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Illegal Drugs and Public Corruption: Crack Based Evidence from California*

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Abstract

Do illegal drugs foster public corruption? To estimate the causal effect of drugs on public corruption, we adopt the synthetic control method and exploit the fact that crack cocaine markets emerged in California in 1981, before reaching any other U.S. state. Our results show that public corruption more than tripled in California in the first three years following the arrival of crack cocaine. We argue that this resulted from the particular characteristics of illegal drugs: cheap technology and rigid demand, which fosters a convergence of interests between criminals and corrupted public officials resulting in a positive causal impact of illegal drugs on corruption.

Keywords: Public corruption, crack cocaine, synthetic control, illegal drugs, law enforcement, difference in difference, and organized crime.

JEL Classifications: C12, D73, K42.

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1 Introduction

It has been suggested that the arrival of crack cocaine to the United States in the 1980s was responsible for the significant increase in drug related deaths and crime rates in low-income and inner-city neighborhoods—see, for instance, [Chitwood et al. \(1996\)](#), [Bourgois \(2003\)](#), and [Fryer et al. \(2013\)](#)—not to mention the widening black-white education gap, see [Evans et al. \(2016\)](#). But can drug markets initiate a vicious cycle that results in more corruption of public officials and thus pose a further important problem for society?

We argue that illegal good profits, public corruption and law enforcement co-evolve. More specifically, focusing in this paper on illegal drugs, it is clear that inexpensive technology and rigid demand can lead to substantial drugs profits. But given that drug dealing is illegal, dealers need for instance to bribe public officials in order to create an environment of weak law enforcement to be able to carry out their activity. This suggests that if a new drug market emerges in a particular state and the profits of that drug are substantial, there is an incentive for dealers to devote resources to corrupting officials, and as result corruption in that state should increase too.¹

We test our hypothesis that illegal drugs foster public corruption using data on crack cocaine and public corruption from U.S. states between 1976 and 1985. We select crack cocaine because of three main reasons. Firstly, given that it is more cost effective to produce and easier to develop (as compared to say cocaine), it is highly profitable for drug sellers and street gangs; see, for instance, [Jacobs \(1999\)](#), [DEA \(1991\)](#), and [Bourgois \(2003\)](#).² Secondly, it is relatively cheap and a highly addictive substance, with a short lasting but instantaneous and intense high, giving the drug a large potential consumer base and creating a rigid demand ([Chitwood et al. 1996](#) and [Bourgois 2003](#)). Not only is it consumed all over the world, but it ranks second in terms of recreational drugs consumption after cannabis ([Karila et al. 2014](#)). Finally, and most importantly, crack cocaine is key for our identification strategy, allowing us to exploit the lag in its initial arrival to each U.S. state and utilize the synthetic control method (SCM) to estimate its causal effect on public corruption. This is precisely why we are interested in California, as crack cocaine arrived here in 1981, before reaching any other state. Not to mention that cocaine usage in California is substantially higher than the

¹This implies the following process: profits increase corruption, corruption in turn decreases law enforcement, which increases profits. Such a process clearly shows that profits, corruption and law enforcement are endogenous. Therefore, while OLS estimates are biased, the synthetic control (SCM) method employed in this paper is ideal for our application.

²See also [Levitt and Venkatesh \(2000\)](#) for the financial activities of a particular street gang in Chicago and for an indication of the profitability of the crack cocaine organization. They show that the central gang leadership as well as the local leaders made substantial net profits; although note that these profits are most likely understated.

average state in America; in fact Los Angeles is considered the world's largest retail market for cocaine and the epicenter of the U.S. crack economy (see, for instance, [Murch 2015](#)). Nevertheless, the basic relationship tested here does not depend specifically on crack but is equally applicable to any other recreational drug (which is highly profitability and has a rigid demand), such as crystal meth; consumption of which has (once again) lead to a "meth crisis" in the United States.

The contribution of our work thus lies in showing the existence of a positive causal effect of drug markets on public corruption in advanced democracies such as the United States, arguing that an important determinant of corruption is the combination of cheap technology and rigid demand associated with illegal recreational drugs. We unveil this relationship applying a recently developed econometrics approach, i.e. the synthetic control method (SCM), to estimate if and to what extent the crack market fostered public corruption in California. Our results show that public corruption more than tripled in California in the first three years following the arrival of crack cocaine, with this result being robust to alternative SCM weighting and corroborated by the placebo studies. We also illustrate the robustness of our results by making use of the dynamic difference-in-difference method, a complementary approach to the SCM, which allows us to exploit the variation over time for all of the U.S. states.

We are not the first ones to emphasize the link between organized crime and corruption. For instance, [Europol \(2017\)](#) reports that organized crime groups in Europe (particularly those involved in drug trafficking) heavily rely on corruption for the smooth running of their activities. This is also explained in a report by the [Australian Crime Commission \(2015\)](#): "*the large profits available in Australia's illicit drug markets are a strong motivator for organized crime groups to develop the capability to corrupt in order to facilitate access to those markets*". [Transparency International \(2011\)](#) provides further evidence that while organized crime feeds corruption, corruption also feeds organized crime. Transnational trafficking of drugs, for example, relies on smuggling and on avoiding investigation; both are directly enabled by corruption. Interestingly, [UNODC \(2017\)](#) dedicates a whole booklet on the topic of the drug problem, organized crime and corruption, arguing that the rise of an illicit economy helps to weaken the rule of law and facilitates corruption, which in turn reinforces the illicit drug sector.³ However, while all of these institutions report that drug markets and corruption are related, they do not investigate this link quantitatively (most likely due to the availability of the data), but instead call for more systematic research to understand the impact of drugs on corruption.

³See also [Gounev and Bezlov \(2010\)](#) who study organized crime groups' use of corruption and argue that illegal drugs markets and prostitution exert the most corruptive effect in the European Union.

To the best of our knowledge, this is the first study to systematically examine the causal relationship between drugs and public corruption, and we believe that our findings contribute to the current public debate on the design of anti-corruption policies. Indeed, we share the view that public corruption is a key problem in society and, as argued by the former International Monetary Fund Managing Director Christine Lagarde recently, makes it difficult (if not impossible) to achieve sustainable, balanced and inclusive economic growth.⁴ Thus, establishing the causal effect of drug markets on corruption is important because it signals that a strategy to combat corruption should be integrated with a strategy to combat drugs markets too.

The rest of the paper is organized as follows. Section 2 discusses some of crack’s characteristics while Section 3 presents some anecdotal evidence on various forms of drug-related public corruption that clarifies why one can *a priori* expect that illegal drugs cause corruption. Section 4 describes the SCM methodology and the dataset used in this paper. Section 5 investigates whether there is a relationship between alternative measures of public corruption and crack cocaine, then finding extensive evidence showing a positive correlation between these variables, it investigates the existence of a causal impact of crack on public corruption. Finally, Section 6 offers some concluding remarks.

