American Law & Economics Association Annual Meetings

Year 2004 *Paper* 3

Fiscal Federalism and the War on Drugs

Richard T. Boylan
University of Alabama

Fiscal Federalism and the War on Drugs

Richard T. Boylan*

April 21, 2004

In 2000, 45% of federal defendants sentenced to prison were convicted of drug offenses. Legal scholars have criticized the federalization of drug prosecutions for hindering state sovereignty and fairness. The expansion of federal jurisdiction to drug crimes is controversial, because federal penalties tend to be more severe than states penalties. In 2000, only 5% of federal defendants sentenced to prison were convicted of importation or exportation of drugs. Thus, the intervention of the federal government cannot be explained by its role in protecting borders. In this paper we hypothesize that the federal government helps states that are too poor or have too many other priorities to adequately deal with illicit drugs. The empirical findings are consistent with the hypothesis that a higher fraction of drug incarcerations are federal in states where more individuals favor the de-criminalization of marijuana and in states with lower per-capita income. Thus, federal prosecutions are allocated contrary to state preferences, due to the negative national externalities with illicit drug use (JEL: K14, K42, H77.)

*University of Alabama, Culverhouse College of Commerce & Business Administration, Department of Economics and Finance, Tuscaloosa, AL 35487, rboylan@cba.ua.edu. I benefited from discussions with Walt Enders, Vivian Ho, Junsoo Lee, Cheryl Long, Paul Pecorino, David Reeb, Daniel Richman, Joe Smith, and the participants of a seminar at Rice University. I also benefited from the data analysis by Tim Perry and Ling Shao.

1 Introduction

The expansion of federal jurisdiction to drug crimes has raised concerns among legal scholars, because federal penalties are in general more severe than state penalties. The difference in penalties hinders state sovereignty and fairness (Newbern [2000] and Clymer [1997]). As with any other public good, if states differ in preferences or in the cost of prosecution, then absent externalities or cost savings, drug offenders should be prosecuted by local jurisdictions [Oates, 1972]. It has further been suggested that federalization has been guided by the ambitions of federal prosecutors instead of the public's interest. For instance, Glaeser et al. [2000] provide evidence that defendants are more likely to be prosecuted in federal court when these prosecutions are personally beneficial to an assistant U.S. attorney.

This paper considers the federalization of drug prosecution as a response to the negative externalities caused by the manufacturing, importation, transportation and use of drugs. The nature of the externality and its importance in explaining the federalization of the drug war are discussed below. Externalities can be local or national. Local externalities refer to the effect of actions in one locality on outcomes in nearby localities. Local externalities can arise from drug trafficking; for instance, drug trafficking in the inner cities may lead to more drug use and less drug trafficking in the neighboring suburbs.

National externalities refer to the effects of actions in a locality on outcomes in the entire nation. National externalities may arise due to the nature of production, distribution, and transportation of drugs. For instance, Appalachia grows two-fifths of the nation's supply of marijuana, and exports much of it to the Northeast (Clines [2000]), while in the early 1980s, the Lower East Side of New York City supplied heroin for the Northeast (Raab [1984]). A further source of national externalities results from fixed costs of establishing drug importation and distribution networks. Hence, widespread use of drugs leads to complex networks that lower the average price of purchasing drugs everywhere in the United States.[1]

[1]Alternatively, given a fixed level of prosecutorial resources, more drug sales lead to a decrease in the ratio of seizures to quantity of cocaine produced and thus a reduced price of drugs (Rydell and Everingham

This last source of externality makes widespread use of drugs in a state costly to the entire nation.

National externalities may also arise due to the nature of preferences for drug control in a population. In 1996, 82% of Americans thought that illegal drug use was a "big problem" for society, although only 27% saw it as a "big problem" in their own local community.[2] Further, 72% of the population saw drug use as "changing the national character," with 50% believing it represents a "fundamental breakdown in the country's morals." Finally, the largest share of the public strongly supported more severe penalties for the possession and sale of drugs. Thus, current dug policies can be explained by the presence of other citizens' drug use in individual Americans' utility functions. This, in turn, can be modelled as a national negative externality in drug use.[3]

The federalization of drug prosecutions is not explained by local externalities, because local externalities in drug offenses are just as likely to be negative as positive. Presumably, increases in the likelihood of being prosecuted in one locality lead traffickers to move to an adjacent area with a lower likelihood of prosecution. Voters are unlikely to agree to use federal resources to reduce the drug trafficking problems in inner cities if this leads the traffickers to move their operations to the suburbs. In general, as shown in Helsley and Strange [forthcoming], it is difficult to justify the federalization of criminal prosecution with the existence of local externalities.[4]

The federalization of drug prosecution is explained by the existence of national externalities in drug offenses. Lack of eradications and less patrolling of highways create negative

[1994]).

[2]The information in this paragraph is taken from Blandon and Young [1998].

[3]Economists have argued that current drug control policies are not cost effective and should be replaced by the legalization and taxation of illicit drugs (Becker et al. [2002], Kuzienko and Levitt [2003], Miron and Zweibel [1995]). Thus, in addition to wanting to limit drug use, individuals have preferences for limiting drug use in a manner which many not be cost effective. This paper takes as given the public's preferences for imprisoning drug offenders. We then examine whether the public's preferences are consistent with the observed mix of state vs. federal incarcerations.

[4]Helsley and Strange [forthcoming] examine whether private and public policing can co-exist. Although they do not explicitly discuss federalization, public policing can be interpreted as policing by the national government, while private policing can be interpreted as policing by the state and local governments.

externalities for the entire nation. Yet, it is not in the best interest of localities along the production, importation, and distribution networks to take into account the national externalities of drug prosecution.[5] Thus national negative externalities explain why the federal government should have a greater role in drug prosecutions along points of importation. Further, national externalities explain why wealthier states with well functioning criminal justice systems can find it more beneficial to spend resources to reduce drug trafficking outside their state than to spend additional resources in their own state. For instance, West Virginia does not have full-time state prosecutors (Committee on Government Operations [1994]). Thus a large percentage of drug prosecutions in that state are conducted by federal prosecutors.

Decentralized decisions on the resources to spend in combating drug offenses is also inefficient if states disagree on the importance of limiting drug use. According to Blandon and Young [1998], Americans worry about illicit drugs because of their linkage to high rates of crime, their negative effect on national character and morality, and the harmful health consequences of drugs for communities and individuals. These concerns are likely to vary across states, and states that are not as concerned about drug use are less likely to strictly enforce drug laws despite the negative effect this has on other states.

The manner in which federal drug expenditures are allocated provides further indirect evidence that negative national externalities explain the federalization of drug trafficking. In several instances, drug control by the federal government requires matching state contributions. For instance, the federal government gives Byrne grants that require matching state funding. Further, the federal government assists local authorities in using federal forfeiture statutes, and organizes drug trafficking around federal/state task forces that require state and local commitment of resources (see Blumenson and Nilsen [1998], 21 U.S.C. §1706). According to Fiscal Federalism, matching grants should be used when the provision of the

[5]Qunitanilla [1997] discusses the removal from office of a District Attorney in Kansas who drained local resources by convicting drug traffickers along the interstate.

public good benefits other jurisdictions, with the magnitude of the matching share increasing in the extent of the spillover [Oates, 1999]. Hence, the requirement of matching funds is consistent with the government intervening efficiently and drug trafficking generating national externalities.

A model formalizes the intuition provided in this introduction. In particular it is shown that a higher fraction of drug prosecutions are federal in districts where individuals are not strongly opposed to drug use.[6] This paper provides empirical evidence consistent with this conclusion. In particular, it is shown that in districts where a higher fraction of adults favor de-criminalization of marijuana, a higher fraction of individuals convicted to prison terms for drug offenses are convicted in the federal courts. Further, a higher fraction of drug imprisonments are federal in poorer districts and districts that are points of importation.

