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 in California, we adopt the synthetic control method and exploit the fact that crack cocaine markets emerged asynchronously across the United States. We focus on California because crack arrived here in 1981, before reaching any other 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: a large trade-off between profits and law enforcement, due to a cheap technology and rigid demand. Such a trade-off 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, and law enforcement.

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 institutionalized corruption and thus pose a further important problem for society?

We argue that illegal drug profits, public corruption and law enforcement co-evolve. On the one hand, while inexpensive technology and rigid demand can lead to substantial drugs profits in an environment of weak law enforcement, when law enforcement is more rigorous (including aggressive drugs seizures and arrests) profits tend to zero. Thus drug profits depend elastically on law enforcement. On the other hand, given the share of profits allocated to corruption (for instance, bribing public officials), the larger the profits, the larger the funds allocated to corruption, and the less law enforcement. This system of relationships implies the following process: profits increase corruption, corruption in turn decreases law enforcement, which increases profits. Such a process clearly shows that law enforcement, profits and corruption are endogenous. Nevertheless, it suggests that if a new drug market emerges in a particular state and the profits of that particular drug are substantial, then corruption in that state should increase too.

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 organised 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.[1] 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

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

the availability of the data), but instead call for more systematic research to understand the impact of drugs on corruption.

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 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 corruption in advanced democracies such as the United States. 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.

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 In-

[2] See 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.

ternational Monetary Fund Managing Director Christine Lagarde recently, makes it difficult (if not impossible) to achieve sustainable, balanced and inclusive economic growth.[3] 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 explains how the strength of the trade-off between profits and law enforcement associated with any illegal good matters in the relationship between drugs profits and corruption, and why crack features a strong trade-off and thus offers an interesting natural experiment to understand this relationship. Section 3 describes the data used and investigates if there exists any relationship between alternative measures of public corruption and crack cocaine. Finding extensive evidence showing a positive correlation between these variables, we describe our empirical methodology and investigate the existence of a causal impact of crack on public corruption in Section 4. Finally, Section 5 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 in the early 1980s, which caused cocaine prices to plunge (by as much as 80%). Interestingly the emergence of crack markets, as determined by cocaine-related deaths associated with crack (see Section 3 for 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 apart. There are several reasons for why it did not take long before crack usage became widespread in the U.S., so much so that it lead 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. Crack was also substantially cheaper, and when introduced, purer than cocaine (DEA (1991)). Given that it could be sold in smaller quantities, it was therefore more affordable than cocaine. Finally, unlike cocaine, crack took root in inner city areas suffering social deprivation. All of these characteristics led to a fast-growing new market somewhat parallel to cocaine powder, and to a sharp increase of overall profits. The impact of this new drug market was also marked by a sudden increase in health problems during the 1980s. According to data from Drug Abuse Warning Network, hospital emergencies related to cocaine rose by 12 percent in 1985 and by an astonishing 110 percent in 1986

[3]For more details see: https://blogs.imf.org/2017/12/08/corruption-disruption/

(from 26,300 to 55,200), see DEA (1991). Moreover, between 1984 and 1987 emergency room visits attributed to cocaine incidents (for instance, overdoses, suicide attempts, and detoxification to mention but a few) increased fourfold.

Beyond the above characteristics, we argue that crack markets induce a large trade-off between profits and law enforcement. Generally, any illegal good has such a trade-off and can activate a circular process in which a share of the profits are devoted to corrupt public officials so as to reduce law enforcement, which in turn increase profits. Yet, each illegal good features its own trade-off, and the larger the trade-off, the larger the incentive as well as the opportunity to reduce law enforcement via corruption. This suggests that the speed of the process driving the co-evolution of profits, corruption and law enforcement increases in the size of the trade-off between profits and law enforcement. Interestingly, crack exhibits a significant trade-off for two reasons. First, its production, transportation and selling costs 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 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). Second, crack exhibits a large trade-off because it is highly addictive, creating a rigid demand (Crane and Rivolo (1997)). Therefore, its business can generate a huge extraction of resources from addicted consumers. Yet, this can only occur if criminals and corrupted government officials cooperate. For these reasons, crack cocaine exhibits a significant trade-off between profits and law enforcement, which led us to conjecture that its arrival in the U.S. caused an increase in institutionalized corruption.