2 Characteristics of Crack Cocaine

Crack cocaine is a potent smoked version of cocaine. It is easily produced by making a solution of baking soda, water, and cocaine powder. Arguably, it was the commercial answer to a cocaine glut problem in the United States, after the rise of the cartels in Colombia in the early 1980s, which caused cocaine prices to plunge (by as much as 80%). There are various reasons for why it did not take long before crack usage became widespread in the U.S., so much so that it led to the American crack epidemic. To start with, crack was more addictive than cocaine due to its ability to produce a quicker but shorter and more intense high. Thus making the occasional or intermittent use of crack much harder than cocaine; between 1982 and 1985, the number of crack cocaine users increased by 1.6 million people (Turner 2017). This feature is important as it determines a rigid demand (Crane and Rivolo 1997), and thus affects profits.

Crack was also easier to develop and more cost efficient to produce. Indeed, crack’s costs for production, transportation and sale are negligible without law enforcement. It is well known, in fact, that the value added of cocaine exponentially increases from coca leaves and cocaine powder in the production countries, to cocaine powder in each of the intermediate

⁴For more details see: <https://blogs.imf.org/2017/12/08/corruption-disruption/>

steps before end users. For example, as indicated by [Stewart \(2016\)](#), a kilogram of cocaine powder is priced at \$2,200 in the jungles in Colombia's interior, between \$5,500 and \$7,000 at Colombian ports, \$10,000 in Central America, \$12,000 in southern Mexico, \$16,000 in the border towns of northern Mexico, and finally between \$24,000 and \$27,000 wholesale in the United States.

Perhaps more striking, [Levitt and Venkatesh \(2000\)](#), based on data gathered over four years from a street gang in Chicago, argue that one kilogram of pure cocaine converted to crack would have a street value of between \$100,000 and \$150,000 (in 1995 dollars). The fact that crack was easier to develop and more cost efficient to produce contributed to making it substantially cheaper, and when introduced, purer than cocaine ([DEA \(1991\)](#)). Indeed, during 1984 to 1987 crack was sold for as little as \$10 per vial; see, for instance, [Hamid \(1992\)](#).⁵ Given that it could be bought in smaller quantities (up to one hit at a time), it was more affordable than cocaine and therefore could be distributed to more people. Finally, unlike cocaine, crack took root in low-income and inner-city neighbourhoods, thus reaching a larger consumer base than cocaine.

All of these characteristics led to a fast-growing new market somewhat parallel to cocaine powder, and to a sharp increase of overall profits. [Furillo \(1984\)](#) offers a snapshot of how lucrative this business was by reporting that an 18-year-old high school student made up to \$70,000 a week selling crack; according to the police, the student was one of hundreds, perhaps thousands, of young men, usually belonging to gangs, getting rich off the hardened cocaine called rocks that swept through some communities in Los Angeles. The rapidly expanding crack market also generated a new efficient retailing technique: rock houses, which were fortified single-family homes or apartments for the sale and use of large volumes of crack. Highly spread in the inner-city neighbourhoods and going in and out of business almost daily, rock houses generated between \$5,000 and \$25,000 sales in a day, with the busiest days when welfare or social security checks went out, or Fridays when most people got their paychecks. Such a scale of profits is even more impressive considering that street retailing is only the last and, arguably, not the most lucrative segment in drug trafficking.

Note that interestingly the emergence of crack markets, as determined by cocaine-related deaths associated with crack (see [Section 4](#) for more details), was state specific in the sense that it arrived to each state at a different point in time and in many cases several years

⁵A vial is a small capsule that contains pebble-size pieces of crack. As to the variation of the vial costs in the 1980s see [Hamid \(1992\)](#) who reports that on the market one could buy the "nickel vial" at \$5 or "dimes" and "twenties" (\$10 and \$20 vials, respectively), but bargains were offered too in many neighborhoods, e.g. two \$5 vials for \$9, or 'nickels' were broken down into bits selling for as little as 50 cents. Thus, as noted by [Hamid \(1992\)](#), "crack was packaged and priced to meet the widest variety of demand and to make instant consumption easy".

apart. This specificity of crack together with its characteristics, namely a new market for a highly addictive and profitable drug, offers an opportunity to test the impact of illegal drugs on corruption.

3 Crack and Public Corruption: Anecdotal Evidence

Drug-related public corruption can take a number of forms, here we look at some well-known anecdotal evidence from the United States at both the retail and the wholesale stages. This evidence helps to clarify why one should *a priori* expect corruption to increase after the arrival of crack cocaine in a state. A very informative document about the corruption of police officers is the Mollen Commission Report (Mollen 1994). While the focus of this in-depth investigation was limited to the police corruption in the New York City Police Department (NYPD), the overall findings have been matched by other studies at the national level (although relying on less fine-grained and abundant information); see, for instance, Stinson Sr et al. (2013) and Carter (1990). The Mollen Commission uncovers that most serious police corruption arises from the drug trade, or in its own words: "*the explosion of the cocaine and crack trade in the mid-1980s fuelled the opportunities for corruption by flooding certain neighborhoods with drugs and cash, and created opportunities for cops and criminals to profit from each other...Today's narcotics corruption involves not only cops stealing from dealers, but cops using their authority to permit dealers and narcotics enterprises to operate freely and flourish on the streets of our City. Even worse: today's corruption involves officers using their police powers to actively assist, facilitate and strengthen the drug trade*"; see page 27 of Mollen (1994).

The Mollen (1994) Commission also documents the various ways in which police officers profit from the narcotics trade by interacting with criminals (see page 221), and discovered that the primary forms of narcotics-related corruption all fostered the drug trade; for example, in one precinct two NYPD officers (whose paychecks were \$400 per week) were paid \$4,000 a week for the protection of drug organizations in their precinct.

As discussed above, the introduction of crack cocaine meant that some low-income and inner-city neighborhoods were flooded with drugs and led to substantial profits for the drug dealers; the rock houses described in Section 2 provide strong evidence for this. Although it is clear that such circumstances fuelled the opportunities for corruption of police officers operating in particular precincts, one wonders why institutional anti-corruption strategies failed to stop a phenomenon that was judged systemic. In this respect, the Mollen Commission finds that the system designed to protect the police department from corruption also minimized the likelihood of uncovering it (see pages 15–16). Moreover, Mollen (1994) gives

a number of examples of how supervisors and commanding officers (as well as those higher up in the chain of command) routinely denied the resources needed to investigate corruption cases, prematurely closed down and fragmented internal investigations, systematically placed undercover Internal Affairs officers in precincts where corruption was least prevalent, and ignored reliable information from field associates.

Looking at the drug trade from retailing to wholesale, it is clear that the former features a decentralized setting with many drug-related, generally low-profile, criminals, whereas the latter features a more centralized setting with fewer but more powerful bosses. Not surprisingly, then, handled drugs per criminal increases from retailing to wholesale which suggests the hypothesis that even larger opportunities for corruption of public officials at the wholesale stage were associated with the arrival of crack

Supporting this hypothesis in the 1980s the cocaine wholesale trade turned out to be at the center of a national scandal in the U.S. involving corruption of public officials, which associated the rise of the crack epidemic in Los Angeles (and later elsewhere in the nation), with the anti-government army (Contras) in Nicaragua, drug lords, and the Central Intelligence Agency (CIA).⁶ The Contras, who were sponsored and trained by the U.S. government, were fighting to overthrow the new socialist Nicaraguan government. It turned out, the covert war was partly financed by smuggling cocaine to the United States, converting it in crack and selling it in the inner-city neighborhood. The profits from the sale of the crack were then used to support the Contras including buying weapons. See, for instance, the [Kerry \(1988\)](#) Committee's report and [Appendix A.1](#), where we describe and discuss the Contras-CIA-crack scandal relying on official documents and journalistic probe of that period.