This paper extends the literature on the role of the federal government. Externalities in drug use lead federal policies to offset local policies. These results stand in contrast to Scholz et al. [1991], Knight [2002] and Strumpf and Oberholzer-Gee [2002]. Scholz et al. [1991] find that counties with Democratic members of Congress have a higher level of Occupational Safety and Health Administration (OSHA) enforcement. Knight [2002] provides evidence consistent with the federal government giving more highway grants to states who value highways more.[7] Strumpf and Oberholzer-Gee [2002] find that states with more diverse preferences about liquor policies are less likely to restrict county liquor laws. These differences can be explained by the nature of the externalities. Poor drug trafficking control is more likely to affect the rest of the nation than poor occupational standards, bad state highways, or lax liquor policies.[8]

[6] A district is a subdivision of a state. The U.S. states are divided into 90 districts. Hence, on average, a state is split into two districts.

[7] Unobserved preferences for highway spending explain the observed positive relation between federal and state highway spending. One can infer this result by noting that when the author instruments for federal spending, increases in federal spending lead to reduced state expenditures on highway construction.

[8] Externalities may still exist in occupational standards, state highways, and liquor policies. For instance, [Strumpf and Oberholzer-Gee, 2002, page 6] assume that there are positive externalities in uniformity of liquor laws.

Section 2 examines theoretically the relation between states' preferences for drug control and the number of drug convictions. Section 3 analyzes empirically the relation between states' preferences for drug control and convictions. The Appendix includes sources and tables.

2 Model

A game relates the degree of federalization of drug prosecutions to district preferences for drug trafficking. In this section, a district refers to a state or a local jurisdiction. In the game the players are the national government and the governments of each district. In the first stage of the game, the national and district governments learn the preferences for drug prosecution in each district. In the second stage, the federal government selects a matching rule for each district. In the third stage, district officials select the level of district expenditures on drug prosecutions. In the fourth stage, federal expenditures on drug prosecution in each district are determined by the district expenditures and the matching rule.

By convention, Greek letters denote parameters, Roman letters denote variables, and all parameters and variables are positive. Specifically, p denotes the fraction of the district population that uses drugs, and c_d and c_f are the fraction of the population in a district convicted for drug offenses by district and federal prosecutors. District expenditures on drug convictions are assumed to equal κc_d. National availability of drugs is denoted by $\hat{p}$ and is a function of the availability of drugs in each district. Further, district drug preferences are parameterized by t. In districts with a high values of t, individuals are less likely to use drugs and are more likely to support prosecution of drug offenses. In general, preferences for use and prosecution differ. However, it will be seen in the empirical section of this paper that differences in preferences for prosecution and use are difficult to identify. Finally, the decisions made in a district are modelled as minimizing the welfare losses from drug use and

enforcement expenditures, l_d.

It is assumed that

$$p = 1 - \alpha(c_d + c_f) - \gamma t + \delta \hat{p} \quad (1)$$

$$l_d = \frac{1}{2} t p^2 + \kappa c_d. \quad (2)$$

Equation (1) states that the number of drug users is decreasing in the number of drug convictions and individuals' distaste for drug use, while increasing in the national availability of drugs. Clearly, the relation between convictions and drug use cannot be linear for the entire range of parameters; hence, the model is to viewed as holding only for the relevant range of the variables. The national negative externalities in drug consumption are $\delta \hat{p}$. As discussed in the introduction, drug externalities take many forms and here we choose to focus on the national negative externalities of drug use.[9]

Equation (2) states that losses from drug trafficking are increasing in drug use, distaste for drug use, and state expenditures on drug convictions.[10] The matching rule selected by the national government is denoted $x(t)$. Finally, the number of federal convictions is determined as $c_f = x(t)c_d$.

Suppose that districts with high levels of drug use have particularly detrimental effects

[9]To model national externalities in preferences, assume that:

$$p = 1 - \alpha(c_d + c_f) - \gamma t \quad (3)$$

$$l_d = \frac{1}{2} t p^2 + \delta \hat{p} + \kappa c_d. \quad (4)$$

This model leads to the same conclusions as the model examined in the paper.

[10]The weight given to drug use, t, is going to be a function of the preferences of voters in the district. The exact weighting can be given by a voting model. Alternatively, one can assume that the district authorities want to maximize expenditures on drug prosecutions, but are more successful at achieving their goals in districts where voters are unfavorably predisposed towards drug use. Note that the loss function for the district does not account for the cost of federal prosecutions. Let C_f be the fraction of the U.S. population convicted by federal prosecutors for drug offenses. Let ϵ be the fraction of U.S. tax revenue paid by the district. Then, the results in the district remain qualitatively the same if we assume that the loss function is

$$l_d = \frac{1}{2} t p^2 + \delta \hat{p} + \kappa c_d + \epsilon C_f. \quad (5)$$

on the nation. If the federal government maximizes the welfare of the districts, then the optimal matching policy reduces differences across states in drug use. For simplicity, we assume that the matching rule is selected to minimize federal expenditures while ensuring that drug use in each state is $\overline{p}$ or lower. The parameter δ, the distribution of the parameter t, and the cost of federal convictions determine the exact value of $\overline{p}$.

Proposition 1 *(1) The fraction of drug convictions that are federal is decreasing in state preferences for drug enforcement, t. (2) Drug use, p, is decreasing in t. (3) The number of federal drug convictions is decreasing in t. (4) The number of state drug convictions can be increasing or decreasing in t.*

Proof Since

$$\begin{aligned} p &= 1-\alpha(1+x)c_d-\gamma t+\delta\hat{p}, \\ c_d &= \frac{1-\gamma t+\delta\hat{p}}{\alpha(1+x)}-\frac{p}{\alpha(1+x)} \\ \frac{\partial l_d}{\partial c_d} &= -tp\alpha(1+x)+\kappa. \end{aligned}$$

By the first order conditions, the state government selects c_d in such a way that

$$p = \frac{\kappa}{t\alpha(1+x)}.$$

Since the federal government seeks to keep drug use at $\overline{p}$, $c_f = 0$ if $\frac{\kappa}{t\alpha} < \overline{p}$. Suppose $\frac{\kappa}{t\alpha} > \overline{p}$. Then,

$$\frac{\kappa}{t\alpha(1+x)} = \overline{p}.$$

It follows that

$$x = \frac{\kappa}{\overline{p}t\alpha}-1,$$

and x is decreasing in t. Further,

$$\frac{c_f}{c_d} = \begin{cases} 0 & \text{if } t > \frac{\kappa}{\overline{p}\alpha} \\ \frac{\kappa}{\overline{p}t\alpha} - 1 & \text{if } t < \frac{\kappa}{\overline{p}\alpha} \end{cases}$$

Since $\frac{c_f}{c_d}$ is decreasing in t and

$$\frac{c_f}{c_f + c_d} = \frac{1}{1 + \frac{c_d}{c_f}},$$

the fraction of drug convictions that are federal is decreasing in t.[11] Similarly, since

$$p = \begin{cases} \frac{\kappa}{t\alpha} & \text{if } t > \frac{\kappa}{\overline{p}\alpha} \\ \overline{p} & \text{if } t < \frac{\kappa}{\overline{p}\alpha}, \end{cases}$$

drug use is decreasing in t.

Let $t < \frac{\kappa}{\overline{p}\alpha}$. Then, $1 - \alpha(1+x)c_d - \gamma t + \delta\hat{p} - \overline{p} = 0$. Hence, by the implicit function theorem,

$$\frac{\partial c_d}{\partial t} = -\frac{\alpha x' c_d + \gamma}{\alpha(1+x)}.$$

It can thus be seen that the number of state convictions can be increasing and decreasing in t. However,

$$\begin{aligned} \frac{\partial x c_d}{\partial t} &= x' c_d + x c_d' \\ &= \frac{\alpha(1+x)}{\alpha(1+x)} x' c_d - x \frac{\alpha x' c_s + \gamma}{\alpha(1+x)} \\ &= \frac{\alpha x' c_d - x\gamma}{\alpha(1+x)} < 0. \end{aligned}$$

Hence, the number of federal convictions is decreasing in t.

