

The Budgetary Implications of Marijuana Prohibition

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Executive Summary

- Government prohibition of marijuana is the subject of ongoing debate.
- One issue in this debate is the effect of marijuana prohibition on government budgets. Prohibition entails direct enforcement costs and prevents taxation of marijuana production and sale.
- This report examines the budgetary implications of legalizing marijuana – taxing and regulating it like other goods – in all fifty states and at the federal level.
- The report estimates that legalizing marijuana would save \$7.7 billion per year in government expenditure on enforcement of prohibition. \$5.3 billion of this savings would accrue to state and local governments, while \$2.4 billion would accrue to the federal government.
- The report also estimates that marijuana legalization would yield tax revenue of \$2.4 billion annually if marijuana were taxed like all other goods and \$6.2 billion annually if marijuana were taxed at rates comparable to those on alcohol and tobacco.
- Whether marijuana legalization is a desirable policy depends on many factors other than the budgetary impacts discussed here. But these impacts should be included in a rational debate about marijuana policy.

I. Introduction

Government prohibition of marijuana is the subject of ongoing debate. Advocates believe prohibition reduces marijuana trafficking and use, thereby discouraging crime, improving productivity and increasing health. Critics believe prohibition has only modest effects on trafficking and use while causing many problems typically attributed to marijuana itself.

One issue in this debate is the effect of marijuana prohibition on government budgets. Prohibition entails direct enforcement costs, and prohibition prevents taxation of marijuana production and sale. If marijuana were legal, enforcement costs would be negligible and governments could levy taxes on the production and sale of marijuana. Thus, government expenditure would decline and tax revenue would increase.

This report estimates the savings in government expenditure and the gains in tax revenue that would result from replacing marijuana prohibition with a regime in which marijuana is legal but taxed and regulated like other goods. The report is not an overall evaluation of marijuana prohibition; the magnitude of any budgetary impact does not by itself determine the wisdom of prohibition. But the costs required to enforce prohibition, and the transfers that occur because income in a prohibited sector is not taxed, are relevant to rational discussion of this policy.

The policy change considered in this report, marijuana legalization, is more substantial than marijuana decriminalization, which means repealing criminal penalties against possession but retaining them against trafficking. The budgetary implications of legalization exceed those of decriminalization for three reasons.¹ First, legalization eliminates arrests for trafficking in addition to eliminating arrests for possession. Second, legalization saves prosecutorial, judicial, and incarceration expenses; these savings are minimal in the case of decriminalization. Third, legalization allows taxation of marijuana production and sale.

This report concludes that marijuana legalization would reduce government expenditure by \$7.7 billion annually. Marijuana legalization would also generate tax revenue of \$2.4 billion

¹ See, for example, the estimates in Miron (2002) versus those in Miron (2003c).

annually if marijuana were taxed like all other goods and \$6.2 billion annually if marijuana were taxed at rates comparable to those on alcohol and tobacco. These budgetary impacts rely on a range of assumptions, but these probably bias the estimated expenditure reductions and tax revenues downward.

The remainder of the report proceeds as follows. Section II estimates state and local expenditure on marijuana prohibition. Section III estimates federal expenditure on marijuana prohibition. Section IV estimates the tax revenue that would accrue from legalized marijuana. Section V discusses caveats and implications.

II. State and Local Expenditure for Drug Prohibition Enforcement

The savings in state and local government expenditure that would result from marijuana legalization consists of three main components: the reduction in police resources from elimination of marijuana arrests; the reduction in prosecutorial and judicial resources from elimination of marijuana prosecutions; and the reduction in correctional resources from elimination of marijuana incarcerations.² There are other possible savings in government expenditure from legalization, but these are minor or difficult to estimate with existing data.³ The omission of these items biases the estimated savings downward.

To estimate the state savings in criminal justice resources, this report uses the following procedure. It estimates the percentage of arrests in a state for marijuana violations and multiplies this by the budget for police. It estimates the percentage of prosecutions in a state for marijuana violations and multiplies this by the budget for prosecutors and judges. It estimates the percentage of incarcerations in a state for marijuana violations and multiplies this by the budget for prisons. It then sums these components to estimate the overall reduction in government expenditure. Under plausible assumptions, this procedure yields a reasonable estimate of the cost savings from marijuana legalization.⁴

² This report addresses only the criminal justice costs of enforcing marijuana prohibition; it does not address any possible changes in prevention, education, or treatment expenses that might accompany marijuana legalization. The narrower approach is appropriate because the decision to prohibit marijuana is separate from the decision to subsidize prevention, education and treatment activities. Marijuana legalization might nevertheless cause some reduction in government expenditure for demand-side policies. For example, legalization would likely mean reduced criminal justice referrals of marijuana offenders to treatment; this category accounted for 58.1% of marijuana treatment referrals in 2002 (U.S. Department of Health and Human Services (2004, Table 4, p.15)). Thus, the approach adopted here implies a conservative estimate of the reduction in government expenditure from marijuana legalization.