These characteristics of crack, namely a new market for a highly addictive and profitable drug, a large trade-off between profits and law enforcement, as well as time differences in its initial arrival across the U.S., provides a useful natural experiment that allow us to design an identification strategy via the SCM.

3 Preliminary Evidence based on Correlations

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 California (from here onward CA) in 1981,[4] while in most of the other states crack cocaine markets emerged after 1985.

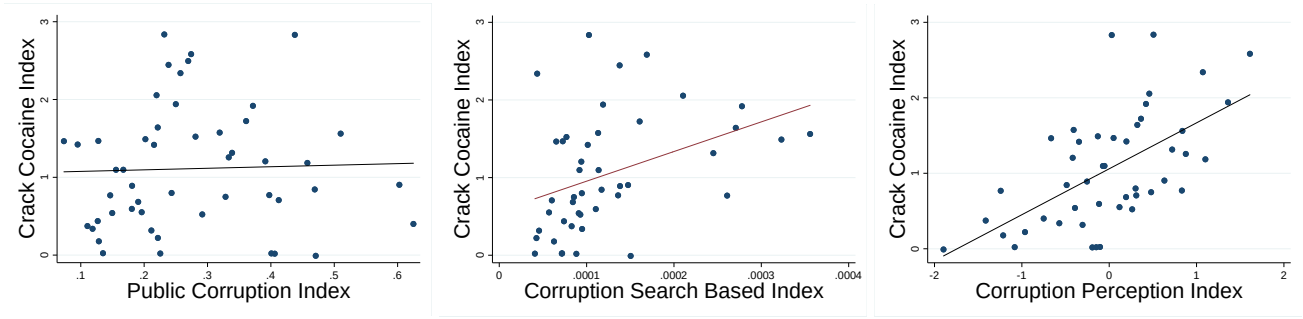
We next obtain data on public corruption from the United States Department of Justice's annual "*Report to Congress on the activities and operations of the public integrity section*". These reports, which have been used by other scholars to study the causes and consequences of corruption (see, for instance, 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.[5]

Before addressing the question of whether illegal drugs foster institutionalized corruption we wondered 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 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

[4] Note 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.

[5] Note 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.

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

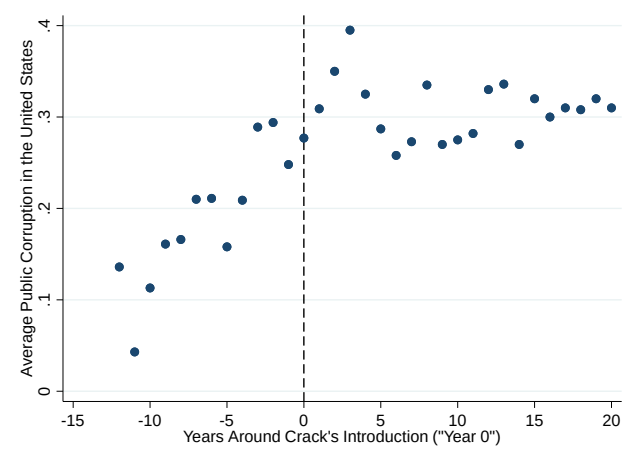


Notes: The crack cocaine index is a measure of crack cocaine consumption from Fryer et al. (2013), averaged over all available years: 1980–2000. Public corruption is captured by three alternative measures: (i) the number of federal convictions for corruption-related crimes (averaged over 1976–2002), (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.

(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 weak positive relationship between the 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 find a much stronger 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

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 average public corruption (using data from the United States Department of Justice) across U.S. states. Source: Authors' calculations.

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 markets can foster corruption. Below we will use a recently developed econometrics approach, i.e. the synthetic control methods (SCM), to estimate if and to what extent the crack market fostered public corruption in California.

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

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). 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 approach we need to know when the crack cocaine market first emerged in each state. To this end (and as discussed in Section 3) we use the Evans et al. (2016) index according to which although crack markets first arrived in California in 1981, they had 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.

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	1985	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.

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).