[11] More precisely, the fraction of drug convictions is non-increasing in t.

3 Determinants of drug policy

The model presented in Section 2 leads to testable hypotheses. Specifically, the model suggests that the number of federal convictions is a function of the parameter t, which denotes individuals' preferences for drug enforcement. Unfortunately, there are no measures of preferences for drug enforcement available at the district level. However, information on several characteristics which should influence preferences for drug enforcement exists in survey data. One can use the survey data to estimate the association between various population characteristics and attitudes towards illicit drugs. The estimates can then be used to predict drug preferences as a function of population characteristics in each district. Survey data on whether marijuana should be de-criminalized is used to proxy for district preferences for drug policy. Specifically, the survey data is used to estimate the following model:

$$\text{Probability(individual } i \text{ favors legalization of marijuana)} = F(\text{individual } i\text{'s characteristics}), \quad (6)$$

where the characteristics of an individual include age and religious affiliation. The function F estimated in Equation (3) is used to compute:

$$1 - t = F(\text{district characteristics}), \quad (7)$$

where district characteristics include the fraction of the population in a district of a particular age group and religious affiliation. Note that high values of t correspond to a low fraction of the population favoring de-criminalization of marijuana.

Propostion 1 in Section 2 suggests the following regressions:

$$\begin{aligned}
\frac{\text{number of federal drug convictions}}{\text{number of drug convictions}} &= f_r(\text{t, controls}) \\
\text{number of drug users per capita} &= f_{dr}(\text{t, controls}) \\
\text{number of federal drug convictions} &= f_f(\text{t, controls}) \\
\text{number of district drug convictions} &= f_d(\text{t, controls}),
\end{aligned}$$

where t are the preferences for drug enforcement. According to the proposition, $\frac{\partial f_r}{\partial t} < 0$, $\frac{\partial f_{dr}}{\partial t} < 0$, and $\frac{\partial f_f}{\partial t} < 0$, and $\frac{\partial f_d}{\partial t} \gtrless 0$.

The first regression is likely to yield the most robust results, since dividing by the total number of convictions accounts for some of the unobserved district characteristics. Formally, let x be the observed independent variables and w the unobserved independent variables. Suppose the unobserved variables affect federal and state convictions multiplicatively: $f_f(t,x,w) = g_f(t,x)h(w)$ and $f_d(t,x,w) = g_d(t,x)h(w)$. Then, $f_r(t,x) = \frac{g_f(t,x)}{g_f(t,x)+g_d(t,x)}$ does not depend on the unobserved independent variables.

The remaining control variables in the drug conviction regressions account for factors discussed below. As discussed in the introduction, one expects more federal prosecutions in low per-capita income and border districts. Political factors may also lead the federal government to redistribute income from states that have few senators per capita to states that have many senators per capita (i.e., to less populated states).[12] This suggests that less populated states receive a greater per capita share of federal expenditures on drug enforcement. Finally, Boylan [forthcoming] has shown that districts with a more experienced U.S. attorney have more federal convictions.[13] Hence, one expects a higher percentage of drug conviction to be federal in districts with more experienced U.S. attorneys.

[12]See Atlas et al. [1995]. The effect of Senate representation depends on whether the unit of analysis is the congressional district versus a state and the type of government expenditures (Levitt and Snyder [1995], Lee [1998]).

[13]The U.S. attorney is the chief federal prosecutor in a district.

There are several natural control variables that are not included in the regressions. For instance, one may expect a higher number of federal drug convictions in districts with more federal and fewer state prosecutors. The reason for not including these variables is that they are the dependent variables in the model. The number of federal drug convictions is a proxy for all federal drug expenditures, which includes the number of federal prosecutors.

3.1 Data

The survey data was collected by the National Opinion Research Center's General Social Survey. Since 1975, the General Social Survey has collected public opinion data on individual's view towards the legalization of marijuana as well as information about the individual's race, religion, political affiliation, and conservatism.[14]

To estimate preferences for drug enforcement, the following variables are used. The political affiliation of a state is measured by the political affiliation of members of the state house and the state senate.[15] The population, racial composition, population density, and income per capita for each county are obtained from the Area Resource File, which is maintained by the Department of Health and Human Services. The church membership by county is obtained from the Glenmary Research Center. Finally, measures for liberalism for each state are taken from Berry et al. [1998]. The authors first measure the liberalism of each member of the U.S. Congress by analyzing their votes. Measures of liberalism of a state are computed using the measures of liberalism of the representatives and their vote shares at elections.

To estimate the effects of district preferences on drug enforcement, the number of federal drug imprisonments are obtained from the Administrative office of U.S. courts. Because the data is only available aggregated at the federal judicial district, for all regressions the unit of observation is a district.[16] The study focuses on imprisonments because this is the

[14]Individuals were asked their opinion on the legalization of marijuana in the following years: 1983-84, 1986-91, 1993-94, 1996, 1998, 2000.

[15]The data set was compiled by Carl Klarner, "Measurement of Partisan Balance of State Government." The data can be downloaded at http://www.unl.edu/SPPQ/journal_datasets.html.

[16]A federal judicial district is a subset of a state. There are 94 districts in the United States. Since 1996,

only measure of state drug expenditures available for a large number of states and years. The number of state imprisonments is obtained from the National Corrections Reporting Program and is aggregated at the district and year. More details on the data and on the sampling rules are found in Kuzienko and Levitt [2003].

The number of individuals who die because of drug use is used as a proxy for the number of individuals who use drugs. This number is computed using the 'Multiple cause of death in the United States' data set.[17] This is the only proxy for drug use that is available for each state and each year [Wysowski et al., 1993]. A second proxy for drug use is the data from the Monitoring of the Future survey of high school seniors. This survey does not give representative samples at the district level and is not available for all districts and years. Further, drug deaths are likely to be more highly correlated with heavy drug than high school use. This is important because heavy users account for the larger fraction of national drug consumption and hence for the national drug externalities considered in this study. For instance, heavy drug users account for 70% of the reported cocaine consumed [Everingham et al., 1995, page 309]. Nonetheless, with both proxies, the empirical estimates are consistent with the predictions of the theoretical model.

The variable 'Border district' is used to control for districts that are foreign importation points. The variable is coded '1' if the district is one of the following: southern district of California (San Diego), central district of California (Los Angeles), district of Arizona, district of New Mexico, western district of Texas (San Antonio), southern district of Texas (Houston), southern district of Florida (Miami), eastern district of New York (Brooklyn), and southern district of New York (Manhattan).[18]

---

the Administrative office of U.S. courts provides the data at the county level. In Section 3.4, the regressions are re-estimated at the county level for this restricted number of years.

[17] Causes of death are reported on death certification by physicians, medical examiners, or coroners. This information is forwarded to the National Center for Health Statistics who codes the information according to the rules of the International Classification of Diseases (ICD). The ninth edition of the ICD (ICD-9) was used from 1979 to 1998. More details on the data are found in Boylan and Ho [2003].

[18] A justification for the choice of these districts follows. According to Office of National Drug Control Policy [2000], heroin is imported through the states of New York, New Jersey, Florida, California, Arizona, and Texas.

3.2 Estimates of regional preferences

A model of preferences for drug enforcement is estimated using the responses to the following question from the National Opinion Research Center's General Social Survey:

> Some people think the use of marijuana should be made legal. Other people think marijuana use should not be made legal. Which do you favor?

Table 1 describes the characteristics of the sample. Protestants are split into Baptists, other Protestant denominations (Methodists, Presbyterians, Episcopalians, and Lutherans), and non-denominational Protestants (the rest). In Table 2, Regression (1), ordinary least squares is used to estimate an individual's attitude towards legalizing marijuana as a function of the characteristics of an individual. Independents, blacks, liberals, 18-24 year olds, unemployed individuals, and those without religious affiliation are most likely to support the legalization of marijuana. The regression also includes year and region fixed effects. The year fixed effects are graphed in Figure 1.