Overall, the Contras-CIA-crack scandal reveals that a large number of Contras officers and supporters were involved in drug dealing in the U.S. to which some in the U.S. government, at least, turned a blind eye to in order to protect foreign policy interests. Arguably, the non-prosecution of some Nicaraguan drug lords by U.S. federal agencies during the 1980s on the account that they were agencies' assets, allowed these high-profile criminals to corrupt law enforcement officers at various levels to foster the drug trade.

Finally we note that financing the Contras war partly with drugs in the early 1980s, along with the large community of Nicaraguans in California, and the high population density of its metropolitan areas, was a formidable combination of factors for the emergence of crack in California first. In [Appendix A.2](#) we describe the fund-raising for Contras in California and the consequent large availability of cocaine therein, zeroing in on those years and on few key figures to illustrate these factors at work. Note that these combination of factors were

⁶Contras belonged to the ruling political and military class which was in power in Nicaragua until 1979, when dictator and elite had to flee the country and the new Sandinista government took over.

specific to California and did not occur, for example, in Arizona, New Mexico and Texas, the other states at the border with Central America.

4 Methodology and Data

A recent and powerful econometric tool for addressing the causality issue in the context of our study, as randomized control experiments are not feasible, is the synthetic control method (SCM), an approach developed by [Abadie and Gardeazabal \(2003\)](#) and [Abadie et al. \(2010, 2015\)](#). The SCM builds on the difference-in-differences (DID) approach which has been an important tool to test the causal impacts of policy interventions since the 1990s. The DID method is based on comparing two groups of observations: one is affected by a specific treatment (e.g. policy interventions), and thus is called the treatment group; the other is similar to the treatment group except that it is not affected by the treatment and is therefore called the control group. The DID method compares changes in outcome for the treatment group before and after the treatment with that in the control group in order to get information on the impact of the treatment above and beyond the potential impacts from exogenous factors which are time invariant. Dealing with potential endogeneity issues, the DID estimator helps isolating the impacts from the treatment.

SCM enhances the DID method by using weighted average of a set of controls instead of a single control group. This innovation allows one not only to control for time invariant variables, offered by the DID approach, but also to control for the variables which are changing over time. More specifically, the SCM first considers a period prior to an exogenous intervention which is being evaluated (in our case the emergence of crack markets) to match the examined case (i.e. California; from here onward CA) with the weighted combination of some of the most representative cases in the donor pool (in our application the 29 U.S. states in [Table 1](#), where crack markets were either not established or were introduced with a time lag after CA). The matching is based on the outcome variables of interest (i.e. public corruption) and its predictors (for instance, the size of the government and GDP per capita). The resulting weighted combinations in the donor pool forms the synthetic control (synthetic CA) which is most similar to the examined group except for the absence of the intervention. SCM then compares changes in the outcome variables in the examined case after the intervention period with those in the synthetic control to evaluate the causal effect of intervention on the outcome variables.

According to [Athey and Imbens \(2017\)](#) the synthetic control approach is the most important innovation in the policy evaluation literature over the last 15 years. It soon became

Table 1: List of the 29 States in the Donor Pool

State	Arrival of Crack	State	Arrival of Crack
Alabama	1986	Nebraska	1987
Alaska	-	Nevada	1987
Arkansas	1987	New Hampshire	-
Connecticut	1986	New Jersey	1986
Delaware	1988	North Carolina	1987
Hawaii	-	North Dakota	-
Idaho	-	Ohio	1986
Iowa	1988	Oklahoma	1988
Kentucky	1987	Oregon	1987
Louisiana	1986	South Dakota	-
Maine	-	Tennessee	1986
Massachusetts	1986	West Virginia	1987
Minnesota	1986	Wisconsin	1987
Mississippi	1986	Wyoming	-
Montana	-		

Notes: Following the approach in [Evans et al. \(2016\)](#), the arrival year of crack cocaine is based on the first of two consecutive years where cocaine-related deaths are reported in each U.S. state. – indicates that the arrival of crack was not reported in [Evans et al. \(2016\)](#) as crack cocaine markets did not emerge in those states.

popular due to its simplicity and effectiveness and has been employed to address some of the fundamental questions in economics. Examples include a study to evaluate the economic costs of conflict in the Basque Country in northern Spain ([Abadie and Gardeazabal 2003](#)); the estimation of the economic impact of the 1990 German reunification ([Abadie et al. 2015](#)); the impact of economic liberalization on real GDP per capita ([Billmeier and Nannicini 2013](#)); the impact of natural disasters on economic growth ([Cavallo et al. 2013](#)), and estimation of the effect of California’s Tobacco control program ([Abadie et al. 2010](#)), to name but a few.

In fact our study is an ideal application for the SCM as crack cocaine markets in the U.S. emerged in some states much earlier than others. To utilize the SCM we need to know when the crack cocaine market first emerged in each state. To this end we use the [Evans et al. \(2016\)](#) index according to which although crack markets first arrived in California in 1981, they emerged in most states after 1985 (an indication of how fast growing the market for this drug was). It is precisely this lag in the arrival of crack across the U.S. that enables us to apply the SCM. Note that in order to get a comprehensive donor pool as well as reasonable pre/post periods for our analysis, we only include states which did not report two consecutive years of cocaine-related deaths before 1985, leaving us with the 29 states in [Table 1](#).

As mentioned before, we are interested in CA because crack cocaine arrived in this state in 1981, before any other. CA is also an obvious case to study the relationship between illicit drugs and public corruption as consumption of these drugs is much larger on the U.S.

west coast, and because cocaine usage in CA is substantially higher than the average state in America. In fact Los Angeles is considered the world's largest retail market for cocaine and the epicenter of the U.S. crack economy; see, for instance, [Murch \(2015\)](#).

To examine the relationship between crack cocaine and public corruption, we construct a dataset of a panel of U.S. states over the period 1976 to 1985. In order to identify the arrival and presence of crack markets within a city or a state we rely on the approach of [Evans et al. \(2016\)](#), which is based on cocaine related deaths in a particular area. Specifically, their index of the arrival of crack cocaine is based on the first of two consecutive years where cocaine-related deaths are reported in each U.S. state. To illustrate why the increase in cocaine related death has been attributed to the use of crack, we note that while in 1981 cocaine-related deaths in the whole country was recorded at 8, following the introduction of crack cocaine and a rapid increase in its usage as a recreational drug, that number increased substantially over time reaching 523 and 1497 deaths in 1989 and 1998, respectively. Based on the [Evans et al. \(2016\)](#) index, crack cocaine markets first emerged in CA in 1981,⁷ while in most of the other states crack cocaine markets emerged after 1985.

