 17th centuries the notion of smoking the drug spreads (probably linked to the introduction of tobacco smoking). The practice, which increases drug's addiction potential, proved popular in China (UNDOC, 2008: 173). Faced with the first epidemics of consumption, Chinese authorities tried to restrict the expansion of the drug, but Western commercial interests intruded. With opium, the West had found a good Chinese were willing to trade for the many things China had to offer the West, like silk and porcelain. Attempts of the Chinese Emperor to established stricter rules to control the opium trade created tensions with Britain, which had the monopoly on its cultivation in Bengal, led to the Opium Wars. The eventual British success in that conflict made opium a staple in Chinese society (Yangwen, 2005).

While the events surrounding the Chinese crisis and the expansion of opium trade certainly played a role in the increasing public concern with the drug, a series of scientific discoveries in the 19th century created further anxieties. In 1803, the German pharmacist Friedrich Sertürner discovered that by dissolving opium in acid and neutralizing it with ammonia one can obtain its active ingredient, morphine. That first synthetic opioid had already increased the strength of the narcotic, but forty years later, Alexander Wood –a Scottish physician– found out that injecting morphine into patients was more effective (and stronger) than drinking it. Also, towards the end of the century, we had yet another development that increased the potency of the drug: the discovery of heroin, which began to be marketed by Bayer.[4] Both the expansion of the opium trade and the strengthened versions of the drug coming out of the opium poppy latex probably contributed to the spread of opium. It is hard to assess the extent to which drugs were consumed in the 19th century, but one way is to look into the references in the media. Figure 1 shows the proportion of references to any non-alcoholic drug in Mexican news in the 19th and early 20th centuries ('raw hits' from

[4] Diamorphine was first synthesized in 1874 by an English chemist named C. R. Alder Wright, but did not lead to further developments. Only in 1898, Felix Hoffmann, a German chemist working for Bayer synthesized it again, and Bayer began to commercialize it.

more than a dozen newspapers), as collected by Campos (2012). Although marijuana already appeared in the late 19th century, and was becoming more popular as time goes by, of all non-alcoholic drugs mentioned, opium and morphine made up for most of the references. Of course, this is not a necessary indication that one drug was more present than other, as ubiquity of presence could lead to lack of mentioning, but further evidence suggests this is indeed the case (Campos, 2012).

[Insert Figure 1 here]

Still, by the turn of the century, opium and other substances we recognize as narcotics today (cannabis and coca) were for the most part legal in both the U.S. and Mexico. According to Brown (2002: 641) "[In the United States] there were no restrictions on importation other than tariff; opium and morphine were cheap and readily available without prescription, particularly as ingredients in countless multi-drug patent medicines that were widely advertised and used by people of all groups and classes as cures for every conceived ailment." While their recreational use appears to have been expanding, and concerns about its abuse were slowly increasing,[5] plant-based drugs were extensively used for medical purposes: diverse 'baby-soothing' syrups (used to calm down babies when teething) contained some amount of opium; morphine was used to treat ailments of different nature (injuries, rheumatism, etc.); respected companies like Bayer marketed heroin as a cough medicine; marijuana cigarettes were used to treat asthma; coca wines (that combined wine with cocaine) such as Vin Mariani and French Wine Coca (the precursor of Coca-Cola) were promoted as having diverse medical properties.

[5] Referring to the U.S., for example, in his book on opium smoking in America and China, the medical doctor Harry H. Kane claimed that "[t]he first white man who smoked opium in America […] was in California, in 1868. […] the practice spread rapidly and quietly among […] gamblers and prostitutes until the later part of 1875, at which time the authorities became cognizant of the fact […] that many women and young girls, as also young men of respectable family, were being induced to visit the dens…" (Kane, 1882: 1). There is then considerable evidence that in the last quarter of the 19th century opium dens begin to appear in different cities of the United Sates, until by the 1890s there where common in the territory.

But governments' attitude towards the drug begins to change, mostly driven by two reasons (van Ours, 2003): new medicines to alleviate pain were introduced, reducing the need to rely upon opium and opiates; and the pressure of the anti-opium movement that followed the increased realization of the addictive nature of the drug. Regarding the second, initial attempts to regulate production, distribution or consumption (typically limiting the access to dens or penalizing the selling of opium) were localized, and in many cases not entirely enforced (Brown, 2002: 640-641). Systematic attempts had to wait to the early 20th century, as detailed in the timeline of Figure 2 for the case of Mexico and the U.S., American regulation is particularly relevant for our story. The first national law addressing the issue was the Pure Food and Drug Act of 1906, which required narcotics to be listed on the labels of patent medicines. In 1909 the U.S. prohibited the import of opium for non-medical purposes, and then banned altogether opium that has been prepared for smoking. In February of that same year takes place the first international conference to discuss the world's narcotics problem at Shanghai, later known as the 'Opium Commission', which prepared the ground for the first international drug treaty in 1912, the Opium Convention of The Hague (UNODC, 2008). Yet the legislation that really marked the beginning of the war on drugs was the Harrison Act of 1914, which regulated and taxed the production, importation, and distribution of opiates and coca products. Marijuana had to wait a couple of decades, when the federal Marijuana Tax Act of 1937 effectively made possession or transfer of marijuana illegal throughout the U.S.

[Insert Figure 2 here]

Regulation lagged somewhat behind on the other side of the Rio Grande, opening a window of opportunity for opium producers and traffickers (Valdés Castellanos, 2013). Mexico joined The Hague Convention, ratifying the treaties proposed, moving ahead of the U.S. on marijuana, as in 1920 the first regulations appear forbidding its cultivation and

commercialization. But opium had to wait a few years more. Two presidential decrees, in 1923 and 1925, imposed a series of requirements for the importation of opium, morphine, cocaine, and other drugs, and forbid the importation of opium prepared for smoking, marijuana, and heroin (Astorga, 2016). Only in 1926 the restriction initially put on marijuana is extended to poppies, turning producers, traders, and consumers of opium into criminals.

More than a decade passed between the Harrison Act and the Mexican law restricting economic activities on opium, creating an opportunity for entrepreneurial Mexicans wanting to profit from the natural increase in price on the other side of the frontier. Certainly, part of this increase in price was really coming from increases in costs (Miron, 2003), the most important being the wage premium to compensate employees for the risk of engaging in illicit activity (and eventual consequences if caught), the potential seizure costs of both capital (physical and financial assets used in the production of drugs) and goods (illicit substances). But if at least part of the activity is legal, the increase in costs was limited, creating a comparative advantage for Mexican producers.

Mexico's comparative advantages

Lag in the regulation of the opium market is not the only factor that made (some parts of) Mexico a suitable environment for the appearance of the first groups engaged in drug trafficking. Institutional context is most likely another one. Like mafias and other forms of organized crime, cartels blossom under weak state institutions. Whereas mafias typically replace the state in certain contexts (Gambetta, 1993; Buonanno *et al*., 2015), cartels profit from states with limited capability to regulate the illicit market or enforce those regulations. Mexico at the beginning of the 20th century was certainly not a beacon of institutional stability. The fall of the Porfiriato and the subsequent Revolution in the 1910s created a political turmoil that took many years to settle, providing a fertile ground for criminal activities. Other factors are unique to the trade of illicit drugs. Different substances impose different

challenges for producers, distributors, and consumers (Reuter, 2014), but at least two elements are common. One is the capacity to generate or obtain the illicit substance. Neither the opium poppy nor cannabis is native to Mexico, but sometime in the 19th century they were introduced and both proved to be well suited for the region.[6] The other is the capacity to distribute it in a market where the substance is regulated or entirely forbidden, and here the geographical the proximity to the American market is certainly crucial.

In the following section, we argue the presence of the Chinese community in certain areas of Mexico provided an additional advantage. Good part of the literature on the historical roots of the Mexican cartels suggests Chinese were somehow connected to the incipient trade (e.g., Astorga, 2015; Grillo, 2011; Osorno, 2011; Valdés Castellanos, 2013). In a typical example, Grillo explains how Chinese coolies brought with them the tradition of opium consumption, as they "traveled on steamships to Sinaloa from the 1860s to toil on railroads and sweat in mine shafts […] as was their custom, Chinese immigrants brought opium poppies, gum and seeds on their long journey over the Pacific" (Grillo, 2011: 25-26). In terms of the discussion above, the Chinese community arguably contributed reinforcing the two latter factors associated with the trade of illegal substances. In the early stages of development of the market, when it was dominated by opium, having the know-how on how to cultivate and extract the drug is at least as important as geography to be able to generate the illicit substance. Opium was such a pervasive element in Chinese culture (Yangwen, 2005), that Chinese presence gave certain comparative advantage in the area. But these people that had arrived escaping poor economic and political conditions in China also had developed certain human capital that contributed to their capacity to distribute these goods.

3. The Chinese connection

[6] The opium poppy was first identified among the flora of Sinaloa around 1886, in a Mexican government study run by Velasco (1889: 88).

Chinese have been migrating to Mexico since the 17th century, but it was not until the 19th century that this migration became large in scale. A crucial turning point came when the U.S. passed the Chinese Exclusion Act of 1882,[7] as after that date many Chinese find their way to Mexico in search of economic opportunities. The most intensive immigration takes place in the first quarter of the 20th century, and by the 1920s the Chinese was the second largest foreign ethnic community resident in Mexico after the Spanish (INEGI, 2014). They tended to concentrate in the north, near the U.S. border, but they also reached pretty much every state of the country. As Grillo's quote above suggested, indeed the firsts to enter Mexico seem to have been directed to the construction of railways and the works in the mines,[8] but they very quickly began to fill other jobs, achieving a high degree of economic success. In the early 20th century, one could see Chinese as agricultural laborers, independent farmers, and skilled workers, but mainly as merchants and shopkeepers. Figure 3, which shows the different occupations Chinese had in 1919 in the state of Sonora, yet representative of other states, makes this point clearly. Many Chinese seem to have been able to transition from laborers to merchants (eventually relevant because it relates to the ability to distribute opium), and by the 1920s they have achieved some sort of monopoly over the grocery and dry goods trade in many regions of Mexico (Romero, 2010: 2).