The model of federalization of drug prosecutions assumes that public opinion towards drug policing is positively correlated with individuals' use of drugs. Specifically, in districts where individuals are more likely to use drugs, individuals are also less likely to prefer strict drug policing. The validity of this hypothesis is examined using the National Household Survey on Drug Abuse which is conducted by the National Institute on Drug Abuse. The data used is for individuals 18 years and older for the years 1982, 1990, and 1995. Summary

A numerical measure for 'Border district' is computed by weighting the number of drug traffickers from a country by the proportion of non-immigrants from that country that arrive in a particular city. For instance, the weighted number of non-immigrants coming to Miami = (Number of Mexican drug traffickers) × (Number of Mexican non-immigrants coming to Miami)/(Number of Mexican non-immigrants coming to all U.S. ports) + (Number of Colombian drug traffickers) × (Number of Colombian non-immigrants coming to Miami)/(Number of Colombian non-immigrants coming to all U.S. ports), ... The number of individuals entering U.S. federal prisons for drug trafficking that are from a particular country is used as the proxy for the number of drug traffickers from that particular country.

Using the data from the U.S. Immigration and Naturalization Service [1999] and The Bureau of Justice Statistics [1997], the five cities with this highest weighted number of immigrants are: Miami (1412), Los Angeles (520), New York (496), Houston (432), Chicago (168).

For these reasons 'Border district' is taken to be all district that border with Mexico, New York City, Los Angeles, and Miami.

statistics for the data are provided in Table 3. In Regression (2) in Table 2, the independent variable is whether an individual reports to have ever used marijuana, cocaine, heroin, or hallucinogens. In Regression (3) the response is whether the individual reports to have used marijuana, cocaine, heroin, or hallucinogens at least four times in the last 30 days.[19] The same individual characteristics explain opinion towards legalization of marijuana, occasional and heavy drug use.[20]

The estimates of Regression (1) in Table 2 are used to estimate the percentage of individuals who favor the legalization of marijuana in each year and district.[21] The sources for the data on the fraction of the population of a political affiliation, race, and religion and the average level of conservatism are listed in Table 4.[22] Table 5 gives the correspondence between the survey variables and the state variables. The imputed values for the percentage of the population that favors the legalization of marijuana vary from 16% (Nebraska in 1990) to 48% (Oregon in 1999).

3.3 Results

In estimating the determinants of drug use, the unit of observation is the federal judicial district during a year. The years analyzed are 1983 through 1999. Table 6 provides sum-

[19]Except for the population size, the coding of the variables is consistent across survey. For the General Social Survey, population size is the size of the place the survey is administered is 1000s. For the National Household Survey on Drug Abuse 1982, -5 denotes the individual resides in a rural area, -4 in a village, -3 in suburbs, -2 in a town, -1 in a city. For the National Household Survey on Drug Abuse 1990 and 1995, -5 denotes an area not in an SMSA and in a rural area, -4 not in an SMSA and not in a rural area, -3 fewer than $250,000$ person in the SMSA, -2 between 250,000 and 999,999 in the SMSA, -1 more than one million inhabitants in the SMSA.

[20]The exceptions are the following. Individuals between 25 and 44 are less likely to favor the legalization of marijuana and be heavy drug users compared to 18 to 25 year olds, but more likely to have used drugs at least once in their life. Individuals with four or more years of college education are more likely to favor decriminalization of marijuana, more likely to have used drugs, but less likely to be heavy users. Blacks are less likely to favor legalization of marijuana and have ever used drugs, but more likely to be heavy users.

[21]The set of variables used to estimate preferences for legalization of marijuana are very similar to set used in Strumpf and Oberholzer-Gee [2002] to estimate the preferences for permitting the sale of liquor.

[22]The state liberalism measure is re-scaled because its range is 0 (most conservative) to 100 (most liberal), while the General Social Survey conservatism measure ranges from 1 (most liberal) to 7 (most conservative). Similarly, the population density variable is re-scaled to match the range of the population size variable in the General Social Survey.

mary statistics for the district and state variables. Table 7 contains the regression of percent drug imprisonments that are federal, drug deaths, high school drug use, federal and state imprisonments on state preferences and controls. The regressions adjust for the serial correlation in the errors by estimating a first-order autoregressive model with year fixed-effects. Unobserved heterogeneity among districts is accounted for by district-level random effects. It can be seen that in districts that are more tolerant of drug use, a higher percentage of drug convictions are federal. The estimated coefficients imply that a one standard deviation in the proportion of the population that favors the legalization of marijuana increases the percentage of convictions that are federal by 15%. Further, consistent with the results in the model, the number of drug deaths is higher in districts that are more tolerant of drug use (Regression 2). In Regression (3), the dependent variable is the fraction of high school seniors who have used an illicit drug. As predicted, in districts with a higher fraction of the population favoring the legalization of marijuana, a higher percentage of high school seniors have used an illegal drug. The coefficient for 'Public opinion' in Regressions (4) and (5) imply that districts more tolerant of drug use have more federal and fewer state convictions, although the coefficients are not statistically significant.

A key variable that is not included in the model of drug prosecutions and drug preferences is an individual's income. Since 1972, the General Social Survey has not changed the coding of income, so that in 1998, 63.5% of responders reported that their income was in the interval '$25,000 or over;' thus the coarseness of the variables makes it of little use. In the regressions in Table 7, the variable 'Income per capita' is thus likely to capture both redistribution of income (from wealthier states to poorer states) and the fact that higher income individuals are more likely to use drugs (see Grossman and Chaloupka [1998]). Hence, consistent with the redistribution of income, districts with higher income per capita have more state imprisonments and fewer federal imprisonments. Consistent with drugs being a normal good, higher-per-capita-income districts have more drug deaths.

Consistent with political theories on the distribution of federal expenditures, districts

with more senators per capita have a higher percentage of drug imprisonments that are federal. Further, border districts and districts with an experienced U.S. attorney have a higher percentage of drug imprisonments that are federal. Finally, the strong degree autocorrelation (ρ) highlight the importance of accounting for the serial correlation in the data.

3.4 Robustness checks

It is possible that the model used to predict preferences for drug enforcement is incorrect. For this reason, in Table 8 the regressions are re-run using the variables used to estimate drug preferences instead of the variable 'public opinion.' The table includes in parentheses the predicted value of the coefficients for regressions (1)-(4). For instance, according to the model of preferences for drug enforcement, a higher percentage of Democrats in a state increases preferences for drug control. According to the model of optimal federalization of drug enforcement, higher preferences for drug enforcement lead to less federalization, less drug use, and fewer federal drug imprisonments. The predictions for the number of state imprisonments is ambiguous. Hence, the model predicts that the first four coefficients in the row 'Democrat' are negative.

In Regression (1), the dependent variable is the percentage of imprisonments that are federal. The only variables in this regression that are statistically significant are: 'Percentage black' and 'Conservatism.' The sign of both variables is as predicted in the model. Most coefficient in the regressions in Table 8 are statistically insignificant, perhaps because of multicollinearity. [Greene, 2000, page 258] suggests that condition numbers greater than 20 are indicative of a multicollinearity problem. For the regression in Table 8 the condition number is 307, while for the regressions in Table 7 the condition number is 11.6.

In Regression (2), the dependent variable is 'Drug Deaths.' 'Democrat,' 'Republican,' 'Catholic,' 'Baptist,' and 'Denominational protestant' are statistically significant and of the predicted sign. The variables 'Less than nine years of education' and 'Unemployment rate' are statistically significant but not of the predicted sign. The wrong sign can be explained

by multicollinearity and by drug deaths being related to both drug use and general health conditions.