³ For example, under current rules regarding parole and probation, a positive urine test for marijuana can send a parolee or probationer to prison, regardless of the original offense. These rules might change under legalization, implying additional reductions in government expenditure.

⁴ The key assumption is that the technology is constant-returns to scale, so that average costs equal marginal costs. This equivalence is not necessarily accurate in the short-run or for very small communities but is likely a good approximation overall.

The Police Budget Due to Marijuana Prohibition

The first cost of marijuana prohibition is the portion of state police budgets devoted to marijuana arrests.

Table 1 calculates the fraction of arrests in each state due to marijuana prohibition. Column 1 gives the total number of arrests for the year 2000.⁵ Column 2 gives the number of arrests for marijuana possession violations. Column 3 gives the number of arrests for marijuana sale/manufacturing violations. Columns 4 and 5 give the ratio of Column 2 to Column 1 and Column 3 to Column 1, respectively; these are the percentages of arrests for possession and sale/manufacture of marijuana, respectively.

The information in Columns 4 and 5 is what is required in the subsequent calculations, subject to one modification. Some arrests for marijuana violations, especially those for possession, occur because the arrestee is under suspicion for a non-drug crime but possesses marijuana that is discovered by police during a routine search. This means an arrest for marijuana possession is recorded, along with, or instead of, an arrest on the other charge. If marijuana possession were not a criminal offense, the suspects in such cases would still be arrested on the charge that led to the search, and police resources would be used to approximately the same extent as when marijuana possession is criminal.⁶

In determining which arrests represents a cost of marijuana prohibition, therefore, it is appropriate to count only those that are “stand-alone,” meaning those in which a marijuana violation rather than some other charge is the reason for the arrest. This issue arises mainly for

⁵ This part of the report relies on data for 2000 since that is the last year for which complete information on arrests is available. After estimating expenditure for 2000, the report adjusts for inflation between 2000 and 2003.

⁶ To the extent it takes additional resources to process an arrestee on multiple charges rather than on a single charge, there is still a net utilization of police resources in such cases due to prohibition. In addition, there is typically a lab test to determine the precise content of any drugs seized when there is an arrest on drugs charges, implying utilization of additional resources due to prohibition. A different issue is that in some cases, police stops for non-drug charges that discover drugs and produce an arrest on drugs charges might not have led to any arrest in the absence of the drug charge (e.g., because of insufficient evidence).

possession rather than for trafficking. There are few hard data on the fraction of “stand-alone” possession arrests, but the information in Miron (2002) and Reuter, Hirschfield and Davies (2001) suggests it is between 33% and 85%.⁷ To err on the conservative side, this report assumes that 50% of possession arrests are due solely to marijuana possession rather than being incidental to some other crime. Thus, the resources utilized in making these arrests would be available for other purposes if marijuana possession were legal. Column 6 of Table 1 therefore indicates the fraction of possession arrests attributable to marijuana prohibition, taking this adjustment into account.⁸

The first portion of Table 2 uses this information to calculate the police budget due to marijuana prohibition in each state. Column 1 gives the total expenditure in 2000 on police, by state. Column 2 gives the product of Column 1 with the sum of Columns 5 and 6 from Table 1. This is the amount spent on arrests for marijuana violations. For 2000, the amount is \$1.71 billion.

The Judicial and Legal Budget Due to Marijuana Prohibition

The second main cost of marijuana prohibition is the portion of the prosecutorial and judicial budget devoted to marijuana prosecutions. A reasonable indicator of this percentage is the fraction of felony convictions in state courts for marijuana offenses. Data on this percentage are not available on a state-by-state basis, so this report uses the national percentage. Data on the percentage of possession convictions attributable to marijuana are also not available, so this report assumes it equals the percentage for trafficking convictions.

⁷ Lewis (2004) reports that the fraction of stand-alone arrests on all drug charges in the city of Syracuse, NY was 90.5% in 2002.

⁸ Gettman and Fuller (2003) obtain a similar estimate to that reported here for Virginia in 2001.