We next obtain data on public corruption from the United States Department of Justice's annual "*Report to Congress on the activities and operations of the public integrity section*". These reports, which have been widely used by other scholars to study the causes and consequences of corruption (see, for instance, [Alt and Lassen 2003](#), [Campante and Do 2014](#), and [Glaeser and Saks 2006](#)), are available from 1976 and enable us to collect information on the number of federal convictions for corruption-related crimes by state during the period of interest.⁸ Considering the period we are interested in, the Public Integrity Section data are the only available data to investigate public corruption in the U.S. There exist however other measures of public corruption which refer to specific years (unfortunately not within our sample period), in particular the corruption index built by [Campante and Do \(2014\)](#) from an online search in 2009, and the [Boylan and Long \(2003\)](#) measure of corruption based on a public corruption perception survey of State House reporters in 2003. We will exploit these two measures to investigate the presence of any correlation between crack and public corruption in Section 5.

SCM applications require a set of variables that can predict the dependent variable, and therefore can be used to construct its synthetic counterpart. In our application, the set of

⁷Note that while the emergence of crack in CA in 1981 is based on the first of two consecutive years where cocaine-related deaths are reported, it is also robust to alternative measures such as: two of three years, or three years in row.

⁸Note that the corruption prosecutions are at the federal and not at the state and local levels. This is because the U.S. Department of Justice only records data at the federal level. Nevertheless, as has been argued, federal prosecutors handle an overwhelming majority of public corruption cases (between 80–94 percent). See, for instance, [Cordis and Milyo \(2016\)](#) and references therein.

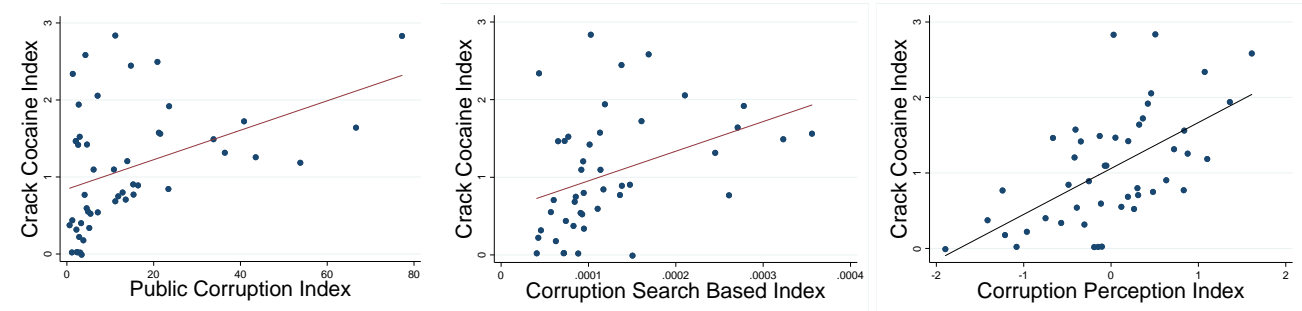
predictors of public corruption based on which the synthetic CA is constructed as a weighted average of potential control states are: (i) the natural logarithm of GDP per capita, (ii) the natural logarithm of population, (iii) the share of government employment (all obtained from the U.S. Bureau of Economic Analysis), as well as (iv) public corruption in selective years prior to arrival of crack cocaine to the United States. We use the logarithm of GDP per capita due to the association between public corruption and economic growth, which has been widely studied (see [Del Monte and Papagni \(2001\)](#) among others). Corruption can influence economic growth in several ways for example through reducing the efficiency in the resource allocation (agents who have connection with governors, which are not necessarily the best entrepreneurs, have better access to public resources), and distorting the composition of government expenditure (corrupt politicians are expected to assess projects considering bribes rather than indication of public utility and productivity). Moreover, we use states' population and the share of the government employment as the proxy for the size of the state and the local government respectively. These two variables are important as larger governments are more likely associated with higher corruption; see, for instance, [Glaeser and Saks \(2006\)](#) who argue that *“the benefits of corruption come from government actors being able to allocate resources, including the right to bypass certain regulations, to private individuals. As such, the benefits to a political actor from being corrupt should be increasing in the size of government and in the individual’s discretion over government actions”*.

5 Estimating the Effects of Crack Cocaine on Public Corruption in California

Before addressing the question of whether illegal drugs foster corruption of public officials we examine if there exists any correlation at all between these two variables. This preliminary question matters as, not being bounded to search for a causal relationship, we could rely on a more extensive data playground to get insights. To address this question we use the [Fryer et al. \(2013\)](#) crack cocaine prevalence index as our measure of crack consumption. [Fryer et al. \(2013\)](#) uses factor analysis to construct a state and city-specific index using several proxies for crack cocaine consumption including (i) cocaine arrests, (ii) cocaine-related emergency room (ER) visits, (iii) frequency of crack cocaine mentions in newspapers, (iv) cocaine-related drug deaths, and (v) the number of Drug Enforcement Administration (DEA) drug seizures.

Figure 1(a) plots the relationship between the crack cocaine index (averaged over all available years: 1980–2000) and the number of federal convictions for corruption-related crimes (averaged over 1976–2002), from which we can see a positive relationship between the

Figure 1: Scatter Plots of Crack Cocaine and Alternative Measures of Public Corruption



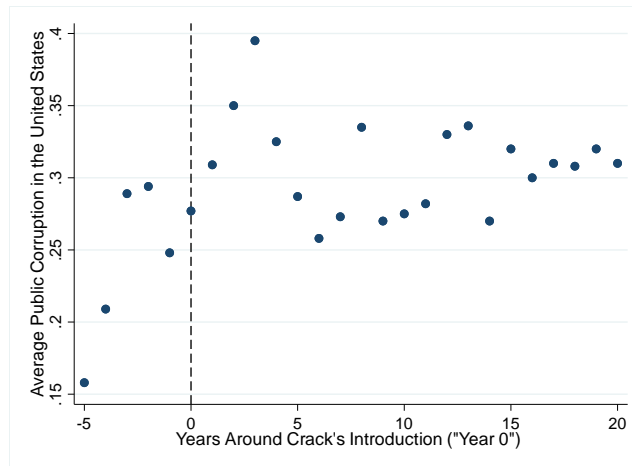
Notes: The crack cocaine index is a measure of crack cocaine consumption from Fryer et al. (2013), averaged over all available years: 1980–2000. Public corruption is captured by three alternative measures: (i) the number of federal convictions for corruption-related crimes (averaged over 1976–2002), (ii) the corruption index built by Campante and Do (2014) from an online search in 2009, and (iii) the Boylan and Long (2003) measure of corruption based on a public corruption perception survey of State House reporters in 2003, respectively. Source: Authors' calculations.

two. In fact using two alternative measures of public corruption in panels (b) and (c), namely the corruption index built by Campante and Do (2014) from an online search in 2009 and the Boylan and Long (2003) measure of corruption based on a public corruption perception survey of State House reporters in 2003 respectively, we also find a positive relationship between crack consumption and corruption. Therefore, regardless of our measure of public corruption, Figure 1 provides preliminary evidence of a positive correlation between crack cocaine and various measures of public corruption in the United States.