The effect of the control variables remains unchanged. Specifically, districts with more senators per capita, lower per capita income, border districts, and districts with an experienced U.S. attorney have a higher percentage of drug convictions that are federal. Hence, the re-distributional properties of federalization are robust to functional specification. Further, multicollinearity in the variables used to measure preferences for drug policies suggests that a model be used to rank districts according to their propensity to favor the prosecutions of drug offenders; i.e., a model similar to the one constructed in Section 3.2.

Another concern is that the variable 'Border' may not properly account for the proportion of federal cases that cannot be prosecuted at the state level. For this reason, Regressions (1) in Table 7 is re-run excluding drug trafficking cases that involve import and exports of drugs. None of the results change. Districts with a higher fractions of (non-import/export) drug imprisonments that are federal are districts where public opinion is more favorable towards decriminalization of marijuana, per capita income is low, senators per capita is high, are points of importation, and have more experienced U.S. attorneys.

The serial correlation in the data was taken into account by assuming an AR(1) error structure. This assumption is very restrictive; in particular it assumes that all districts have the same autoregressive process. The linear regression model with robust standard errors clustered at the district level was estimated to provide estimates that account for arbitrary serial correlation [Wooldridge, 2002, page 152]. The estimates remain unchanged. Namely, districts more prone toward marijuana decriminalization, with more senators per capita, lower per capita income, border districts, and districts with an experienced U.S. attorney have a higher percentage of drug convictions that are federal. Since this estimator is less efficient, the significance level for the variable is decreased and the coefficients for 'Border' and 'U.S. attorney experience' are significant at only the 10% confidence level.[23]

[23]A dynamic model is a more general specification for the autocorrelation in the error process than the

Correlation between district specific unobserved effects and the explanatory variables is another potential source of misspecification. The Hausman test for Regression (1) in Table 7 results in a test statistics of 5.64 (with a corresponding p-value of 0.23 for the χ^2 distribution with four degrees of freedom). Thus, one cannot reject the hypothesis that the unobserved district effects are independent from the explanatory variables.

Since 1996, the number of federal imprisonments is available at the county level from the Administrative Office of U.S. Courts. To further test the robustness of the results, for the years 1996 through 1999, the regressions are estimated at the county level. For most counties and years, the number of federal drug incarceration and the number of drug deaths are zero. For this reason a Tobit model is considered instead of the linear regression model when the dependent variable is the percent of drug imprisonments that are federal. A Poisson model (weighted by the population in a county) is used to estimate the regression when the dependent variables are the number of drug deaths, the number of federal imprisonments, and the number of state imprisonments. Year fixed-effects and county random-effects are included in all regression. Table 9 contains summary statistics for the data. The imputed values for the percentage of the population that favors the legalization of marijuana vary from 9% (Cimarron County, OK; 1996) to 55% (New York County, NY; 1998).

The results of the county Tobit and Poisson regressions are consistent with the prediction in the theoretical model.[24] Specifically, in counties where individuals favor the decriminalization of marijuana, a greater fraction of drug imprisonments are federal, there are more drug deaths, and there are more federal imprisonments (Table 10).

As discussed in Section 3, per capita income is likely to affect drug use and federal government assistance. Consistent with Fiscal Federalism, in states with higher per capita income, a lower fraction of imprisonments are federal. Further, in counties with higher per

AR(1) process. Including the lag of the percentage of imprisonments that are federal does not change the result for Regressions (1) in Table 7, but makes the coefficient for the variable 'Public opinion' insignificant. However, a common factors test [Greene, 2000, page 552] can be used to show that the restrictions in the coefficients implied by the AR(1) process cannot be rejected at the 10% significant level.

[24]Similar results are obtained if the Tobit model is used for all regressions.

capita income, there are more drug deaths and more drug imprisonments. The regressions are re-estimated in Table 11 with the variables that are used to estimate drug preferences. Again, the results are by and large consistent with the predictions in the model of federalization and state preferences.

This study has focused in the federalization of drug crimes. However, similar explanations as the ones provided in this paper can be used to explain the federalization of all crimes. Suppose the dependent variables is the ratio of all non-drug federal imprisonments over the sum of all non-drug imprisonments. Then, districts with a higher fractions of non-drug imprisonments that are federal are districts with individuals favorably predisposed toward the decriminalization of marijuana, with higher per capita income, with more experiences U.S. attorneys, and in states that are less populated. The effects of public opinion and per capita income are however statistically insignificant. The results are consistent with other crimes not having the same degree of national externalities as drug trafficking.

4 Conclusion

This study takes an individuals' preferences for drug prosecution as given and examines whether the federal/state mix in convictions is efficient. The model predicts more federal drug trafficking convictions in districts where individuals are not as committed to drug convictions. The federal government thus accounts for the negative externalities not considered in state and local decision-making. The empirical evidence is largely consistent with this prediction.

A large body of literature has suggested that the current level of drug convictions is not cost effective (Becker et al. [2002], Kuzienko and Levitt [2003], Miron and Zweibel [1995]). The analysis in the paper can be extended to alternative drug strategies. For instance, consider drug treatment policies. If successful, these policies reduce drug use and thus reduce negative externalities in other localities. Alternatively, consider the system where

narcotics are legal but taxed. Then, higher taxes and greater efforts to limit tax avoidance lead to lower negative externalities for other localities. Hence, regardless of the drug control strategy, the national government has a role in internalizing these externalities, and the federal role in drug control is greater in localities where individuals are not as opposed to illicit drug use.

References

Cary M. Atlas, Thomas W. Gilligan, Robert J. Hendershott, and Mark A. Zupan. Slicing the federal government net spending pie: Who wins, who loses, and why. *American Economic Review*, 85(3):624–629, June 1995.

Gary Becker, Michael Grossman, and Kevin Murphy. The simple economics of the war on drugs. Mimeo, U. Chicago econ. dept., 2002.

William D. Berry, Evan J. Ringquist, Richard C. Fording, and Russell L. Hanson. Measuring citizen and government ideology in the American states, 1960-93. *American Journal of Political Science*, 42:327–348, January 1998.

Robert J. Blandon and John T. Young. The public and the war on illicit drugs. *JAMA*, 279 (11):827–832, 1998.

Eric Blumenson and Eva Nilsen. Policing for profit: The drug war's hidden economic agenda. *University of Chicago Law Review*, 65:35–112, Winter 1998.

Richard Boylan and Vivian Ho. Tracking variations in drug deaths across U.S. cities. Mimeo, 2003.

Richard T. Boylan. Salaries, turnover, and performance in the federal criminal justice system. *Journal of Law and Economics*, forthcoming.

Bureau of Justice Statistics. Offenders entering federal prison during fiscal year 1996: Bop96in. Washington, D.C.: The Urban Institute (distributor), 1997.

Francis X. Clines. Reaping marijuana in hills emptied of stills. *New York Times*, page 1.16, June 4, 2000.

Steven D. Clymer. Unequal justice: The federalization of criminal law. *Southern California Law Review*, 70:643–739, March 1997.

Committee on Government Operations. Are federal prosecutors located where we need them? Hearing before the information, justice, transportation, and agricultural subcommittee of the committee on government operations, House of Representatives, One hundred third Congress, First session, October 14, 1993. 1994.

Susan M. Sohler Everingham, C. Peter Rydell, and Jonathan P. Caulkins. Cocaine consumption in the United States: Estimating past trends and future scenarios. *Socio-Economic Planning Science*, 29(4):305–314, 1995.

Edward L. Glaeser, Daniel P. Kessler, and Anne Morrison Piehl. What do prosecutors maximize? An analysis of the federalization of drug crimes. *American Law and Economics Review*, 2(2):259–290, 2000.

William Greene. *Econometric analysis*. Prentice Hall, Englewood Cliffs, fourth edition, 2000.

Michael Grossman and Frank J. Chaloupka. The demand for cocaine by young adults: a rational addiction approach. *Journal of Health Economics*, 17(4):427–474, August 1998.

Robert W. Helsley and William C. Strange. Mixed markets and crime. *Journal of Public Economics*, forthcoming.