[Insert Figure 3 here]

A proportion of the Chinese entering Mexico were probably attracted by the local economic opportunities, but others were simply diverted south of the Rio Grande by the American Exclusion Act. There is also evidence that some Chinese went to Mexico with the aim of illegally entering the U.S. As drug prohibition inevitably generates a market for illegal nar-

[7] In the increasingly globalized economy of the 19th century, the U.S. was among the first to introduce restriction to the access of immigrants. Why this was the case is still debated (see e.g., Timmer and Williamson, 1998), but regulations in the second part of the century begin to reflect a clear intent of making it difficult for certain immigrants to legally enter the country (Hutchinson, 1981). The 1860s see some of the first restrictions on the coolie trade, and in 1875 the Immigration Act establishes the notion of "excludable" classes and prohibits, among others, the importation of Chinese women for prostitution.

[8] There is evidence, for example, that in the late 1880s the Anglo American Mining Co. hired a substantial amount of Chinese people, and that by 1889 they had about 150 of them (Hu-DeHart, 2003: fn. 2).

cotics trade, immigration restriction opens the possibility of a market for people smuggling: "As a way of circumventing the Chinese exclusion laws of the United States, enterprising Chinese merchants and capitalists created a highly sophisticated transnational immigrant smuggling network involving representatives in China, Mexico, Cuba and various cities throughout the United States, including Tucson, San Diego, El Paso, New York, Boston, New Orleans, and San Francisco" (Romero, 2010: 3). These networks were organized with the collaboration of Chinese merchants on both sides of the border, and developed a series of schemes and techniques to smuggle compatriots into the U.S., making Chinese pioneers in the illegal Mexico-U.S. migration business.

Chinese advantage in an incipient trade

There are several accounts on the Chinese diaspora reaching the U.S. and Mexico (e.g., Romero, 2010; Peña Delgado, 2012), but in none of them is opium identified as a motivation to emigrate. Both the tradition of opium smoking carried by the migrants and the ubiquity of opium dens in Chinese settlements appear in these descriptions, but this never seems to be the reason behind the movement. Opium consumption was beginning to generate concerns in the society, and hence was sometimes frowned-upon, but at the time it was largely legal and not readily available in North America.[9] Chinese maintained this tradition despite being in North America, not because they went there.

But when regulation changed regarding the production and trade of narcotics in the U.S., increasing the value of opium and opening the opportunity for a priced business, the Chinese community did have a comparative advantage in it. As discussed above, the market of illegal drugs requires the ability to produce (or being able to obtain) the illicit substances and the capabilities to distribute them. Chinese brought with them the opium seeds, the habit of smoking opium, and the social tradition of the opium den. They knew how to cultivate the

[9] In the first decade of the 1900s the United States imported more than 200 metric tons of raw opium per year.

opium poppy, how to extract the latex and how to process it to make it suitable for consumption. They basically had physical and human capital to produce a good that now was more profitable. Along with that, the specialization of Chinese in retailing added an element that facilitated commercialization. As owners of small commerce or street vendors of different products (recall Figure 3), they were regularly engaged in a type of trade that allowed them to easily reach consumers. Of course, when the good in question is illegal an additional layer of complexity is added, as its commercialization has to go largely unnoticed by the authorities. On smuggling the Chinese community, which at least in part had been engaging in introducing compatriots illegally into the U.S. at least since the 1880s (see, e.g., Schiavone Camacho, 2012), also probably had an advantage: they had not only know-how (skills transferable from people-smuggling to drugs-smuggling), but also an already developed network of contacts on both side of the frontier.[10]

Was drug trade competition breeding sinophobia?

Another piece of evidence suggesting there was a strong involvement of the Chinese community in the drug trade comes from the many accounts of the Mexican sinophobic wave of the 1920s. No historian of the Chinese immigration to Mexico can evade the anti-Chinese movement of the post-revolutionary era (e.g., Romano, 2010; Peña Delgado, 2012; Schiavone Camacho, 2012). Mexican xenophobia towards Chinese manifested in various ways: from looting and boycotts, to protests, to racist propaganda and legislation. Nowhere was this more extreme than in Sonora, where marriages between Mexican and Chinese were banned, segregated neighborhoods were created, and the whole Chinese population was virtually expelled in 1931. The nature of the sentiment driving this movement is still ill-understood, but one of the standard culprits has been the great economic success of Chinese

[10] Some recent accounts suggest that nowadays many drug cartels have begun to diversify into new markets, one of them being smuggling people into the U.S. (Wainwright, 2016: Ch. 6). Wainwright's account highlights how increases in enforcement of migration restrictions are actually increasing the cost of '*coyotes*' to smuggle people, and the cartels are taking over. It is interesting to see that exactly the opposite appears to have been the case a century ago.

(e.g., Romero, 2010). An issue that has been less explored, yet appears in a series of references, is the involvement criminals –who probably wanted to take over the market partly controlled by Chinese– in nurturing this movement. Grillo, for example, says that "criminals also whipped up racism. In 1933, the American consul in Ensenada sent a report to Washington about the rising anti-Chinese tide. He cited an informant, a Mandarin-speaking American saying that known villains were among the key anti-Chinese activists. Among them was a smuggler surnamed Segovia, who was moving round the states of Sonora, Sinaloa, and Baja California putting money into violent anti-Chinese groups" (Grillo, 2011: 32). That same American consul, A. Smale, further suggested that the origin of this racist movement in Sonora and Sinaloa really came from Mexicans to whom Chinese have taught how to cultivate poppies and extract opium who wanted to take over the business (Astorga, 2015). It is also interesting to note that the movement indeed gains strength in the 1920s, precisely when prohibition takes place in the U.S.

It is then plausible that part of the outburst of sinophobia in the 1920s and 1930s represent the first expressions of what was going to become a regular pattern of violence aimed at getting the drugs market (Rasmussen *et al*. 1993; Rios, 2012), or the increased in violence associated with the creation of illegal markets (Chimeli and Soares, 2017). In any case, actions against Chinese were widespread during the period, and the sharp decline in Chinese population seen afterwards is largely attributed to the organized anti-Chinese movements, especially in Sonora, Sinaloa, Nayarit, and Tamaulipas, aiming at destroying Chinese monopolies (Romero, 2010: 56), not only on legal markets.

This section has presented a series of elements that suggest the presence of Chinese migration contributed to determine the location of the first drug trafficking organizations. Because of the illicit nature of this trade and the need to remain undetected or unmonitored by the authorities, they sometimes rely on building social networks and local specific

knowledge, and are less likely to move around, hence there are reasons to believe they show certain level of persistence over time. Is that the case? Did this initial immigration determine the *current* location of cartels? Next section presents and discusses the data we collected to address this question, which we do in section 5.

4. Data

Throughout the empirical analysis we carry out, we use municipality-level data that come from different sources. Demographic data on Chinese population was obtained from original records of the 1930 census. This was the first Mexican census to be processed centrally, and recognized to be one of Mexico best planned and executed censuses. Although the great majority of the material from the Distrito Federal was lost, most of the other original records survived and were recently digitalized by Ancestry.com, from where we collected them. This means our data covers around 80% of the total population of the country at the time. Since most of the missing records are in Distrito Federal (with a population of more than 1 million people at that time), the coverage of the rest of the country is relatively high (Mexico had 16 million people in 1930, and the digitalized files contain around 13 million records). There are no reasons to believe any of these losses are systematic. In all empirical analyses, we exclude municipalities in Distrito Federal from the estimates.

The original documents record for every individual, among other things, place of birth and residence. We extracted all records indicating China as the place of birth. Residence was defined by town, municipality, and state. Unfortunately, municipalities have drastically changed shape in the last century: in 1930 the census recorded 2,194 municipalities, whereas now there are 2,456 (Commons, 2002). These are not only 262 additional administrative units appearing from the split of original municipalities; there were also many changes in borders. To our knowledge, there is no clear match between the political division back then, and the one we have today. But since we have information on town and state of residence,

and these in general did not change, we matched that information to the current map of Mexican municipalities. That is, we obtained for every *current* municipality the number of people born in China and residing in 1930 in a town of that municipality.

Since only a few Chinese could potentially start an opium-related business in a given municipality, we focus on the extensive margin, which is what is really relevant for cartel presence. Hence, we create a new variable, Chinese presence, which takes the value one if Chinese population in the municipality is greater than one (mapped in Figure 4). Although we take this as our preferred measure of the presence of a Chinese community in a municipality, we show in Section 5 that all results are robust to alternative definitions of this variable.

[Insert Figure 4 here]

We also collected data on German population in 1930, the third largest group of overseas immigrants at that time (behind Chinese and Spaniards), which we use to capture unobserved heterogeneity related to immigrants picking the best locations. Throughout Mexico's history, the most important group of overseas immigrants was the Spanish and, in fact, it was so in the early twentieth century. The census of 1900 reports around 16,300 Spanish living in Mexico, compared to only 2,660 Chinese at the time.[11] Having such a longstanding history, Spanish migration was probably driven by diverse dynamics connected to chain migration. Different, but also particular factors probably drove nationals of neighboring countries (U.S. or Guatemala), being next to the border. Taking aside these specific cases, the main immigration flow after the Chinese was the German. Figure 5 shows the evolution of Chinese and German population in Mexico for the period from 1895 to 1970. Around 1900

[11] Once the initial period of exploration was completed in the 16th Century, most Spaniards wanting to start a life in the Americas began to gravitate towards Peru and Mexico. At the beginning of the 17th Century more than 17,000 people from Spain migrated to Mexico, a figure that represents more than one third of all Spanish immigration to the continent since Columbus (Newson, 2006). In the following centuries destinations began to diversify, and many Spanish migrants also aimed at other important attractors such as Cuba or the Rio de la Plata, but a considerable flow continued to go to Mexico.

both groups were comparable in size and, except for the sharp inflow of Chinese nationals in the first decade of the 20th century, trends are similar.

[Insert Figure 5 here]

To construct German population per current municipality we use the same sources and followed the same procedure as with the Chinese. Then, again as we did with Chinese, we constructed the variable German presence as a dummy variable that takes the value one if German population in the municipality is greater than one.