Further evidence of this relationship is provided in Figure 2, which relates the emergence of crack to average public corruption across all U.S. states. The x -axis shows years before and after "year zero" in which, for the first time, the crack market emerged based on the Evans et al. (2016) index. The y -axis shows average public corruption (using data from the Department of Justice) across U.S. states. Note that since crack markets emerged asynchronously across America, each state features its own "year zero". Average corruption across states is then computed at their year zero (dot corresponding to zero on the x -axis), at their year + 1 (dot corresponding to 1 on the x -axis), and so on, allowing us to track average public corruption before and after the emergence of crack markets. As can be seen clearly from Figure 2, there is a sharp increase in corruption in the years following the arrival of crack cocaine.

Overall, Figures 1 and 2 show a positive relationship between crack cocaine consumption and corruption, providing preliminary evidence in support of our hypothesis that illegal drug

Figure 2: Emergence of Crack Cocaine Markets and Average Public Corruption in the United States



Notes: The x -axis shows years before and after "year zero" in which, for the first time, the crack market emerged based on the Evans et al. (2016) index. The y -axis shows the number of federal convictions for corruption-related crimes (averaged over 1976-2002). Source: Authors' calculations.

markets can foster corruption.

5.1 SCM Results

The SCM methodology allows us to understand the affinity between CA and a synthetic CA, the latter consisting of a weighted average of states chosen from the donor pool of 29 in Table 1. Note that the donor pool has to be constructed so that in the initial years in which the effect of crack on corruption emerged in CA there were no other states hit by crack too, as they would have polluted the donor pool. This automatically ruled out some states including the other three border states with Mexico. It turns out that the evolution of public corruption in CA prior to the emergence of the cocaine market is best reproduced by a combination of three states, namely Alabama, Alaska, and Ohio with the assigned weights being 0.240, 0.446, and 0.314 respectively. In Table 2 we report the pre-treatment characteristics of CA as well as synthetic California. Contrasting the values of the predictors as well as the past values of public corruption across real and synthetic CA, it is clear that the values are very similar.

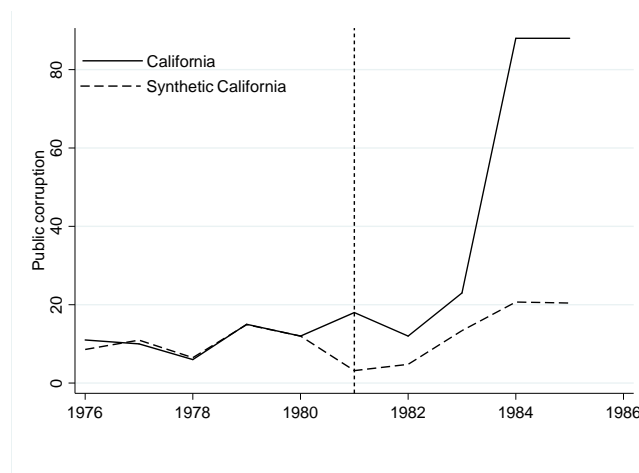
Having established that synthetic CA is a suitable control group for CA, we plot in Figure 3 the evolution of public corruption in CA as well as its synthetic counterpart over the period 1976 to 1985. As can be seen synthetic CA closely resembles real CA in terms of corruption over the period prior to the emergence of the crack market. This is in line with

Table 2: Public Corruption Predictor Means

Variables	California	
	Real	Synthetic
natural logarithm of GDP per capita	10.3	10.5
natural logarithm of population	16.9	14.5
share of government employment	0.17	0.23
public corruption in 1976	11.0	8.58
public corruption in 1978	6.0	6.48
public corruption in 1980	12.0	12.0

Sources: United States Department of Justice's "*Report to Congress on the activities and operations of the public integrity section*" and the U.S. Bureau of Economic Analysis.

Figure 3: Evolution of Corruption: California vs. Synthetic California



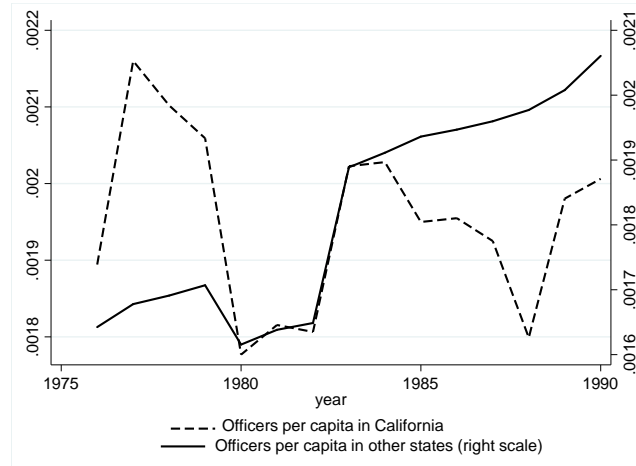
Notes: Public corruption is the number of federal convictions for corruption-related crimes.

the close values of the predictors in CA with respect to synthetic CA between 1976 and 1981, which suggests that the latter correctly approximates the degree of public corruption in the former should the crack market have not emerged. Importantly, the discrepancy between the two after 1981, shows a large positive effect of the emergence of crack markets on public corruption. Specifically, in 1984 corruption of public officials in CA was more than three times larger than what it would have been if crack cocaine was not introduced in this state. The results are robust with respect to any particular pre-period public corruption that we use as a predictor in our SCM analysis (as opposed to the ones currently used: 1976, 1978, and 1980), as well as different subset of public corruption predictors (see Figure B.1 in Appendix B).⁹ We also observe a time lag between the emergence of crack (1981) and when the gap between real and synthetic CA becomes significant. This is expected as there is a delay from detection to conviction; more specifically, according to Cordis and Milyo (2016) the average delay is less than 2 years.

We next verify that the increase in corruption in CA is not an artefact due to a possible increase in law enforcement. It could be argued that the crack epidemic triggered an increase in the number of law enforcement officers, which in turn lead to the discovery of and reporting of corruption which had been in place before the emergence of crack markets. In this case, the level of corruption might not have increased at all with respect to the pre-crack period, only crime detection would have increased. To verify that the surge in the corruption statistics is not a spurious observation, we obtain data on the number of law enforcement employees in each state from the Federal Bureau of Investigation (FBI) *Police Employee Database* so as to compare the number of law enforcement officers in CA with the average in all other U.S. states. We plot these two series in Figure 4 over the period 1975 to 1990, from which it is clear that in the years prior and after the emergence of crack markets in CA (namely 1981), the number of per capita officers in CA was very similar to that of the average in other US states. In fact the number of officers in CA and all other states are pretty much identical in the years 1980 to 1984. Therefore, we find no evidence that the emergence of crack markets in CA led to an exogenous intervention by law enforcement agencies. Indeed, as argued by Murch (2015), the militarization of policing and the war on crack in Los Angeles started much later (in the winter of 1985) with a number of initiatives (including new and brutal technologies of policing) by the Los Angeles Police Department.