Brian Knight. Endogenous federal grants and crowd-out of state government spending: Theory and evidence from the federal highway aid program. *American Economic Review*, 92(1):71–92, March 2002.

Ilyana Kuzienko and Steven D. Levitt. An empirical analysis of imprisoning drug offenders. *Journal of Public Economics*, 2003.

Frances E. Lee. Representation and public policy: The consequences of senate apportionment for the geographic distribution of federal funds. *Journal of Politics*, 60(1):34–62, February 1998.

Steven D. Levitt and James M. Snyder, Jr. Political parties and the distribution of federal outlays. *American Journal of Political Science*, 39(4):958–980, November 1995.

Jeffrey A. Miron and Jeffrey Zweibel. The economic case against drug prohibition. *Journal of Economic Perspectives*, 1995(9):175–192, 1995.

Alistair E. Newbern. Good cop, bad cop: Federal prosecution of state-legalized medical marijuana use after United States v. Lopez. *California Law Review*, 88:1575–1634, October 2000.

Wallace E. Oates. *Fiscal Federalism*. Harcourt Barce Jovanovich, New York, 1972.

Wallace E. Oates. An essay on fiscal federalism. *Journal of Economic Literature*, 37:1120–1149, September 1999.

Office of National Drug Control Policy. Estimation of heroin availability 1995-1998. Washington, D.C., 2000.

Carl Qunitanilla. A prosecutor wins battle agains drugs but loses the war - Tenacious Kansan was great for the highway patrol but grated on community. *Wall Street Journal*, page A1, January 16, 1997.

Selwyn Raab. U. S. attorney steering office in new directions. *The New York Times*, page B1, January 9, 1984.

C. Peter Rydell and Susan S. Everingham. *Controlling Cocaine: Supply Versus Demand Policies*. RAND, Santa Monica, CA, 1994.

John T. Scholz, Jim Twombly, and Barbara Headrick. Street-level political controls over federal bureaucracy. *American Political Science Review*, 85(3):829–850, September 1991.

Koleman S. Strumpf and Felix Oberholzer-Gee. Endogenous policy decentralization: Testing the central tenet of economic federalism. *Journal of Political Economy*, 110(1):1–36, 2002.

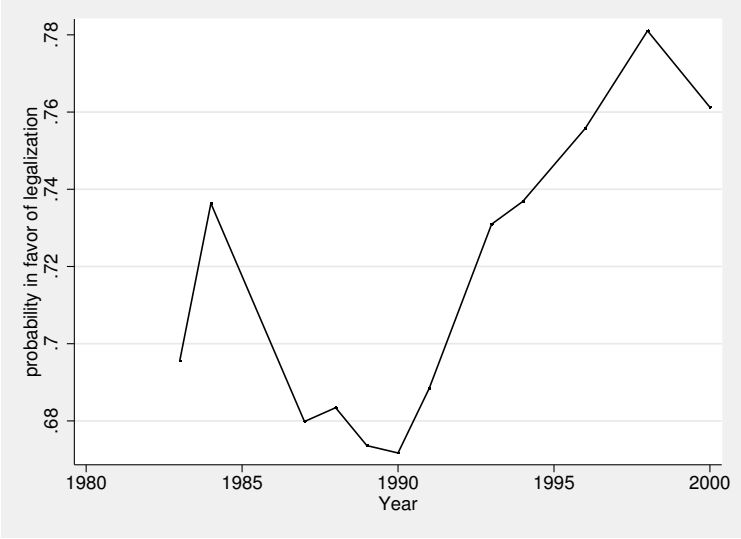
U.S. Immigration and Naturalization Service. Statistical yearbook of the immigration and naturalization service, 1997. U.S. Government Printing Office: Washington, D.C., 1999.

Jeffrey M. Wooldridge. *Econometric analysis of cross section and panel data*. MIT Press, Cambridge, 2002.

Diane K. Wysowski, Susan E Schober, Robert P. Wise, and Andrea Kotstein. Mortality attributed to misuse of psychoactive drugs, 1979-1988. *Public Health Reports*, 108(5): 565–570, Sept-Oct 1993.

Appendix

Figure 1: Likelihood that an individual favors legalization of marijuana



The numbers correspond to the year fixed-effects for Regression (1) in Table 2. This is the likelihood that a young, employed, white, independent from the Pacific region with no religious affiliation supports the decriminalization of marijuana.

Table 1: Summary statistics for General Social Survey

Variable	Mean	Std. Dev.	Min.	Max.	N
Legalize Marijuana	0.23	0.42	0	1	16654
Democrat	0.37	0.48	0	1	16654
Republican	0.28	0.45	0	1	16654
Population size	3.6	11.96	0	78.95	16654
Age between 25 and 44	0.46	0.5	0	1	16654
Age between 45 and 64	0.27	0.44	0	1	16654
Age 65 or older	0.18	0.38	0	1	16654
Less than 9 years education	0.07	0.25	0	1	16654
4 years college or more	0.22	0.41	0	1	16654
Black	0.14	0.34	0	1	16654
Other race	0.04	0.19	0	1	16654
Unemployed	0.03	0.16	0	1	16654
Conservatism	4.15	1.35	1	7	16654
Jewish	0.02	0.14	0	1	16654
Catholic	0.24	0.43	0	1	16654
Non-denom. Protestant	0.18	0.38	0	1	16654
Baptist	0.21	0.41	0	1	16654
Denominat. Protestant	0.23	0.42	0	1	16654
New England	0.05	0.22	0	1	16654
Middle Atlantic	0.14	0.35	0	1	16654
East North Central	0.18	0.38	0	1	16654
West North Central	0.08	0.28	0	1	16654
South Atlantic	0.18	0.39	0	1	16654
East South Central	0.07	0.26	0	1	16654
West South Central	0.09	0.28	0	1	16654
Mountain	0.06	0.24	0	1	16654
Pacific	0.13	0.34	0	1	16654
1983	0.04	0.21	0	1	16654
1984	0.08	0.27	0	1	16654
1986	0.08	0.27	0	1	16654
1987	0.1	0.3	0	1	16654
1989	0.06	0.23	0	1	16654
1989	0.06	0.23	0	1	16654
1990	0.05	0.22	0	1	16654
1991	0.06	0.23	0	1	16654
1993	0.06	0.23	0	1	16654
1994	0.11	0.31	0	1	16654
1996	0.1	0.31	0	1	16654
1998	0.1	0.3	0	1	16654
2000	0.1	0.3	0	1	16654

Table 2: Regression estimates of the probability an individual supports the de-criminalizing of marijuana, has ever used drug, is currently a heavy drug user

	Legalize Marijuana	Drug Use	Heavy Use
	(1)	(2)	(3)
Democrat	-.03 (.008)***		
Republican	-.053 (.008)***		
Population size	.001 (.0003)***	.013 (.002)***	.005 (.001)***
Age between 25 and 44	-.042 (.011)***	.033 (.008)***	-.034 (.004)***
Age between 45 and 64	-.092 (.012)***	-.241 (.011)***	-.074 (.005)***
Age 65 or older	-.14 (.013)***	-.344 (.014)***	-.078 (.007)***
Less than 9 years education	-.028 (.013)*	-.175 (.012)***	-.017 (.006)**
4 years college or more	.036 (.008)***	.03 (.008)***	-.019 (.004)***
Black	-.015 (.01)	-.071 (.008)***	.007 (.004)*
Other race	-.113 (.017)***	-.145 (.016)***	-.023 (.008)**
Unemployed	.112 (.02)***	.06 (.013)***	.048 (.006)***
Conservatism	-.043 (.002)***		
Catholic	-.156 (.011)***		
Jewish	.027 (.024)		
Non-denom. Protestant	-.176 (.012)***		
Baptist	-.173 (.012)***		
Denominat. Protestant	-.144 (.012)***		

Table 2: *Continuation*

	Legalize Marijuana	Drug Use	Heavy Use
	(1)	(2)	(3)
Const.	.722	.452	.101
	(.017)***	(.01)***	(.005)***
Obs.	16654	23553	23553
R^2	.091	.1	.023

Notes: All regressions include year and regional dummies. The reference category for political affiliation is 'Independent or other party.' The reference category for religion affiliation is 'No religious affiliation or other religion.' The reference category for the region is 'Pacific.' The reference year for the survey is 2000. * significant at the 5% level; ** significant at the 1% level; *** significant at the 0.1% level.