As explained above, the number and shape of municipalities have changed since 1930, and therefore it is difficult to obtain development indicators from 1930 for the current political division. Given this limitation, to proxy for development our approach was to use city (population) growth. The (positive) connection between changes in the size of population of cities and prosperity has been explored many times, especially for societies in early stages of industrialization.[12] Following this literature, we constructed a variable that measures the growth of population in cities. We collected census data on the populations of 1920 and 1930 for the town that is currently head of each municipality, and calculated that (main) city growth in the period.

Identifying cartel presence is, of course, far from straightforward. Eduardo Guerrero, a scholar very active in the debate on organized crime in Mexico has produced an extensive survey that provides information on the activity of different cartels, but his work is only at state level (Guerrero, 2011). For our study, we rely upon three different sources of data regarding cartel activity at municipality level. First, there is solid but confidential data provided to us by the *Observatorio de Desarrollo y Promoción Social* (ODP) from Mexico,[13] that

[12] Acemoglu *et al.* (2002, Section II), for example, provide an extensive discussion on the connection between urbanization and population density, and income growth. Among other references, they cite the classic text of Kuznets (1968) on economic growth: "…economic growth [is] a sustained increase in per-capita or per-worker product, most often accompanied by an increase in population and […] in the distribution of population between the countryside and the cities".
[13] https://www.odp.social.

through diverse sources identified signs of cartel presence in all Mexican municipalities. This information was recorded by the ODP as a dummy variable (Cartel presence) that takes the value one if there is evidence of a cartel activity in a municipality, and zero otherwise, and represents our preferred measure. Second, we also use information coming from the number of drug-related homicides collected by the Mexican government between December 2006 and December 2010, which has been used before to study cartel activity (e.g., Dell, 2015; Dube *et al*., 2016; Holland and Ríos, 2017). Based upon police reports, during this period a committee with representatives of the government met regularly to classify murders as drug-related if there was any evidence that victim or perpetrator (or both) were involved in drug trade. Since we are interested in general cartel activity and not intensity of drug-related violence, with this information we constructed the dummy variable (Cartel presence 2006-2010) that takes the value one if in a municipality there has been at least one drug-related murder in the period the variable was recorded. Finally, we rely on a third source for measuring cartel activity at the municipality level that comes from web content. These data, constructed by Coscia and Rios (2017), track the presence at the municipality level of ten criminal organizations in the period 1991 to 2010. The dataset is constructed by using a search algorithm that codes a cartel as being present in a municipality if the frequency of hits for a particular municipality-organization pair exceeds a given threshold. From this dataset, we use two variables, Cartel presence 2005 and Cartel presence 2010, which are binary variables that take the value one if there is cartel presence in the municipality and zero otherwise. This new dataset is relevant because it provides information on cartel activity before the presidency of Felipe Calderón, which marked by the ignition of the Mexican Drug War.[14] Unfortunately, it is also the one likely to be of poorer quality. At least two elements contribute to this. On the one hand, the algorithm used to construct the variable relies on

[14] Felipe de Jesús Calderón Hinojosa served as President of Mexico from 1 December 2006, to 30 November 2012.

Google News, which functioned in beta form before 2006, so the compilation of news in 2005 was only partial.[15] On the other hand, even if the data collection in terms of news was complete, before Calderón this news might underestimate cartels' activity. Before the Mexican Drug War many of these criminal organizations operated peacefully in many municipalities (Guerrero Gutiérrez, 2011; Valdés Castellano, 2013). This probably made them less likely to engage in activities that would be identified by local media, generating a downward bias in news reports mentioning them (Holland and Rios, 2017, fn. 10).

The pairwise correlation between the four measures of cartel presence is positive (see Table A1 in the Appendix). As shown in Table 1, which contains the summary statistics of our sample of 2,440 municipalities,[16] there is more cartel presence in 2010 or 2011 than in 2005, which is also apparent in the maps of Figure 6. According to Coscia and Rios (2017), even though some new drug organizations have only been in operation since 2007, they tend to operate in municipalities where other criminal organizations had at some time been present but were abandoned.

[Insert Table 1 here]

[Insert Figure 6 here]

Geographical variables were available from the *Instituto Nacional de Estadística y Geografía* (INEGI) in Mexico. The set of geographical variables include altitude (minimum and maximum), temperature (average, minimum, and maximum), average precipitations, surface, distance to U.S. border (the distance from the centroid of the municipality to U.S. border), distance to the closest port (we consider the most important port in the Atlantic and the most important port in the Pacific, in terms of influx of immigrants), distance to Mexico City, population, and population density. Since there are no records on 1930 municipal pop-

[15] Coscia and Rios (2017) explicitly state that they "expect some downward bias [in the number of news] for years before 2006, while Google News was still in beta and when the collection of articles in years previous to 2006 may have been incomplete."
[16] The 16 municipalities of the Federal district were excluded.

ulation in today's political division, we use two variables to capture the demographic size of the municipality: population in 2015 and population in 1930 of the town that is the head of the municipality today. We also constructed a dummy variable that takes the value 1 for those municipalities that host the town that is head of the state.

In addition, using information from the Food and Agriculture Organization (FAO) we constructed a dummy variable that takes the value one for those municipalities that have optimal conditions for poppy cultivation (*papaver somiferum*). We consider that a municipality has optimal conditions for producing opium if its average temperature, annual rainfall, and type of climate fall in the ranges considered optimal for cultivating opium.[17] The optimal ranges come from the FAO Eco Crop system. However, it is important to bear in mind that optimal conditions are not necessary for poppy cultivation, since poppies can grow in almost any soil and even do well in slightly sandy or rocky places. Generally, any soil can be modified to accommodate poppies, and it has been said that poppies are like weeds because they grow so easily (Hogshire, 1994).

Table 2 presents balance checks. We report multivariate regressions between the variable municipal Chinese presence in 1930 and the set of covariates. Chinese presence in 1930 is orthogonal to most geographical variables, including Suitability for poppy cultivation.[18] The orthogonality between Chinese presence and Suitability for poppy cultivation, together with the fact that the great increase in Chinese migration is prior to the prohibition (see Figure 5), supports the idea that Chinese migration was not related to opium activities.

[Insert Table 2 here]

Chinese presence is significantly correlated with Surface and Population, and the estimated coefficients indicate there are more Chinese people in the bigger and more populated

[17] Mexico uses a modification to the climate classification of Köppen. Following Garcia (2004), we create the equivalences between both systems. We constructed the variable in such a way that a municipality has the optimal type of climate if at least has one of all possible optimal types of climates.
[18] In Table A2 in the appendix we report results from running each covariate separately on municipal Chinese presence in 1930, and we obtain similar results to the ones reported in the multivariate analysis.

municipalities. Finally, and as expected, Chinese presence is positively correlated with German presence. Most important, all results reported in Section 5 hold when we control for all these variables.

Our main outcome of interest is Marginalization (in 2015), an index constructed from various municipal socioeconomic indicators provided by the *Consejo Nacional de Población* in Mexico (CONAPO). By construction, the index has a zero mean and a standard deviation equal to one. Marginalization index includes 9 socioeconomic indicators: Illiteracy (percentage of illiterate at age 15), Without primary (percentage of population at age 15 without primary school), Without toilet (percentage of population without toilet), Without electricity (percentage of population without access to electricity network), Without water (percentage of population without access to water network), Overcrowding (percentage of households with some level of overcrowding), Earthen floor (percentage of occupants in dwellings with an earthen floor), Small localities (percentage of population in localities with less than 5,000 inhabitants), and Low salary (percentage of labor force earning less than 2 minimum salaries). Table 3 presents summary statistics for the components of the marginalization index.

[Insert Table 3 here]

As an additional outcome, we have data on per capita tax revenue at the municipality level in 2015, provided by the ODP.

5. Econometric model and results

A model for cartel presence

Following the discussion in Section 3, we are interested in estimating the relationship between Chinese population in 1930 and the presence of cartels in Mexico 80 years later. We estimate the following regression model:

$$Cartel\ Presence_{is} = \beta\ Chinese\ Presence_{is} + \gamma\ X_{is} + \mu_s + \varepsilon_{is} \quad (1)$$

where i indexes municipalities and s indexes state, β is the parameter of interest, X_{is} is the set of municipality-level control variables, μ_s are state fixed effects, and ε_{is} is an error term.

Since the distribution of Chinese along the Mexican territory is not random, we include state fixed effects and municipality-level controls to make sure that differences in Chinese presence are not picking up the effects of some other unobserved characteristics. This strategy controls for un-observables that are common to all municipalities in the same state. This is especially relevant since in Mexico most political decisions are made at the state level. Thus, we rely on the assumption that municipalities in the same state face similar institutional and contextual conditions. In addition, to account for possible correlations between municipalities from the same state, all standard errors are clustered at the state level.

Table 4 reports Ordinary Least Squares (OLS) estimates of different specifications of Equation (1). In Column (1) we report estimates on the relationship between Cartel presence and Chinese presence without including controls. In Column (2), our preferred specification, we control for German presence, Poppy suitability, Surface, Population, Population density, Minimum altitude, Maximum altitude, Average temperature, Maximum temperature, Minimum temperature, Average precipitation, Distance to U.S., Distance to Mexico City, Distance to closest port, and Head of state. The estimated coefficients indicate that in those municipalities with Chinese communities in 1930 the likelihood of having cartels today is around 11 percentage points higher.

Important for our identification strategy is that Chinese presence remains positive and significant after controlling for German presence, indicating that it is not immigration per se at the beginning of the 20th century that is associated with cartel presence today, but Chinese immigration in particular.

In order to further account for the possibility that Chinese in 1930 were located close to the U.S. border, and so do Cartels today, in Column (3) we exclude those municipalities

located within 100 kilometers from the U.S. The coefficient on Chinese presence in this specification remains positive and significant.[19]

[Insert Table 4 here]

The historical literature suggests Sinaloa might be some sort of an outlier in our story. On the one hand, Chinese migration to Mexico was especially important in this state (see, e.g., Romero, 2010; Peña Delgado, 2012). On the other, the state was also particularly affected by subsequent events. After the departure of most Chinese, in a short period when the production of opium was temporarily legalized de facto in order to supply the U.S. demand for morphine during the World War II, the Mexican government starts a project of large-scale cultivation of opium poppies in an area of Sinaloa (Sanchez Godoy, 2009). Even though state fixed dummies should control for a potential Sinaloa selection effect, in Column (4) we report results excluding the state. Again, Chinese presence remains positive and significant.