⁹We would have liked to use the data from the Transactional Records Access Clearinghouse (TRAC) database, constructed from Freedom of Information Act requests from the U.S. Department of Justice, as an alternative measure of public corruption. However, this data is only available from 1986 onward and therefore cannot be used in our application as we need data from before 1981 (prior to the emergence of crack markets in CA).

Figure 4: Law Enforcement Employees: California vs. other U.S. States



Source: Authors' calculation based on data from the Federal Bureau of Investigation's *Police Employee Database*, see [FBI \(2017\)](#).

5.2 Placebo Studies

To make sure that our results are reliable and not driven by chance, we follow [Abadie and Gardeazabal \(2003\)](#) and [Abadie et al. \(2010\)](#) and perform different placebo tests. In the first battery of tests we set a random date for the placebo intervention and we keep only the period before the emergence of crack cocaine market in CA; i.e. years prior to 1981. Figure 5(a) displays the results of our in-time placebo study. Despite having small number of pre-intervention time periods the evolution of public corruption in synthetic CA is very close to that of CA. Therefore, in contrast to the results in Figure 3, the two never diverge and the in-time placebo intervention has no effect, which suggests that the gap in Figure 3 is not random.

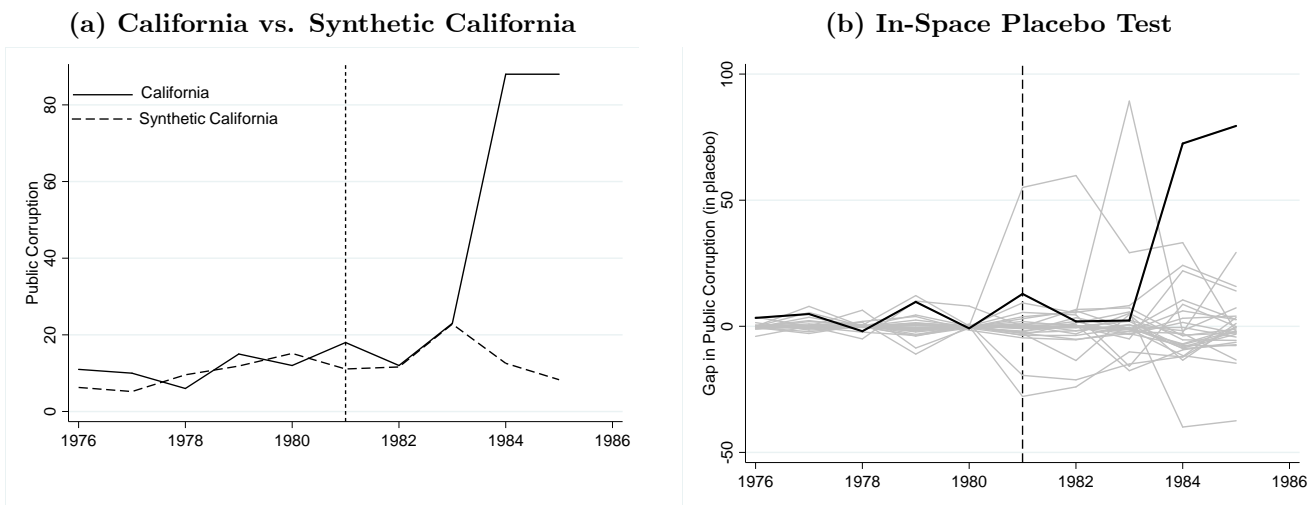
We next display the results of the in-space placebo study in Figure 5(b). This is based on replicating the synthetic control method for every control state in the donor pool while shifting CA in the pool of donors. The grey lines show the difference in public corruption between each state in the donor pool and its corresponding synthetic version, what is known as the gap. As can be seen, our estimated effect of interest (black line) falls well outside of the distribution of placebo effects. This suggests that unlike CA, the synthetic control approach estimates insignificant effects for all of the 29 U.S. states (see Table 1) who are not affected by the intervention (i.e. emergence of crack cocaine markets).

Figure 5: Placebo Studies



Notes: Public corruption is the number of federal convictions for corruption-related crimes. Panel (b) shows the public corruption gaps in California and placebo gaps in all 29 control states, see Table 1.

Figure 6: Evolution of California vs. Synthetic California (based on different states forming the synthetic California)



Notes: Public corruption is the number of federal convictions for corruption-related crimes. Panel (b) shows the public corruption gaps in California and placebo gaps in all 27 control states (without Alaska and Ohio), see Table 1.

5.3 Robustness to the Selection of States in the Donor Pool

We perform another exercise to test the sensitivity of the results to the selection of the states in the donor pool. Given that Alaska and Ohio, which have the largest weights in our synthetic CA, might not be an obvious representation of CA, we take these two states out of the donor pool and redo our analysis. Excluding these two states, we find that a combination of Louisiana (0.413), Massachusetts (0.214), and New Jersey (0.373), with the weights in the brackets, can best reproduce the trend in public corruption in CA before the emergence of crack. Panels (a) and (b) in Figure 6 display public corruption in CA vs. synthetic CA and the in-space placebo test in the absence of those two states, respectively. Clearly the results in Figure 6 are in line with our previous findings, showing a large positive effect of the emergence of crack markets on public corruption in CA, and thereby illustrating the robustness of our results. Note that we also did an exercise by removing Alaska and Ohio separately and found very similar results.

5.4 Robustness to Alternative Model Specifications

We next test the robustness of our results with a complementary approach to the SCM, which can exploit the information provided by all the U.S. states, and is also able to capture not only the first impact of crack on corruption, if any, but its deferred effect too; arguably, the public corruption response to the emergence of crack market was not immediate. For this purpose, following Wolfers (2006), we use the dynamic difference-in-difference method and document the dynamic response of public corruption to the emergence of crack cocaine market in all the states.¹⁰ To this end, we estimate the following equation in which s and y denote state and year respectively:

$$\begin{aligned}
 \text{Public Corruption}_{s,y} &= \sum_{T \geq 1} \beta_T T \text{ years following the emergence of crack markets} \\
 &+ \sum_s \text{State fixed effects}_{s_s} + \sum_y \text{Year fixed effects}_{s_y} \\
 &+ \sum_s \text{State}_s * \text{Year}_y + \text{Controls}_{s_y} + \varepsilon_{s_y}
 \end{aligned} \tag{1}$$

where, in addition to state fixed effect, time fixed effect, state-specific time trends, as well as, the same set of control variables used in the SCM specification in Section 5.1, we also

¹⁰According to Wolfers (2006) “any reduced-form or structural analysis that assumes an immediate constant response to a policy shock may be misspecified if actual dynamics are more complex than a simple series break.”

include dummy variables for the first two years (i.e. years zero and one), years two and three, and years four and five following the emergence of crack cocaine in a state.