Table 3: Summary statistics for National Household Survey on Drug Abuse

Variable	**Mean**	**Std. Dev.**	**Min.**	**Max.**	**N**
Ever used drugs	0.35	0.48	0	1	23553
Heavy drug user	0.05	0.22	0	1	23553
Population size	-2.05	1.39	-5	-1	23553
Age between 25 and 44	0.58	0.49	0	1	23553
Age between 45 and 64	0.13	0.34	0	1	23553
Age 65 or older	0.06	0.24	0	1	23553
Black	0.21	0.41	0	1	23553
Other race	0.04	0.19	0	1	23553
Less than 9 years education	0.08	0.27	0	1	23553
4 years college or more	0.16	0.37	0	1	23553
Unemployed	0.06	0.23	0	1	23553
New England	0.03	0.18	0	1	23553
Middle Atlantic	0.14	0.35	0	1	23553
East North Central	0.13	0.34	0	1	23553
West North Central	0.06	0.23	0	1	23553
South Atlantic	0.22	0.42	0	1	23553
East South Central	0.06	0.24	0	1	23553
West South Central	0.13	0.34	0	1	23553
Mountain	0.05	0.21	0	1	23553
Pacific	0.18	0.38	0	1	23553
1982	0.16	0.37	0	1	23553
1990	0.29	0.46	0	1	23553
1995	0.54	0.5	0	1	23553

Table 4: Data References

Data type	**Source**
Public opinion	General Social Survey National Opinion Research Center (NORC)
Drug use	National Household Survey on Drug Abuse National Institute on Drug Abuse
Party affiliation	Fraction of members of the state house, state senate governor that are of a political party
Population, racial composition, unemployment rate, and income per capita	Area Resource File Department of Health and Human Services
Church membership	Churches and Church Membership in the United States Glenmary Research Center
State liberalism	Berry et al. [1998] (ICPSR 1208)
State imprisonments	The National Corrections Reporting Program (ICPSR 2017, 2613, 3029, 3339)
Federal imprisonments	Federal court cases: Integrated data base 1970-2000 (ICPSR 8429)
Drug deaths	Multiple cause of death in the U.S. National Center for Health Statistics
High school drug use	Monitoring the Future
U.S. attorney experience	Boylan [forthcoming]

Table 5: Correspondence between survey variables and district variables

Survey variables	**District variables**
Democrat	% of state legislature Democrat
Republican	% of state legislature Republican
Population size	District population density
Black	% of district population black
Conservative	State measure of liberalism
Religious affiliation	$\frac{\text{\# of adherents for religious affiliation in district}}{\text{population in district}}$

Table 6: Summary statistics for district level data

Variable	Mean	Std. Dev.	Min.	Max.	N
% federal imprisonments	0.2	0.16	0	0.97	1204
Drug deaths per 1,000,000	18.82	24.21	0	286.01	1129
High school drug use	0.74	0.15	0.25	0.94	552
Federal imprisonments per 100,000	6.16	5.9	0	55.59	1204
State imprisonments per 100,000	37.66	34.01	0.26	191.56	1204
Public opinion	0.31	0.06	0.16	0.48	1204
Inc. per cap. (10,000s)	2.31	0.46	1.27	5.01	1204
Senators per 1,000,000	0.58	0.67	0.06	4.41	1204
Border district	0.08	0.28	0	1	1204
U.S. attorney experience	3.36	2.45	0	13.25	1204
1983	0.03	0.16	0	1	1204
1984	0.05	0.21	0	1	1204
1985	0.06	0.23	0	1	1204
1986	0.06	0.23	0	1	1204
1987	0.06	0.24	0	1	1204
1988	0.06	0.24	0	1	1204
1989	0.06	0.24	0	1	1204
1990	0.06	0.24	0	1	1204
1991	0.07	0.25	0	1	1204
1992	0.06	0.24	0	1	1204
1993	0.06	0.24	0	1	1204
1994	0.06	0.24	0	1	1204
1995	0.06	0.24	0	1	1204
1996	0.06	0.24	0	1	1204
1997	0.06	0.24	0	1	1204
1998	0.06	0.25	0	1	1204
1999	0.06	0.24	0	1	1204

Table 7: Relation among public opinion, drug use, and drug imprisonments

	Perc. impr. fed.	Deaths	Use	Fed. impr.	State impr.
	(1)	(2)	(3)	(4)	(5)
Public opinion	.508	34.897	.559	4.753	-19.334
	(.166)**	(20.237)	(.106)***	(5.307)	(25.828)
Inc. per cap. (10,000s)	-.077	16.538	.015	-2.094	9.618
	(.027)**	(3.17)***	(.014)	(.892)*	(4.494)*
Senators per 1,000,000	.081	-2.524	.012	.202	-10.943
	(.017)***	(1.743)	(.01)	(.559)	(2.843)***
Border district	.139	31.994	-.01	8.244	12.191
	(.05)**	(4.99)***	(.018)	(1.617)***	(8.192)
U.S. attorney experience	.003	.109	.0004	.12	-.211
	(.001)*	(.168)	(.002)	(.04)**	(.192)
Obs.	1204	1129	552	1204	1204
R^2	.202	.505	.829	.238	.371
ρ	.659	.616	.593	.745	.806

Notes: District random-effects linear model with an AR(1) disturbance. In each regression the unit of observation is the district/year. In Regression (1) the dependent variable is the percentage of drug imprisonments that are federal. In Regression (2) the dependent variable is number of individuals who die from drug abuse and dependency per 1,000,000 inhabitants. In Regression (3) the dependent variable is the fraction of high school seniors who have used an illicit drug. In Regression (4) the dependent variable is the number of federal drug imprisonments per 100,000 inhabitants. In Regression (5) the dependent variable is the number of state and local imprisonment per 100,000 inhabitants. 'Public opinion' is the predicted percentage of the district that favors the de-criminalization of marijuana. The coefficients for the year fixed-effects are omitted from the table. * significant at the 5% level; ** significant at the 1% level; *** significant at the 0.1% level.

Table 8: Relation among public opinion, drug use, and drug imprisonments

	Perc. impr. fed.	Deaths	Use	Fed. impr.	State impr.
	(1)	(2)	(3)	(4)	(5)
Democrat (−)	-.31	-286.624	.054	7.588	-272.822
	(1.002)	(122.004)*	(.748)	(32.469)	(152.327)
Republican (−)	-.306	-281.606	.097	8.989	-276.776
	(1.004)	(122.2)*	(.749)	(32.529)	(152.592)
Population density (+)	-.003	4.6	0	.049	2.1
	(.007)	(.503)***	(.003)	(.235)	(.876)*
Age between 25 and 44 (−)	.311	26.569	-.203	10.691	-11.847
	(1.32)	(123.662)	(.876)	(46.662)	(203.228)
Age between 35 and 44 (−)	2.018	-103.957	.059	-12.882	-705.856
	(1.195)	(107.427)	(.719)	(42.189)	(177.249)***
Age 65 or older (−)	1.427	16.224	-.976	30.002	-219.954
	(1.118)	(104.321)	(.738)	(39.619)	(172.61)
$<$ 9 years education (−)	-.002	1.328	-.001	-.003	.609
	(.003)	(.334)***	(.002)	(.119)	(.544)
$\geq$ 4 years college (+)	.006	.765	-.005	.009	-2.458
	(.005)	(.409)	(.003)*	(.16)	(.657)***
Percentage black (−)	-.314	-.872	-.111	3.434	85.337
	(.159)*	(11.819)	(.078)	(5.644)	(20.451)***
Unemployment rate (+)	-.255	-78.373	-.431	-3.629	78.583
	(.332)	(39.673)*	(.315)	(10.919)	(51.943)
Conservatism (−)	-.022	1.893	-.039	-.234	1.513
	(.009)**	(1.041)	(.008)***	(.277)	(1.273)
Catholic (−)	-.089	-27.623	-.054	-1.838	7.141
	(.131)	(9.833)**	(.067)	(4.63)	(17.09)
Jewish (+)	-.537	20.938	-.052	-48.915	-32.829
	(1.002)	(82.244)	(.44)	(35.616)	(141.506)
Non-denom. Protest. (−)	-.116	-5.417	-.178	-9.959	-31.27
	(.197)	(14.67)	(.106)	(6.994)	(25.785)
Baptist (−)	-.24	-101.431	-.023	-2.999	-15.489
	(.363)	(28.013)***	(.196)	(12.866)	(47.886)
Denomin. Protest. (−)	-.302	-171.355	-.376	-25.461	-96.577
	(.415)	(31.29)***	(.202)	(14.719)	(54.456)