In addition, as reported in Column (5), Chinese presence remains positive and significant after controlling for population in 1930 (instead of population in 2015) and for local development, as measured by population growth in the period 1920 to 1930 for the town that is the head of the municipality today. Given that these variables are only available for 2,160 municipalities, in what follows we use as our preferred specification the one reported in Column (2), but all results are robust to controlling for Population in 1930 and Local population growth.

As pointed out above, since Chinese presence is not randomly distributed across the Mexican territory we have included state fixed effects and municipality level controls to make sure differences in Chinese presence are not picking up the effects of other characteristics that can also be related to cartel presence. We now go a step further and, rather than

[19] We obtain similar results when we exclude municipalities located within 50 kilometers from the U.S. Results mentioned but not reported are available from the authors upon request.

comparing municipalities with different Chinese presence within a given state, we implement the neighbor-pair fixed effects estimator used in Acemoglu *et al.* (2012) and Buonnano *et al.* (2015), that compares each municipality with Chinese presence to each of its direct neighbors without Chinese presence. In particular, we restrict the sample to the 291 municipalities that have Chinese presence and have as neighbor at least one municipality without Chinese presence, and the 704 municipalities without Chinese presence which are adjacent to them. By including neighbor-pair fixed effects, this empirical strategy controls directly for un-observables that are common across adjacent municipalities. As reported in Table 5, the coefficient of Chinese presence in the neighbor-pair fixed effects estimates is always significant and its magnitude is very close to our baseline findings, providing additional and compelling evidence on the role played by Chinese community in emergence of drug cartels.

[Insert Table 5 here]

Tables 6 and 7 explore we explore alternative definitions for Chinese and Cartel presence. In Table 6 we define Chinese presence as Chinese population in 1930 being greater than 0, 5, 10, and 15 individuals. In all cases the coefficient for Chinese presence is similar to the ones reported in Table 4. Table 7 presents results for the other 3 ways of measuring cartel presence: Cartel presence 2006-2010, Cartel presence 2010, and Cartel presence 2005. In 5 out the 6 specifications the coefficient for Chinese presence remains positive and significant, with values for the coefficients similar to the ones reported in the previous tables. Only in the specification with controls for Cartel presence 2005, the coefficient becomes smaller and not significant, though remain positive. It is reassuring that all results hold when using indicators for cartel presence that come from different sources and that were constructed using entirely different methodologies.

[Insert Table 6 here]

[Insert Table 7 here]

Finally, in Table 8 we report placebo estimates of Equation (1), in which Cartel presence is replaced by 3 non-drug related crime variables available at the municipality level: house theft, car theft, and shop theft. We expect Chinese presence in 1930 not to be positively correlated with non-drug related crimes today. As observed in Table 8, in all cases the coefficient on Chinese presence is negative (and statistically not significant for house theft and shop theft). These results are reassuring: even though Chinese presence in 1930 is positively correlated to drug cartels, it is not positively related to other types of (non-drug related) crime.

[Insert Table 8 here]

Consequences of cartel presence

We are now interested in estimating the causal effect of cartel presence on socioeconomic outcomes. Formally, we want to estimate the following model:

$$Marginalization_{is} = \alpha\, Cartel\ presence_{is} + \pi\, X_{is} + \mu_s + \varepsilon_{is} \quad (2)$$

Cartel presence, however, may be endogenous in a model for marginalization. To address potential endogeneity concerns we instrument cartel presence today with Chinese presence in 1930 and estimate Equation (2) using 2SLS.

The identification assumption is that Chinese presence in 1930 is not directly correlated with the outcomes of interest. The exclusion restriction can be challenged because of two reasons. First, Chinese may have picked locations with better socioeconomic outcomes or locations with potential to improve these outcomes. To account for this potential confounder, we rely on a rich set of controls: Local population growth, Poppy suitability, Minimum altitude, Maximum altitude, Average temperature, Maximum temperature, Minimum temperature, Average precipitation, Surface, Population, Population density, Distance to Mexico City, Distance to U.S., Distance to closest port, and Head of state. Crucially, we also control for German presence in 1930, a variable that should capture any remaining unobserved het-

erogeneity related to immigrants picking the best locations. Second, Chinese may have affected the socioeconomic environment in those municipalities in which they located in such a way that their presence had a persistent impact on current socioeconomic outcomes. We believe this is very unlikely given the small population of Chinese relative to total municipality population, and given that Chinese were only present in Mexico for a relatively short period of time (as Figure 5 suggests, mainly between 1900 and 1935). Still, to further address this potential concern, we study the effect of Chinese presence in the U.S. in 1930. In particular, we collected county data for Chinese presence (defined as in Mexican municipalities)[20] and three socioeconomic outcomes comparable to those used in Mexico: poverty (percentage of population in poverty situation in 2016), poverty for population under 17 years old (percentage of population under 17 years old in poverty situation in 2016), and unemployment (percentage of people unemployed). We also collected county-level data for a set of control variables (population, surface, and population density). We present results for all U.S. states, and also for states that border Mexico.[21] We explore if Chinese presence in 1930 in the U.S. is correlated with better socioeconomic outcomes today, as measured by unemployment and poverty. As reported in Table 9, this is not the case. In the U.S., the presence of Chinese communities in 1930 is not correlated with better socioeconomic outcomes today, thus providing confidence to the assumption that Chinese presence in 1930 in Mexico is not directly related to current socioeconomic outcomes.

[Insert Table 9 here]

Table 10 provides 2SLS estimates for Equation (2), without and with controls. The estimated coefficients indicate the presence of drug cartels in a municipality decreases the

[20] Approximately 26% of U.S. counties had more than one Chinese in 1930. There is some missing data on Chinese presence for some counties in the states of California, Hawaii, and New York. For those missing counties, we assume that there is no Chinese presence. All results are robust to excluding the states of California, Hawaii, and New York.

[21] The U.S. states that border Mexico are Arizona, California, New Mexico, and Texas.

marginalization index about 2 standard deviations.[22] Results are robust to restricting the sample to those municipalities located more than 100 kilometers from the U.S., to excluding the state of Sinaloa, and to controlling for Local population growth.

[Insert Table 10 here]

Now we analyze individually the components of the marginalization index. Table 11 reports 2SLS estimates for a variation of Equation (2), in which the left-hand variable Marginalization is replaced by each of the 9 components of the marginalization index. Our estimates indicate that our preferred definition for Cartel presence is negatively associated with all components of the index, and 6 out of 9 coefficients are statistically significant. In particular, Cartel presence is associated with good outcomes in terms of literacy, salaries, public service provision, and housing conditions.

[Insert Table 11 here]

Robustness checks

Tables 12 and 13 show that the main estimates are also robust to alternative definitions for Chinese presence and Cartel presence, respectively. In all cases the 2SLS estimate for Cartel presence is negative and statistically significant. 2SLS estimates of the coefficient for Cartel presence 2010 and Cartel presence 2006-2010 are negative and significant. The value of the coefficient in these specifications is similar to the main estimates reported in Table 10. The absolute value of the coefficient is bigger for Cartel presence 2005, though it becomes not significant (p-value equal to 0.14).[23]

[Insert Table 12 here]

[22] As reported in Table A3 in the Appendix, the OLS estimate of α in equation (2) is negative and statistically significant in all specifications, though the values of the coefficients are smaller than the ones reported in Table 10. In addition, the estimated coefficient for Chinese presence in the reduced-form equation is also negative and statistically significant (see Table A4 in the Appendix).

[23] To further validate our identification assumption, we replicate our estimates restricting the sample to those municipalities with positive German presence. In this new sample of 142 municipalities results are strikingly similar to the ones reported with all municipalities. Chinese presence is significantly correlated with cartel presence. And cartel presence is significantly associated with lower marginalization (See Table A5 in the Appendix).

[Insert Table 13 here]

6. Discussion and further results

Our results that cartel presence has a positive impact on literacy, salaries, public service provision at the local level are in line with the opinion of many Mexican thinkers that have argued that drug cartels have a significant socioeconomic impact on the economies in which they operate. Chaban, for example, argues that:

> "The *narco*, in its activity, generates direct jobs, which, in spite of being illegal, have an impact in the economies where it is based. The spillovers that propel drug organizations, especially at the local level, can alleviate much the hardships of an under-developed country, a phenomenon that makes it a factor of stability. Also, drug cartels often collaborate in providing public services that benefit the community in which they operate, such as roads or schools. This contribution, in addition to generating sympathy among the local population, greatly alleviates the demand for basic services that the State is often unable to provide. On the other hand, the *narco* usually invests in legal business, which also has an impact on the economy and on the revenues of the State, through higher tax revenues." (Chaban, 2005)

The statement above suggests yet an additional testable implication, namely that cartel presence should be positively associated with tax revenue. Indeed, as reported in Table 14, there is a positive and significant correlation between cartel presence and per capita tax revenue at the municipality level.

[Insert Table 14 here]

7. Conclusions

We study the historical origins of Mexican cartel's emergence and its socioeconomic consequences today. We first trace the location of current cartels to the location of Chinese migration at the beginning of the 20th century. We document that both events are strongly

connected, and provide a narrative that rationalizes this finding. We basically argue that for at least two reasons Chinese migrants had a comparative advantage in the illegal market for opium. First, they brought to the Americas with them the raw material (poppy seeds), and the know-how on production and consumption (smoking). Second, with the restriction on Chinese immigration by the U.S. at the end of the 19th century, many Chinese south of the border began to gather specialized knowledge on smuggling (compatriots) into the U.S. These elements, together with the timing of regulation on drugs on the U.S. and weak institutions in Mexico after the revolution, created a 'perfect storm' that explains the reported link between Chinese presence in 1930 and current cartel location. We argue then that the location of Chinese immigration in the early 20th century is largely exogenous to current socioeconomic outcomes (conditional on the large and rich set of controls available), and we exploit its variability at the municipality level as an instrument for cartel presence today. Our results indicate a positive link between cartel presence and better socioeconomic outcomes at the municipality level, such as lower marginalization rates, lower illiteracy rates, higher salaries, and better public services.