Table 3 presents various estimates of equation (1) for the period 1976–1985. The first row of panel (a) reports the estimates based on the full set of U.S. states which echo the finding provided by the SCM in Figure 3: the emergence of crack cocaine led to an increase in public corruption after 2–3 years. The first row of panels (b) and (c) show similar results when we restrict the set of states to the 29 states in the SCM donor pool, and when we add New York and Florida as two big players when it comes to crack cocaine to our set of states in panel (b). Interestingly, the coefficients are statistically significant and positive even after 4 to 5 years after the emergence of crack markets, showing a deferred effect of crack on corruption. Overall, our basic specification given by Model 1 shows that in the absence of any other controls, public corruption increased significantly after the emergence of crack markets in the United States.

To check the robustness of our results, in Model 2 we follow [Besley and Burgess \(2004\)](#), and [Wolfers \(2006\)](#) by adding state-specific trends to the basic specification (Model 1);¹¹ in Model 3 we add the controls which we used in our SCM specifications (the natural logarithm of GDP per capita, the natural logarithm of population, and the share of government employment) and in Model 4 we add both state-specific trends and controls to our basic specification. The estimates from Models 2–4 in Table 3 confirm that the results in our basic specification (Model 1) are robust and corroborate the finding provided by the SCM in Sections 5.1–5.3. In the absence of the crack market the average public corruption per state was 8, therefore the findings in Table 3 suggest that depending on the year and the model specification, public corruption increased by approximately 2 to 4 times after the emergence of the crack markets, which is in line with our SCM findings.

To provide further evidence for the causal effect of crack cocaine on public corruption we re-estimated equation (1) including dummy variables for years two and three and years four and five following the emergence of crack cocaine in a state as well as a dummy for the years prior to the emergence of crack cocaine markets. The estimated coefficients of the latter are in majority of cases (eight out of twelve coefficients) insignificant, including for all four models in panel b (which is consistent with our main SCM specification), thereby suggesting the absence of any systematic state selection by drug traffickers and providing further support for our claim of a causal effect. These results are not reported here, but are available from the authors upon request.

¹¹See also the discussion in [Angrist and Pischke \(2008\)](#).

Table 3: Dynamic Effects of Emergence of Crack Cocaine Markets on Public Corruption, 1976-1985

	Model 1 Basic Specification	Model 2 Including State-Specific Trends	Model 3 Including Controls	Model 4 Including State-Specific Trends and Controls
(a) All U.S. States				
Years 2–3	39.030*** (3.565)	15.491*** (5.278)	41.921*** (3.648)	10.043* (5.299)
Years 4–5	69.715*** (6.672)	43.761*** (9.006)	77.382*** (6.753)	35.253*** (9.057)
Observations	503	503	503	503
(b) 29 SCM States				
Years 2–3	34.401*** (4.094)	20.264** (8.628)	29.087*** (4.976)	26.523*** (9.023)
Years 4–5	70.615*** (5.331)	52.126*** (11.278)	63.397*** (6.496)	60.527*** (12.033)
Observations	300	300	300	300
(c) 29 SCM States, New York and Florida				
Years 2–3	46.157*** (4.027)	25.463*** (6.868)	52.178*** (4.154)	21.759*** (7.334)
Years 4–5	68.880*** (7.032)	51.868*** (10.363)	82.611*** (7.238)	47.075*** (11.002)
Observations	320	320	320	320

Notes: In Model 2 we add state-specific trends to Model 1 as a robustness check. In Model 3 we add the controls which we used in our SCM specifications (namely, the natural logarithm of GDP per capita, the natural logarithm of population, and the share of government employment) to Model 1. In Model 4 we add both state-specific trends and controls to Model 1. See Table 1 for the list of 29 SCM States. Statistical significance is denoted by *, ** and ***, at 10%, 5% and 1% level, respectively.

6 Conclusion

Using data on crack cocaine and public corruption from U.S. states between 1976 and 1985, we contributed to the literature by examining whether illegal drugs foster corruption. We selected crack cocaine as its characteristics, namely a new market for a highly addictive and profitable drug, as well as time differences in its initial arrival across the U.S., provided us with a useful natural experiment, allowing us to design an identification strategy via the synthetic control method.

Estimating the causal effect of drugs on public corruption in California (we focus on CA because crack arrived in this state before any other), we find that the emergence of crack markets led to a significant increase in public corruption. Specifically, in 1984 corruption of public officials in CA was more than three times larger than what it would have been if crack cocaine was not introduced in this state. Our results suggest that drug markets can be an important source of public corruption.

To the best of our knowledge, this is the first study to systematically examine the causal relationship between drugs and public corruption, and we believe that our findings contribute to the current public debate on the design of anti-corruption policies. Given that public corruption makes it difficult to achieve sustainable, balanced and inclusive economic growth, we argue that a strategy to combat corruption should be integrated with a strategy to combat drugs markets too.

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A Crack and Public Corruption: Additional Anecdotal Evidence

A.1 The Contras-CIA-crack Scandal

The Contras-CIA-crack scandal emerged with the [Kerry \(1988\)](#) Committee's report,¹² which officially disclosed the Contras' drug trafficking in 1988, and showed that while the CIA was supporting the Contras against the Sandinista government, it also allowed the Contras to provide key infrastructure for the drug trade and to be financed by the profits of crack sold in the U.S., particularly in Los Angeles. In the words of the Kerry Committee: *"The logic of having drug money pay for the pressing needs of the Contras appealed to a number of people who became involved in the covert war. Indeed, senior U.S. policy makers were not immune to the idea that drug money was a perfect solution to the Contra's funding problems... Weapons for the Contras came from Panama on small planes carrying mixed loads which included drugs. The pilots unloaded the weapons, refuelled, and headed north toward the U.S. with drugs... Drugs pilots soon began to use the Contra airstrips to refuel even when there were no weapons to unload. They knew that the authorities would not check the airstrips because the war was protected"*; see pages 41–42 of [Kerry \(1988\)](#).

A few years after the Kerry Committee Report was concluded, it was argued that the guerrilla war against the Nicaraguan government was secretly financed by drug-trafficking activity, with the CIA involved in the drug trafficking (or at the very least being aware of it), and mostly at the expenses of the low-income and inner city neighborhoods; see, for instance, [Webb \(1996\)](#). This controversy called for a formal response of the federal agencies accused of not prosecuting the Contras drug trafficking activities, which prompted three institutional investigations run by the CIA, the Department of Justice, and the House Intelligence Committee. On the one hand we have the government side of the narrative, which minimizes the role of the drug lords in financing Contras and fostering the crack epidemic, represented by the CIA Inspector [Hitz \(1998\)](#) maintaining that no evidence was found of any conspiracy by CIA to bring drugs into the United States, although there were instances where CIA did not, in an expeditious or consistent fashion, cut off relationships with individuals supporting the Contras program alleged of drug trafficking. On the other hand, we have the version proposed by some journalists (in particular [Webb \(1996\)](#) and [Webb \(1998\)](#)), and politicians, who instead maintained that the Contras drug trafficking activities, first in California

¹²The Kerry Committee was a subcommittee of the Senate Foreign Relations Committee which investigated the links between foreign policy, law enforcement and drug trafficking from Latin America to the United States. The 1,167-page in-depth Committee's report is based on testimony from 47 witness, documents from a large number of government agencies as well as hearings including interviews and depositions from Contra leaders who acknowledged receiving drug profits, with the apparent knowledge of the CIA (p. 5–7, 37–38, and 49–53). The report also questions how the State Department selected companies to supply humanitarian assistance to the Contras as, before the selection, federal law enforcement knew that these companies were controlled by narco-traffickers and continued to deal with narcotics when they were a liaison between the State Department and the Contras (p. 42–49).

and then elsewhere in the U.S. lead to tons of cocaine entering the country with federal officers being aware of it.