Table 8: *Continuation*

	Perc. impr. fed.	Deaths	Use	Fed. impr.	State impr.
	(1)	(2)	(3)	(4)	(5)
Inc. per cap. (10,000s)	-.093	-1.464	.032	-1.874	17.252
	(.037)*	(4.054)	(.028)	(1.252)	(5.747)**
Senators per 1,000,000	.059	-.114	.014	.443	-4.028
	(.017)***	(1.255)	(.01)	(.59)	(2.163)
Border district	.184	-.393	.0007	9.021	-4.234
	(.055)***	(4.285)	(.025)	(1.929)***	(7.207)
U.S. attorney experience	.003	.097	.0007	.116	-.242
	(.001)*	(.165)	(.002)	(.041)**	(.194)
Obs.	1204	1129	552	1204	1204
R^2	.297	.715	.847	.258	.606
ρ	.634	.578	.556	.704	.775

Notes: District random-effects linear model with an AR(1) disturbance. In each regression the unit of observation is the district/year. The sign included in parenthesis next to a variable denote the effect of that variable on the likelihood that the individual favors the legalization of marijuana (i.e., the sign of the corresponding coefficient in Regression (1), Table 2). The coefficients for the year fixed-effects are omitted from the table. * significant at the 5% level; ** significant at the 1% level; *** significant at the 0.1% level.

Table 9: Summary statistics for county level data

Variable	**Mean**	**Std. Dev.**	**Min.**	**Max.**	**N**
% federal imprisonments	0.11	0.22	0	1	8931
Drug deaths	2.76	19.97	0	732	8931
Federal imprisonments	7.27	42.78	0	1648	8931
State imprisonments	67.57	428.45	0	16093	8931
Public opinion	0.32	0.06	0.09	0.55	8931
County inc. per cap. (10,000s)	2.18	0.54	0.42	8.37	8931
State inc. per cap. (10,000s)	2.6	0.33	1.92	3.65	8931
Senators per 1,000,000	0.49	0.52	0.06	3.27	8931
Border district	0.06	0.23	0	1	8931
U.S. attorney experience	3.37	1.57	0	6.75	8931

Table 10: Relation among public opinion, drug use, and drug imprisonments – county estimates

	Perc. impr. fed.	Deaths	Fed. impr.	State impr.
	(1)	(2)	(3)	(4)
Public opinion	.887	18.462	1.639	.903
	(.146)***	(.552)***	(.309)***	(.128)***
County inc. per cap. (10,000s)	.064	-.007	-.039	-.072
	(.017)***	(.049)	(.038)	(.013)***
State inc. per cap. (10,000s)	-.154	-4.036	.64	.284
	(.029)***	(.099)***	(.059)***	(.022)***
Senators per 1,000,000	.022	-.529	.043	-.36
	(.017)	(.059)***	(.054)	(.036)***
Border district	.244	.646	3.111	-.032
	(.035)***	(.164)***	(.15)***	(.099)
U.S. attorney experience	.015	-.067	-.0003	.008
	(.003)***	(.006)***	(.003)	(.001)***
Obs.	8931	12372	12372	10424
Log likelihood	-4070.602	-15192.97	-20549.55	-36056.5

Notes: Tobit (1) and Poisson (2–4) regressions. The Poisson regressions are weighted by the county population. The unit of observation is the county-year, for the years 1996-1999. All regressions include year fixed-effects and county random-effects. * significant at the 5% level; ** significant at the 1% level; *** significant at the 0.1% level.

Table 11: Relation among public opinion, drug use, and drug imprisonments – county estimates

	Perc. impr. fed.	Deaths	Fed. impr.	State impr.
	(1)	(2)	(3)	(4)
Democrat (−)	-1.575	-6.036	4.655	2.072
	(1.402)	(1.954)**	(1.564)**	(.464)***
Republican (−)	-1.507	-4.969	5.192	2.138
	(1.403)	(1.988)*	(1.572)***	(.475)***
Population density (+)	.0009	-.004	-.04	-.02
	(.005)	(.017)	(.031)	(.008)**
Age between 25 and 44 (−)	.053	21.045	-5.604	-4.42
	(.433)	(1.296)***	(1.728)**	(.781)***
Age between 35 and 44 (−)	-.711	-10.093	-1.967	-.731
	(.365)	(1.164)***	(1.484)	(.746)
Age 65 or older (−)	.144	19.688	-1.854	-3.607
	(.423)	(1.292)***	(1.557)	(.735)***
$<$ 9 years education (−)	.007	-.038	.049	-.036
	(.002)***	(.007)***	(.007)***	(.003)***
$\geq$ 4 years college (+)	.01	.048	.011	-.027
	(.002)***	(.006)***	(.006)	(.003)***
Percentage black (−)	.061	-.073	2.302	2.798
	(.06)	(.214)	(.265)***	(.14)***
Unemployment rate (+)	.325	9.991	-2.934	-.145
	(.299)	(.882)***	(.515)***	(.255)
Conservatism (−)	-.048	-.235	-.006	.022
	(.014)***	(.032)***	(.023)	(.009)*
Catholic (−)	-.017	-.272	-1.314	.116
	(.071)	(.228)	(.204)***	(.138)
Jewish (+)	-.082	19.675	8.037	9.724
	(.692)	(2.322)***	(2.298)***	(.865)***
Non-denom. Protest. (−)	-.409	-1.621	-1.511	-.094
	(.114)***	(.337)***	(.403)***	(.248)
Baptist (−)	-.585	-.039	-1.484	2.253
	(.084)***	(.322)	(.336)***	(.191)***
Denomin. Protest. (−)	-.636	-6.887	-3.06	-4.08
	(.141)***	(.619)***	(.476)***	(.319)***

Table 11: *Continuation*

	Perc. impr. fed.	Deaths	Fed. impr.	State impr.
	(1)	(2)	(3)	(4)
County inc. per cap. (10,000s)	-.014	-.529	-.053	-.023
	(.026)	(.058)***	(.045)	(.015)
State inc. per cap. (10,000s)	-.173	-1.414	.576	.233
	(.033)***	(.081)***	(.07)***	(.031)***
Senators per 1,000,000	.006	-.1	.274	.004
	(.017)	(.043)*	(.059)***	(.036)
Border district	.129	.325	2.73	.373
	(.041)**	(.109)**	(.184)***	(.096)***
U.S. attorney experience	.023	.0005	.003	.007
	(.004)***	(.006)	(.003)	(.001)***
Obs.	8931	12372	12372	10424
Log likelihood	-3990.122	-14866.83	-20385.5	-35439.69

Notes: Tobit (1) and Poisson (2–4) regressions. The Poisson regressions are weighted by the county population. The unit of observation is the county-year, for the years 1996-1999. All regressions include year fixed-effects and county random-effects. * significant at the 5% level; ** significant at the 1% level; *** significant at the 0.1% level.