These results are in line with anecdotal evidence and consistent with many of the findings of recent works on organized crime. To understand our contribution to this previous literature on consequences of organized crime on multiple dimensions, it is important to keep in mind which is the relevant counterfactual. In our empirical exercises the counterfactual are Mexican municipalities without cartel presence. So it is entirely possible that all municipalities in Mexico are worse off compared to a situation without cartels, even if within Mexico those with cartels are doing relatively better. This aligns with the work by Pinotti (2015) that indicates that organized crime is associated with bad outcomes at the macro level; that is, countries with organized crime perform worse off compared to countries without (or with fewer) organized crime. At the same time, our work is not at odds with the 'career

choice' identified in the works of Sviatschi (2017a; 2017b) that show that exposing children to illegal labor markets and to gang puts children on a criminal path. And we believe the contrasts with the results of Acemoglu *et al.* (2017) are particularly telling, as they point to the differences between various forms of organized crime. On this we can speculate that the nature of the product each organization is selling can explain how it relates to the local community, in the case of mafias being largely redistributive and cartels income increasing. It could also be that drug trafficking organizations, in order to remain out-of-sight of the authorities, need to invest in social capital, motivating them to transfer some of their resources to the local community. In any case, our paper contributes to this body of literature by reporting that drug-related criminal organizations in Mexico are associated with good local outcomes, and helps to understand why drug lords have great support in the local communities in which they operate, and hence cartels are so difficult to fight.

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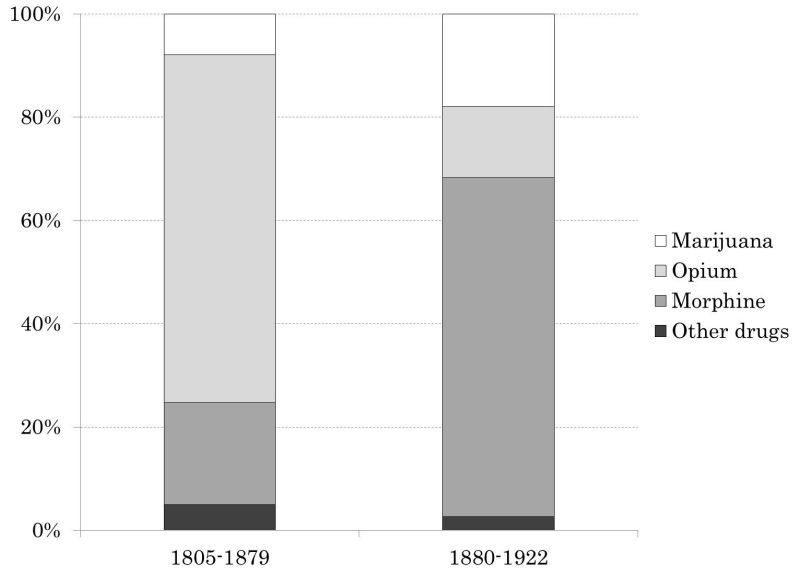
Figure 1. References to non-alcoholic drugs in the press



Notes: Other drugs include references to cocaine, peyote (*lophophora williamsii*) and *toloache* (*datura ferox*, known as 'fierce thornapple' in English). These figures correspond to 'raw hits' of references in media of terms associated with the consumption of these drugs. In The period 1805-1879 there are only 101 mentions of these non-alcoholic drugs (when there are almost 2,000 references to alcohol-related problems), and in the period 1880-1922 these mentions climb to 4243 (alcohol-related references to more than 38,000).

Sources: Campos (2012: 86).

Figure 2. Timeline of illicit drugs regulation in U.S. and Mexico

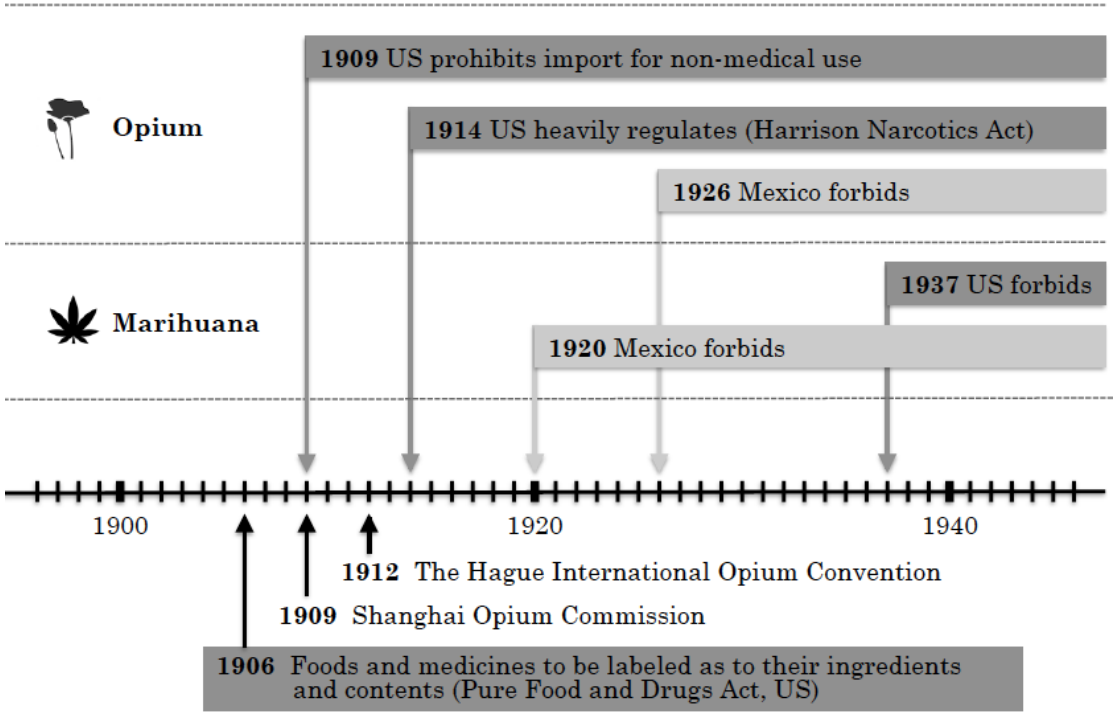
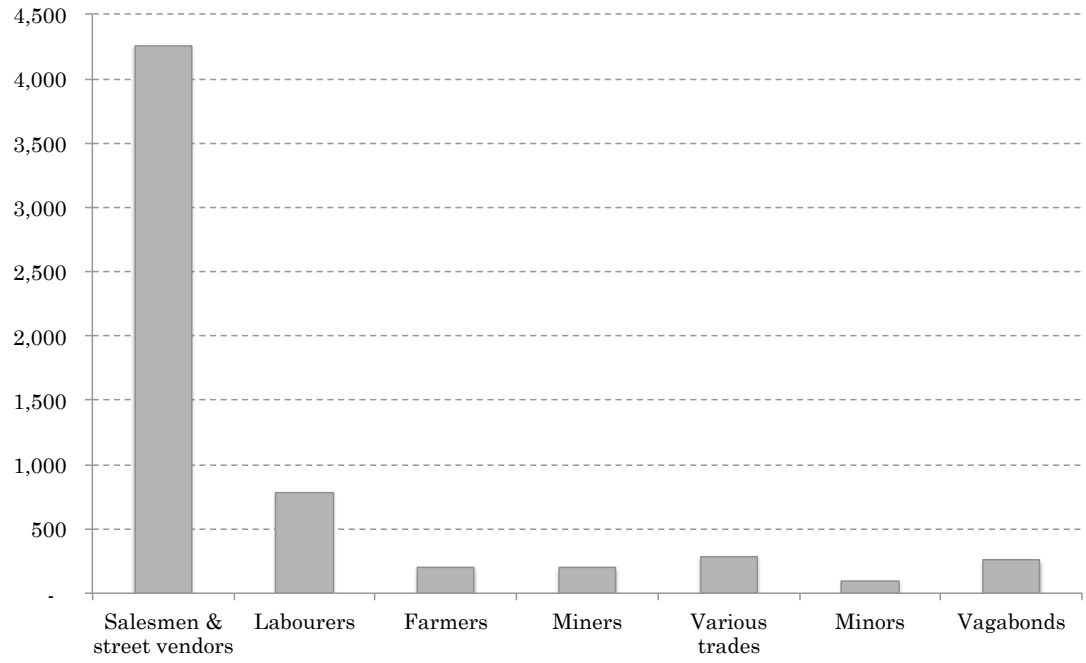
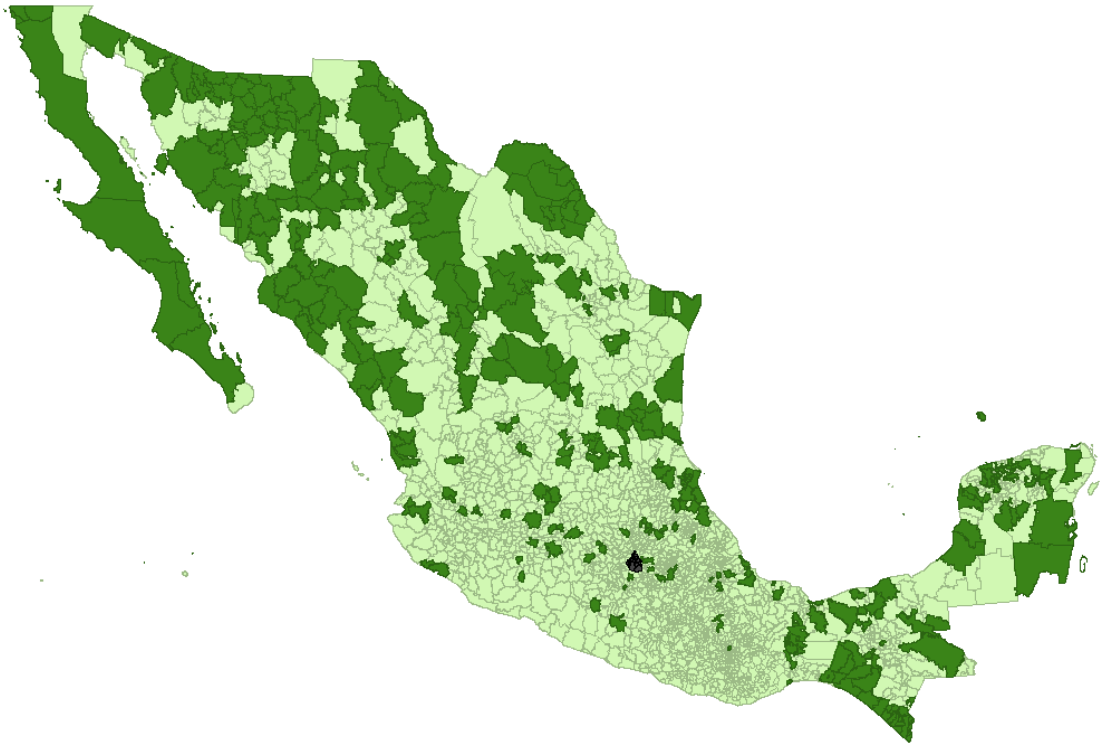