A.2 Fund-raising for Contras in California and the Large Availability of Cocaine

As discussed in Section 3, financing the Contras war partly with drugs in the early 1980s, along with the large community of Nicaraguans in California, and the high population density of its metropolitan areas, was a formidable combination of factors for the emergence of crack in California first. Here we zero in on those years and on few key figures to illustrate these factors at work. In 1979, when the new government installed, the Nicaraguans who had supported the dictatorship fled the country and largely went to California. This state was already a top destination for Central American immigrants in the United States, particularly Nicaraguans who could therefore help their countrymen in exile.¹³ Danilo Blandon – a protagonist of the crack epidemic and belonging to one of the richest Nicaraguan families with strong ties with the dictatorship back several generations – exiled with his wife to Los Angeles as the latter had relatives there. In LA County, he fund-raised for Contras, initially by social gatherings and then by drug trafficking; specifically he bought wholesale cocaine and resold to lower level wholesalers.¹⁴ Importantly, Blandon benefitted from a fast-track option of obtaining cocaine. Indeed, his supplier was another key figure, Norwin Menes, a Nicaraguan who already in the 1970s was a large-scale drug importer from Latin America, arguably the Cali cartel’s representative in Nicaragua. As Blandon, Menes had important family links to the dictatorship and was committed to fund raising for Contras.¹⁵ Being both involved in fund raising for Contras, who were supported by US Government, they managed *de facto* to benefit of a special status allowing them to move large quantities of drugs from producers to retailers. This large availability of cocaine in Los Angeles, fostered by Contras fund raising, created a business opportunity that was immediately seized. Indeed, the possibility to easily convert cocaine to crack, and the high population density, particularly in inner-city neighbourhoods, contributed to the quick spread of the consumption of this new drug (note that rock houses described in Section 2 could not operate outside areas with high population density).

¹³As of 1980, in California the population of Hispanic origin was 4,544,331, much larger for example than in the other border states with Mexico; where it was 440,701 in Arizona, 477,222 in New Mexico, and 2,985,824 in Texas (U.S. Census Bureau).

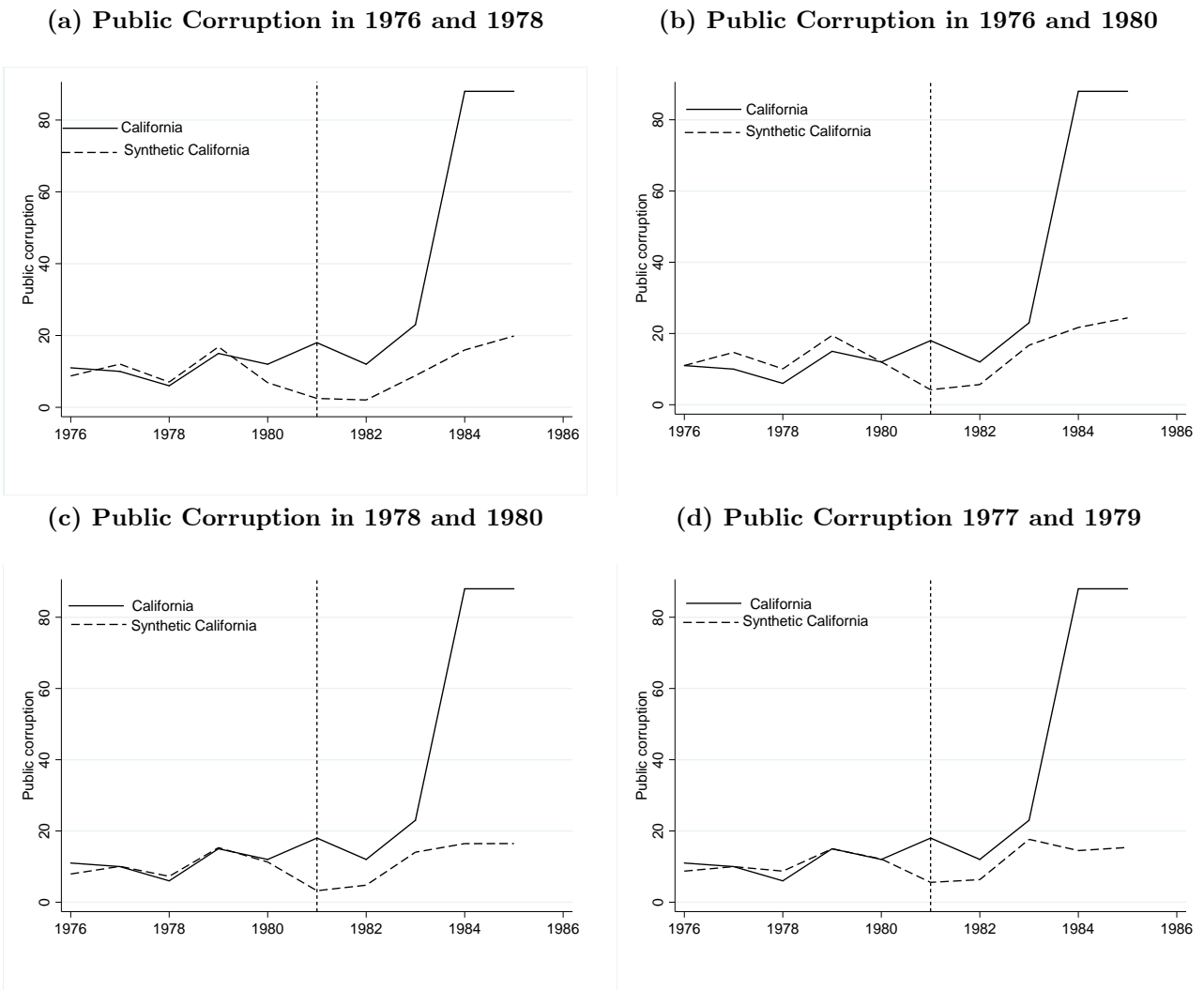
¹⁴See Webb (1998), p. 42 and the notes on sources for Chapter 2, for details on his family, and pp. 62–66 and the notes on sources for Chapter 3, for his involvement in drug-trafficking.

¹⁵As to Menes and his criminal career, see Webb (1998), pp. 51–57 and the notes on sources for Chapter 3.

B Additional Results

In this Appendix we show that our results are robust with respect to any particular pre-period public corruption that we use as a predictor in our SCM analysis (as opposed to the ones used in Section 5.1: 1976, 1978, and 1980).

Figure B.1: Robustness to Different Pre-period Public Corruption as a Predictor in our SCM Analysis



Notes: In addition to different pre-period public corruption the following variables are also included as predictors: log of GDP per capita, share of government employment, and log of population.