Before presenting our results we give a brief description of the empirical methodology employed in this paper. 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. 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 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.

4.1 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. In our application, the set of 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. Note that the aforementioned variables have been used as a determinant of public corruption in other studies, see, for instance, Campante and Do (2014).

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. All the other states in the donor pool are therefore assigned a weight equal to zero. 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.

Table 2: Public Corruption Predictor Means

	California	
Variables	**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

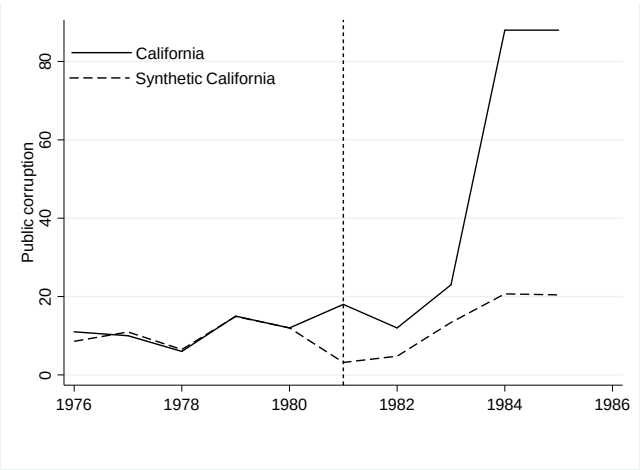
Source: United States Department of Justice's "*Report to Congress on the activities and operations of the public integrity section*" and the U.S. Bureau of Economic Analysis.

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 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 institutionalized corruption 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, 1980), as well as different subset of public corruption predictors.[6] We also observe a time

[6]We 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

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.

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



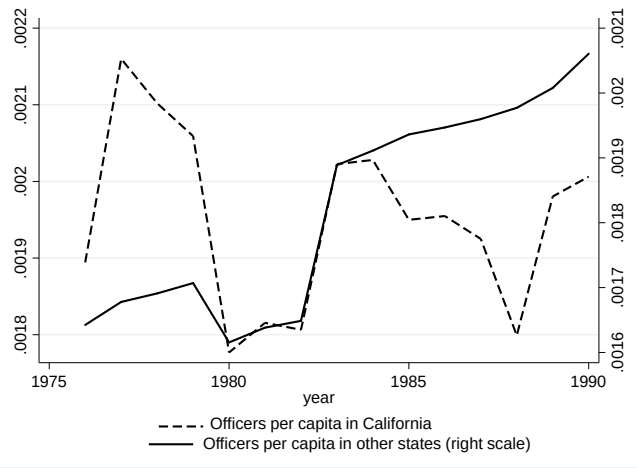
Notes: Public corruption is the number of federal convictions for corruption-related crimes.

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 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

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).

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.

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



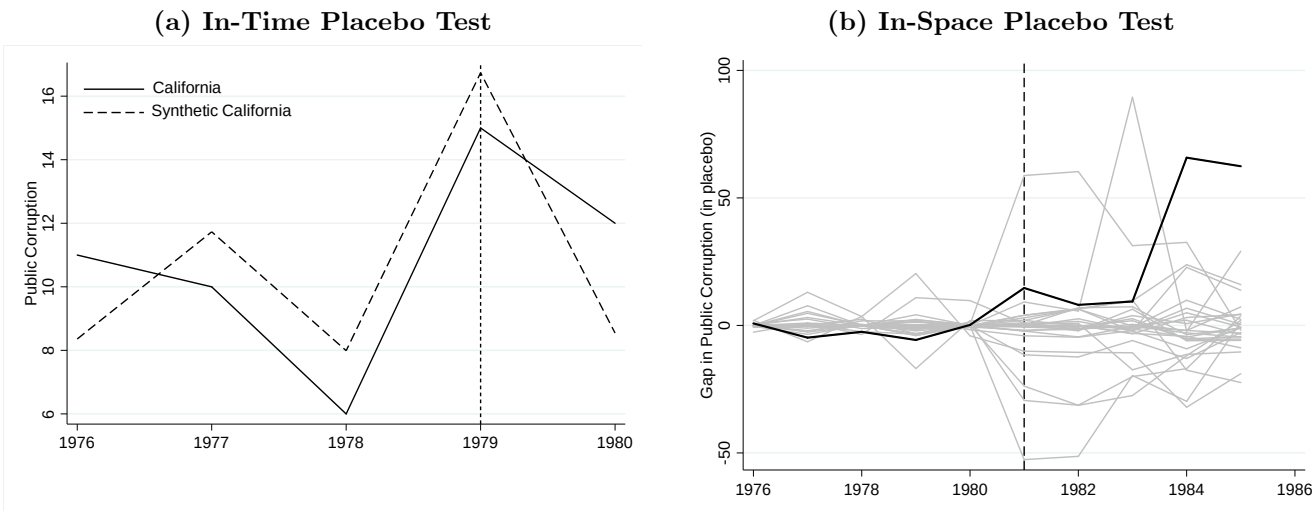
Source: Authors' calculation based on data from the Federal Bureau of Investigation's *Police Employee Database*, see FBI (2017).