Figure 3. Occupations of Chinese in Sonora, 1919



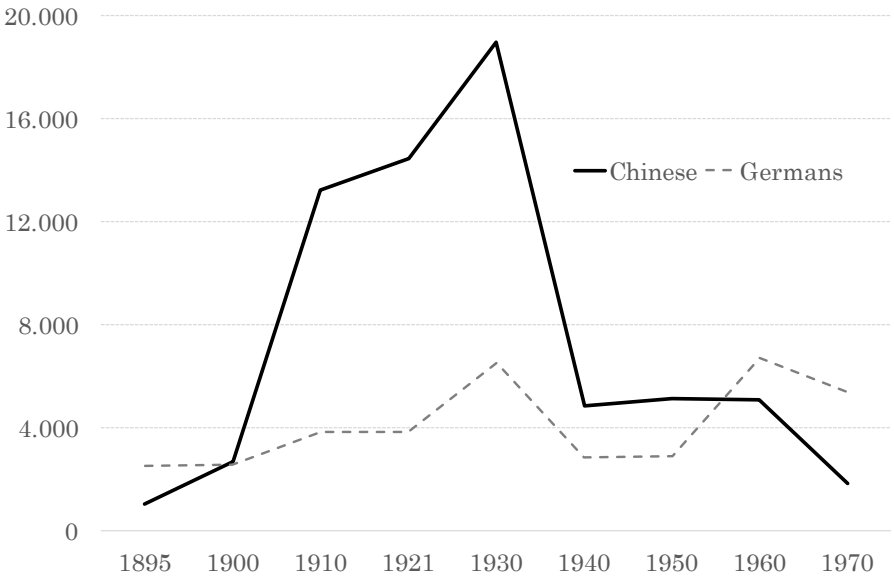
Notes: Various trades include mostly cooks, laundrymen, cobblers, bakers, and tailors, among others.
Sources: Own elaboration, based upon Hu-DeHart (2013: 131).

Figure 4. Chinese Presence in 1930



Notes: Darker colour indicates Chinese presence.
Source: Own elaboration, based upon census data. See text.

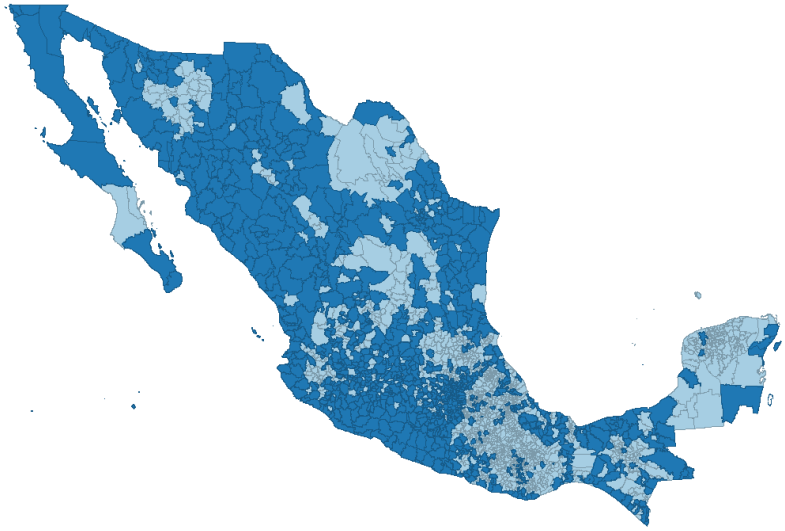
Figure 5. Chinese and German population in Mexico, 1895-1970



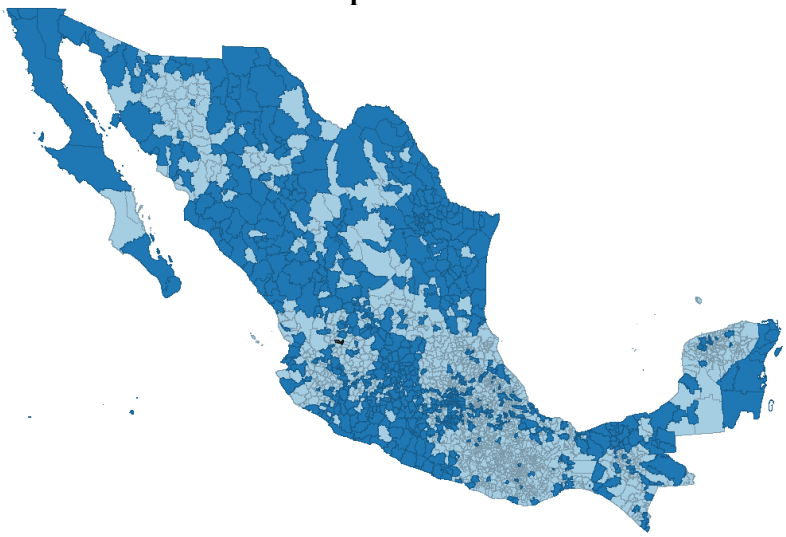
Source: INEGI (2014).

Figure 6. Cartel presence, diverse sources

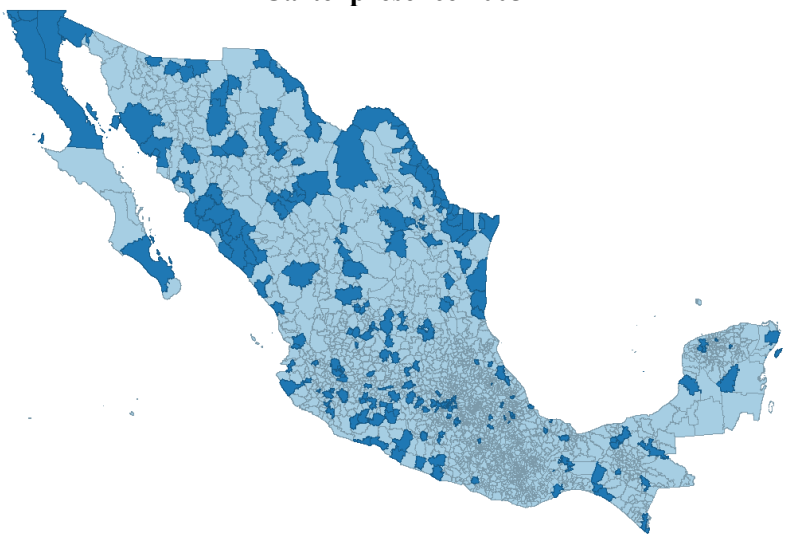
Cartel presence 2006-2010



Cartel presence 2010



Cartel presence 2005



Notes: Darker colour indicates cartel presence.
Source: See text.

Table 1. Summary statistics

	(1) Mean	(2) S.D.	(3) Min.	(4) Max.
Cartel presence (in 2011)	0.42	0.49	0	1
Cartel presence 2006-2010	0.37	0.48	0	1
Cartel presence 2010	0.28	0.45	0	1
Cartel presence 2005	0.09	0.28	0	1
Chinese presence	0.11	0.31	0	1
Marginalization	0	1	-2.22	5.03
Per capita tax revenue	141.83	286.32	0.01	6,480
House theft (in 2015)	45.58	212.46	0	4,758
Car theft (in 2015)	82.69	410.41	0	9,831
Shop theft (in 2015)	34.86	178.29	0	2,806
Controls				
German presence	0.06	0.23	0	1
Poppy suitability	0.09	0.28	0	1
Distance to U.S. (km)	745.11	259.57	6.68	1,350
Distance to Mexico City (km)	456.69	376.08	0	2,282
Distance to closest port	958.50	264.22	0	1,336
Head of state	0.01	0.01	0	1
Population in 2015 (in 000)	45.32	129.18	0.087	1,677
Surface (000 km^2)	0.80	2.11	0.002	53.26
Density	295.99	1206.26	0.14	16,999
Minimum altitude (meters)	1,011	801	-202	2,691
Maximum altitude (meters)	1,970	983	8.00	5,469
Average temperature (Celsius)	19.79	4.04	10.49	29.08
Maximum temperature (Celsius)	30.69	3.94	19.92	39.93
Minimum temperature (Celsius)	8.26	5.19	-5.58	21.38
Average precipitation (mm)	89.58	50.72	6.45	338.36
Local population growth (1920-30)	0.22	1.64	-1	54
Population in 1930 (in 000)	2,639	7,408	0	179.34

Notes: All data is at the municipality level. Cartel presence takes the value 1 if there is cartel presence in 2011; Cartel presence 2006-2010 takes the value 1 if the total number of drug-related murders in the period December 2006 to December 2010 is greater than 0; Cartel presence 2010 and Cartel presence 2005 are binary variables based on web searches; Chinese presence takes the value 1 if Chinese population in 1930 is greater than 1; German presence takes the value 1 if German population in 1930 is greater than 1; Local population growth corresponds to growth in the population in the period 1920 to 1930 in the town that is the head of the municipality today; Head of state is a dummy that takes the value 1 for those municipalities that host the head of state town; Population in 1930 corresponds to the town that is the head of the municipality today; Marginalization is the marginalization index in 2015. Laakso and Taagepera index and Molinar index are from the 2015 election. Per capita tax revenue is for the period 2012-2014. Poppy suitability takes the value of 1 for those municipalities that have climate parameters in the range that FAO considers optimal for poppy (*papaver somniferum*) cultivation. All distances (in Km) are from the centroid of the municipality.

Table 2. Chinese presence in 1930 and covariates

	Dependent variable: Chinese presence		
	(1)	(2)	(3)
German presence	0.4306***	0.3804***	0.3279***
	(0.0444)	(0.0460)	(0.0416)
Poppy suitability		0.0446	0.0336
		(0.0287)	(0.0255)
Minimum altitude		0.0001*	0.0001**
		(0.0000)	(0.0000)
Maximum altitude		0.0000	0.0000
		(0.0000)	(0.0000)
Average temperature		0.0214	0.0362
		(0.0367)	(0.0358)
Maximum temperature		-0.0148	-0.0206
		(0.0197)	(0.0191)
Minimum temperature		0.0068	0.0033
		(0.0134)	(0.0135)
Average precipitation		0.0001	0.0002
		(0.0002)	(0.0003)
Surface		0.0085*	0.0141***
		(0.0043)	(0.0033)
Population in 2015		0.0002**	
		(0.0001)	
Population density		0.0000	0.0000
		(0.0000)	(0.0000)
Distance to U.S.		-0.0002	-0.0003
		(0.0002)	(0.0002)
Distance to Mexico City		0.0006***	0.0006***
		(0.0002)	(0.0002)
Distance to closest port		0.0005*	0.0004*
		(0.0003)	(0.0002)
Head of state		0.0563	-0.1110
		(0.0951)	(0.1114)
Local population growth			0.0009
			(0.0021)
Population in 1930			0.0077***
			(0.0018)
State dummies	Yes	Yes	Yes
Observations	2,440	2,439	2,160

Notes: Standard errors clustered at the state level are shown in parentheses. All models are estimated using Ordinary Least Squares. *Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 3. Components of the marginalization index

	(1) Mean	(2) S.D.	(3) Min.	(4) Max.
Illiteracy	11.75	8.60	0.67	56.42
Without primary	29.27	11.91	2.49	71.24
Without toilet	4.43	7.14	0	70.57
Without electricity	2.21	3.59	0	57.96
Without water	8.73	11.56	0	98.88
Overcrowding	36.27	11.36	7.28	78.46
Earthen floor	8.31	8.91	0	68.49
Small localities	71.98	34.69	0	100
Low salary	55.43	17.03	8.25	94.12

Notes: All data is at the municipality level. Illiteracy is the percentage of illiterate at age 15; Without primary is percentage of population at age 15 without primary school; Without toilet is percentage of population without toilet; Without electricity is percentage of population without access to electricity network; Without water is percentage of population without access to water network; Overcrowding is percentage of households with some level of overcrowding; Earthen floor is percentage of occupants in dwellings with an earthen floor; Small localities is percentage of population in localities with less than 5,000 inhabitants; Low salary is the percentage of labor force earning less than 2 minimum salaries.

Table 4. First stage: Chinese presence in 1930 and cartel presence

	Dependent variable: Cartel presence				
	(1)	(2)	(3)	(4)	(5)
Chinese presence	0.1870***	0.1114***	0.1123***	0.1121***	0.1051**
	(0.0487)	(0.0361)	(0.0387)	(0.0366)	(0.0385)
German presence		0.0461	0.0394	0.0498	0.0724
		(0.0508)	(0.0547)	(0.0522)	(0.0548)
Poppy suitability		0.0028	0.0014	0.0006	0.0082
		(0.0397)	(0.0400)	(0.0405)	(0.0418)
Minimum altitude		0.0000	0.0000	0.0000	0.0000
		(0.0000)	(0.0000)	(0.0000)	(0.0000)
Maximum altitude		0.0000	0.0000	0.0000	0.0000
		(0.0000)	(0.0000)	(0.0000)	(0.0000)
Average temperature		0.0656	0.1020	0.0666	0.0605
		(0.0605)	(0.0650)	(0.0609)	(0.0615)
Maximum temperature		-0.0331	-0.0509	-0.0333	-0.0300
		(0.0325)	(0.0349)	(0.0329)	(0.0325)
Minimum temperature		-0.0193	-0.0361	-0.0205	-0.0141
		(0.0275)	(0.0313)	(0.0276)	(0.0281)
Average precipitation		0.0001	0.0001	0.0001	0.0003
		(0.0003)	(0.0003)	(0.0003)	(0.0003)
Surface		0.0110*	0.0208**	0.0111*	0.0158*
		(0.0057)	(0.0085)	(0.0057)	(0.0091)
Population density		0.0000*	0.0000	0.0000*	0.0001***
		(0.0000)	(0.0000)	(0.0000)	(0.0000)
Population in 2015		0.0004***	0.0005***	0.0004***	
		(0.0001)	(0.0001)	(0.0001)	
Distance to U.S.		0.0002	0.0002	0.0002	0.0001
		(0.0002)	(0.0002)	(0.0002)	(0.0002)
Distance to Mexico City		0.0002	-0.0000	0.0002	0.0002
		(0.0001)	(0.0002)	(0.0001)	(0.0001)
Distance to closest port		0.0002	-0.0000	0.0002	0.0003
		(0.0002)	(0.0002)	(0.0002)	(0.0002)
Head of state		-0.0522	-0.1221	-0.0531	0.0092
		(0.0666)	(0.0728)	(0.0683)	(0.0683)
Local population growth					0.0025
					(0.0022)
Population in 1930					0.0033**
					(0.0015)
State dummies	Yes	Yes	Yes	Yes	Yes
Observations	2,440	2,439	2,368	2,421	2,160

Notes: Standard errors clustered at the state level are shown in parentheses. All models are estimated using Ordinary Least Squares. Column (3) excludes municipalities located within 100km from U.S. border. Column (4) excludes municipalities located in the state of Sinaloa. *Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 5. Robustness check: Neighbor-pair fixed effects estimates

	Dependent variable: Cartel presence				
	(1)	(2)	(3)	(4)	(5)
Chinese presence	0.1481**	0.0760**	0.0800**	0.0768*	0.0719**
	(0.0548)	(0.0348)	(0.0384)	(0.0382)	(0.0333)
Neighbor-pair dummies	Yes	Yes	Yes	Yes	Yes
State dummies	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	Yes	Yes	Yes
Observations	2,302	2,300	2,205	2,164	2,047

Notes: Standard errors clustered at the state level are shown in parentheses. All models are estimated using Ordinary Least Squares. The set of controls includes German presence (adjusted in order to being defined in the same way as Chinese presence), Poppy suitability, Minimum altitude, Maximum altitude, Average temperature, Maximum temperature, Minimum temperature, Average precipitation, Surface, Population, Population density, Distance to U.S., Distance to Mexico City, Distance to closest port, and Head of state. Column (3) excludes municipalities located more than 100km from U.S. border. Column (4) excludes municipalities located in the state of Sinaloa. *Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 6. Robustness check: alternative definitions for Chinese presence

	Dependent variable: Cartel presence			
	(1)	(2)	(3)	(4)
Chinese presence	0.1273***	0.1360***	0.1022	0.0876*
	(0.0408)	(0.0480)	(0.0632)	(0.0451)
State dummies	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Observations	2,439	2,439	2,439	2,439

Notes: Standard errors clustered at the state level are shown in parentheses. All models are estimated using Ordinary Least Squares. The set of controls includes German presence (adjusted in order to being defined in the same way as Chinese presence), Poppy suitability, Minimum altitude, Maximum altitude, Average temperature, Maximum temperature, Minimum temperature, Average precipitation, Surface, Population, Population density, Distance to U.S., Distance to Mexico City, Distance to closest port, and Head of state. In column (1) Chinese presence is defined as Chinese population in 1930 being greater than 0; in Column (2) as being greater than 5; in Column (3) as being greater than 10; in Column (4) as being greater than 15. *Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 7. Robustness check: alternative definitions for cartel presence

	Cartel presence 2006-2010		Cartel presence 2010		Cartel presence 2005	
	(1)	(2)	(3)	(4)	(5)	(6)
Chinese presence	0.2252***	0.1086**	0.2250***	0.1072**	0.1388***	0.0517
	(0.0451)	(0.0399)	(0.0376)	(0.0406)	(0.0269)	(0.0362)
State dummies	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	No	Yes	No	Yes
Observations	2,440	2,439	2,439	2,438	2,440	2,439

Notes: Standard errors clustered at the state level are shown in parentheses. All models are estimated using Ordinary Least Squares. The set of controls includes German presence, Poppy suitability, Minimum altitude, Maximum altitude, Average temperature, Maximum temperature, Minimum temperature, Average precipitation, Surface, Population, Population density, Distance to U.S., Distance to Mexico City, Distance to closest port, and Head of state. *Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 8. Placebo regressions: Chinese presence and other (non-drug related) crimes

	Dependent variable: House theft (1)	Dependent variable: Car theft (2)	Dependent variable: Shop theft (3)
Chinese presence	-2.8647	-43.2987*	-2.2000
	(12.6627)	(24.5363)	(9.8869)
State dummies	Yes	Yes	Yes
Controls	Yes	Yes	Yes
Observations	1,876	1,876	1,876

Notes: Standard errors clustered at the state level are shown in parentheses. All models are estimated using Ordinary Least Squares. The set of controls includes German presence, Poppy suitability, Minimum altitude, Maximum altitude, Average temperature, Maximum temperature, Minimum temperature, Average precipitation, Surface, Population, Population density, Distance to U.S., Distance to Mexico City, Distance to closest port, and Head of state. *Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 9. Chinese presence in U.S. counties and current socioeconomic outcomes