4.2 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 know as the gap. As can be seen, our estimated effect of interest falls well outside of the distribution of placebo effects. This suggests that unlike CA, the synthetic control approach estimate

Figure 5: Placebo Studies



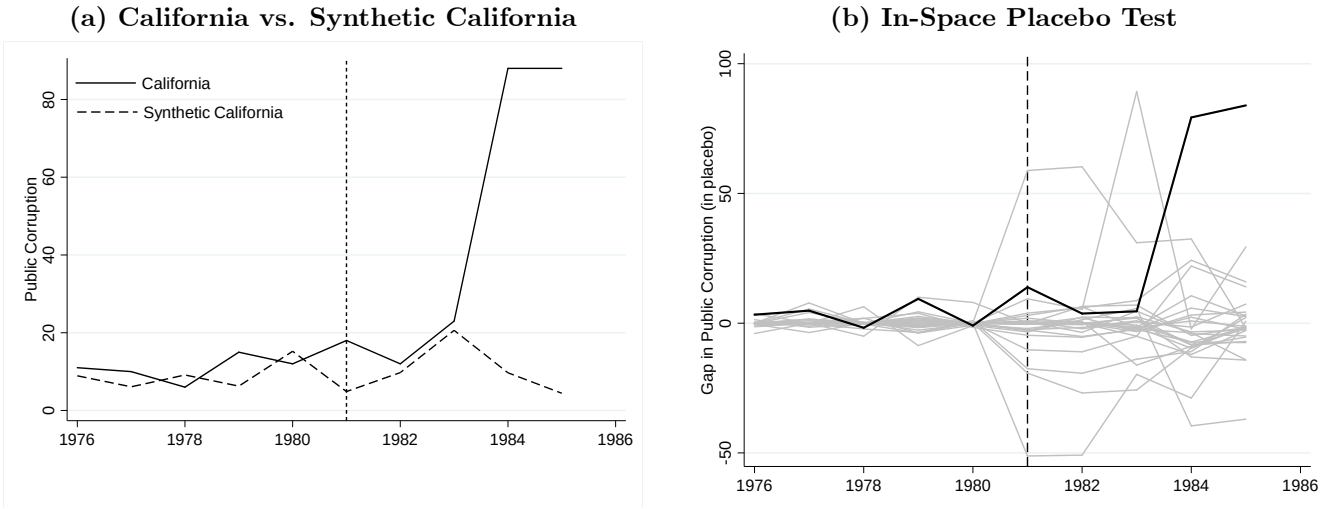
Notes: Public corruption is the number of federal convictions for corruption-related crimes. Panel (b) shows the public corruption gaps in California and placebo gaps in all 29 control states, see Table 1.

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).

4.3 Robustness to Alternative Weighting

We perform one final exercise in order to ensure that our results are robust in terms of alternative weighting. 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. Figures 6(a) and (b) 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 is 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.

Figure 6: Evolution of Corruption: California vs. Synthetic California (based on alternative weighting)



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 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, a large trade-off between profits and law enforcement, 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 institutionalized corruption 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 suggests that drug markets, featuring a large trade-off between illegal profits and law enforcement, 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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