	(1) Poverty	(2) Poverty (<17 years old)	(3) Unem-ployment	(4) Poverty	(5) Poverty (<17 years old)	(6) Unem-ployment
Chinese presence	0.1814	0.1458	0.3939**	0.6437*	-0.2248	-0.0611
	(1.3583)	(1.6316)	(0.0973)	(0.3782)	(0.5815)	(0.0807)
State dummies	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Mean of dependent variable	17.2583	25.0667	5.6989	15.9293	22.4180	5.2377
Observations	360	360	360	3,139	3,139	3,139

Notes: Standard errors clustered at the state level are shown in parentheses. All models are estimated using Ordinary Least Squares. The set of controls includes Surface, Population, and Population density. Poverty, Poverty for population under 17 years old, and unemployment are in percentage. All outcomes correspond to 2016. Columns (1) to (3) use U.S. counties from states that border Mexico. Columns (4) to (6) use all U.S. counties. *Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 10. IV estimates: cartel presence and marginalization

	Dependent variable: Marginalization				
	(1)	(2)	(3)	(4)	(5)
Cartel presence	-2.7232***	-2.1236***	-2.2834**	-2.1975***	-2.2990**
	(0.7457)	(0.7624)	(0.8536)	(0.7823)	(0.9537)
F-test	14.72	9.55	8.40	9.38	7.64
State dummies	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	Yes	Yes	Yes
Observations	2,440	2,439	2,368	2,421	2,160

Notes: Standard errors clustered at the state level are shown in parentheses. All models are estimated using Two Stages Least Squares. Cartel presence is instrumented using Chinese presence. F-test is the F-test of excluded instruments. In Columns (2) to (4) the set of controls includes German presence, Poppy suitability, Minimum altitude, Maximum altitude, Average temperature, Maximum temperature, Minimum temperature, Average precipitation, Surface, Population, Density, Distance to U.S., Distance to Mexico City, Distance to closest port, and Head of state. Column (5) further controls for Local population growth and Population in 1930 (instead of Population in 2015). Column (3) excludes municipalities located more than 100km from U.S. border. Column (4) excludes municipalities located in the state of Sinaloa. *Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 11. Cartel presence and marginalization components

	Illiteracy	Without primary	Without toilet	Without electricity	Without water	Overcrowding	Earthen floor	Small localities	Low salary
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Cartel presence	-17.0822***	-26.9536**	-6.4289	-6.9269*	-1.6086	-21.6924***	-8.9558*	-81.8697**	-10.4426
	(6.0239)	(10.4827)	(4.3895)	(3.4222)	(7.2001)	(6.6551)	(4.9329)	(35.6494)	(11.9201)
State dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,439	2,439	2,439	2,439	2,439	2,439	2,439	2,439	2,439

Notes: Standard errors clustered at the state level are shown in parentheses. All models are estimated using Two Stages Least Squares. Cartel presence is instrumented using Chinese presence. The set of controls includes German presence, Poppy suitability, Minimum altitude, Maximum altitude, Average temperature, Maximum temperature, Minimum temperature, Average precipitation, Surface, Population, Population density, Distance to U.S., Distance to Mexico City, Distance to closest port, and Head of state. *Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 12. Robustness check: alternative definitions for Chinese presence

	Dependent variable: Marginalization			
	(1)	(2)	(3)	(4)
Cartel presence	-1.5393***	-2.5261***	-4.6561*	-6.0568*
	(0.4585)	(0.7218)	(2.6671)	(3.0184)
State dummies	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Observations	2,439	2,439	2,439	2,439

Notes: Standard errors clustered at the state level are shown in parentheses. All models are estimated using Two Stages Least Squares. Cartel presence is instrumented using Chinese presence. The set of controls includes German presence (adjusted in order to being defined in the same way as Chinese presence), Poppy suitability, Minimum altitude, Maximum altitude, Average temperature, Maximum temperature, Minimum temperature, Average precipitation, Surface, Population, Population density, Distance to U.S., Distance to Mexico City, Distance to closest port, and Head of state. In Column (1) Chinese presence is defined as Chinese population in 1930 being greater than 0; in Column (2) as being greater than 5; in Column (3) as being greater than 10; in Column (4) as being greater than 15. *Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 13. Robustness check: alternative definitions for cartel presence

	Dependent variable: Marginalization		
	(1)	(2)	(3)
Cartel presence 2006-2010	-2.1782***		
	(0.7087)		
Cartel presence 2010		-2.2063**	
		(0.9002)	
Cartel presence 2005			-4.5779
			(3.0195)
State dummies	Yes	Yes	Yes
Controls	Yes	Yes	Yes
Observations	2,439	2,438	2,439

Notes: Standard errors clustered at the state level are shown in parentheses. All models are estimated using Two Stages Least Squares. In all cases Cartel presence is instrumented using Chinese presence. The set of controls includes German presence, Poppy suitability, Minimum altitude, Maximum altitude, Average temperature, Maximum temperature, Minimum temperature, Average precipitation, Surface, Population, Population density, Distance to U.S., Distance to Mexico City, Distance to closest port, and Head of state. *Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table 14. Further results: cartel presence and tax revenue

	Dependent variable: ln(Per capita tax revenue)	
	(1)	(2)
Cartel presence	3.2391***	2.6981**
	(0.7299)	(1.1830)
State dummies	Yes	Yes
Controls	No	Yes
Observations	2,262	2,261

Notes: Standard errors clustered at the state level are shown in parentheses. All models are estimated using Two Stages Least Squares. Cartel presence is instrumented using Chinese presence. The set of controls includes German presence, Poppy suitability, Minimum altitude, Maximum altitude, Average temperature, Maximum temperature, Minimum temperature, Average precipitation, Surface, Population, Population density, Distance to U.S., Distance to Mexico City, Distance to closest port, and Head of state. *Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table A1. Pairwise correlation among cartel measures

	Cartel presence 2010	Cartel presence 2005	Cartel presence 2006-2010	Cartel presence
Cartel presence 2010	1			
Cartel presence 2005	0.48	1		
Cartel presence 2006-2010	0.13	0.19	1	
Cartel presence	0.53	0.29	0.11	1

Table A2. Balance checks: Chinese presence in 1930 and covariates

	Chinese presence
	(1)
German presence	0.4306***
	(0.0444)
Poppy suitability	0.0099
	(0.0286)
Minimum altitude	-0.0000
	(0.0000)
Maximum altitude	-0.0000
	(0.0000)
Average temperature	0.0064
	(0.0040)
Maximum temperature	0.0058
	(0.0035)
Minimum temperature	0.0057
	(0.0035)
Average precipitation	-0.0000
	(0.0002)
Surface	0.0184**
	(0.0067)
Population 2015	0.0004***
	(0.0001)
density	0.0000
	(0.0000)
Distance to US	-0.0002
	(0.0002)
Distance to Mexico City	0.0005***
	(0.0001)
Distance to closest port	0.0004
	(0.0003)
State Capital	0.3233***
	(0.1043)
Local population growth	0.0027
	(0.0040)
Population 1930	0.0106***
	(0.0019)

Notes: Each line corresponds to the coefficient of the regression between Chinese presence and each covariate separately. Standard errors clustered at the state level are shown in parentheses. State dummies are included. *Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table A3. OLS estimates: cartel presence and marginalization

	Dependent variable: Marginalization				
	(1)	(2)	(3)	(4)	(5)
Cartel presence	-0.4890***	-0.3556***	-0.3543***	-0.3553***	-0.3241***
	(0.0884)	(0.0571)	(0.0546)	(0.0569)	(0.0512)
State dummies	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	Yes	Yes	Yes
Observations	2,440	2,439	2,368	2,421	2,160

Notes: Standard errors clustered at the state level are shown in parentheses. All models are estimated using Ordinary Least Squares. In Columns (2) to (4) the set of controls includes German presence, Poppy suitability, Minimum altitude, Maximum altitude, Average temperature, Maximum temperature, Minimum temperature, Average precipitation, Surface, Population, Density, Distance to U.S., Distance to Mexico City, Distance to closest port, and Head of state. Column (5) further controls for Local population growth and Population in 1930 (instead of Population in 2015). Column (3) excludes municipalities located more than 100km from U.S. border. Column (4) excludes municipalities located in the state of Sinaloa. *Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table A4. Reduced form estimates: cartel presence and marginalization

	Dependent variable: Marginalization				
	(1)	(2)	(3)	(4)	(5)
Cartel presence	-0.5092***	-0.2414***	-0.2591***	-0.2500***	-0.2485***
	(0.0789)	(0.0651)	(0.0671)	(0.0659)	(0.0664)
State dummies	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	Yes	Yes	Yes
Observations	2,440	2,439	2,368	2,421	2,160

Notes: Standard errors clustered at the state level are shown in parentheses. All models are estimated using Ordinary Least Squares. In Columns (2) to (4) the set of controls includes German presence, Poppy suitability, Minimum altitude, Maximum altitude, Average temperature, Maximum temperature, Minimum temperature, Average precipitation, Surface, Population, Density, Distance to U.S., Distance to Mexico City, Distance to closest port, and Head of state. Column (5) further controls for Local population growth and Population in 1930 (instead of Population in 2015). Column (3) excludes municipalities located more than 100km from U.S. border. Column (4) excludes municipalities located in the state of Sinaloa. *Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.

Table A5. Municipalities with German migration

	(1)	(2)	(3)	(4)
	Dependent variable: Cartel presence		Dependent variable: Marginalization	
Cartel presence			-2.6331***	-3.3060*
			(0.7527)	(1.7154)
Chinese presence	0.2913***	0.1334*		
	(0.0964)	(0.0774)		
State dummies	Yes	Yes	Yes	Yes
Controls	No	Yes	No	Yes
Observations	142	142	142	142

Notes: Standard errors clustered at the state level are shown in parentheses. Models in columns (1) and (2) are estimated using OLS, and models in columns (3) and (4) are estimated using Two Stages Least Squares (Cartel presence is instrumented using Chinese presence). The set of controls includes German presence, Poppy suitability, Minimum altitude, Maximum altitude, Average temperature, Maximum temperature, Minimum temperature, Average precipitation, Surface, Population, Population density, Distance to U.S., Distance to Mexico City, Distance to closest port, and Head of state. *Significant at the 10% level. **Significant at the 5% level. ***Significant at the 1% level.