In 2000 the percent of felony convictions in state courts due to any type of trafficking violation was 22.0%.⁹ Of this total, 2.7% was due to marijuana, 5.9% was due to other drugs, and 13.4% was unspecified. This report assumes that the fraction of marijuana convictions in the unspecified category equals the fraction for those in which a specific drug is given, or 31.4% [=2.7%/(2.7%+5.9%)]. The report also assumes that the percentage of possession convictions due to marijuana equals this same fraction. These assumptions jointly imply that the percentage of felony convictions due to marijuana equals the fraction of felony convictions due to any drug offense (34.6%) multiplied by the percentage of trafficking violations due to marijuana (31.4%). This yields 10.9% (=34.6%*31.4%).¹⁰

The second portion of Table 2 uses this information to calculate the judicial and legal budget due to marijuana prohibition. Column 3 gives the judicial and legal budget, by state. Column 4 gives the product of Column 3 and 10.9%, the percentage of felony convictions due to marijuana violations. This is the judicial and legal budget due to marijuana prosecutions. For 2000, the amount is \$2.94 billion.

The Corrections Budget Due to Marijuana Prohibition

The third main cost of marijuana prohibition is the portion of the corrections budget devoted to incarcerating marijuana prisoners. A reasonable indicator of this portion is the fraction of prisoners incarcerated for marijuana offenses.

As with the percentage of prosecutions due to marijuana, state-by-state information on the percentage of prisoners incarcerated for marijuana offenses is not available. Appropriate data do exist for a few states, however, and this percentage is likely to be similar across states. This report therefore computes a population-weighted average based on the few states for which

⁹ The data on felony convictions are from Durose and Langan (2003, Table 1, p.2).

¹⁰ The fraction of felony convictions for any type of drug is from Durose and Langan (2003, Table 1, p.2).

data exist; it then imposes this percentage on all states. This percentage is 1.0%, as documented in Appendix A.

The third portion of Table 2 calculates the corrections budget due to marijuana prohibition.¹¹ Column 5 gives the overall corrections budget, by state. Column 6 gives the product of Column 5 and 1.0%, the estimated fraction of prisoners incarcerated on marijuana charges. This is the corrections budget devoted to marijuana prisoners. For 2000, the amount is \$484 million.

Overall State and Local Expenditure for Enforcement of Marijuana Prohibition

As shown at the bottom of Table 2, total state and local government expenditure for enforcement of marijuana prohibition was \$5.1 billion for 2000. This is an overstatement of the savings in government expenditure that would result from legalization, however, for two reasons. First, under prohibition the police sometimes seize assets from those arrested for marijuana violations (financial accounts, cars, boats, land, houses, and the like), with the proceeds used to fund police and prosecutors.¹² Second, under prohibition some marijuana offenders pay fines, which partially offsets the expenditure required to arrest, convict and incarcerate these offenders. The calculations in Appendix B, however, show that this offsetting revenue has been at most \$100 million per year in recent years at the state and local level. This implies a net savings of criminal justice resources from marijuana legalization of \$5.0 billion in 2000. Adjusting for inflation implies savings of \$5.3 billion in 2003.^{13 14 15}

¹¹ This report excludes the capital outlays portion of the corrections budget, since the available data do not indicate the average rate of such expenditures. This biases the estimates downward.

¹² Most seized assets are ultimately forfeited.

¹³ Inflation rate data are for the CPI - All Urban Consumers (Bureau of Labor Statistics, U.S. Department of Labor, <http://www.bls.gov/cpi/home.htm#data>).

¹⁴ The figure here for Massachusetts exceeds that in Miron (2003c) because this report assumes 50% of possession arrests are due to marijuana prohibition while the earlier report assumed 33%. The 50% figure is more appropriate here because the analysis covers all states rather than just Massachusetts.

III. Federal Expenditure for Marijuana Prohibition Enforcement

This section estimates federal expenditure on marijuana prohibition enforcement. There are no data available on expenditure for marijuana interdiction *per se*; existing data report expenditure on interdiction of all drugs, without separately identifying expenditure aimed at marijuana versus other drugs. It is nevertheless possible to estimate the portion due to marijuana prohibition using the following procedure:

1. Estimate federal expenditure for all drug interdiction;
2. Estimate the fraction of this expenditure due to marijuana interdiction based on the fraction of federal prosecutions for marijuana;
3. Multiply the first estimate by the second estimate.

This provides a reasonable estimate of federal expenditure for marijuana interdiction so long as this expenditure is roughly proportional to the variable being used to determine the fraction of total interdiction devoted to marijuana.¹⁶

Table 3 displays federal expenditure for drug interdiction. This was \$13.6 billion in 2002 (Miron 2003b), and it is the figure that applies for all drugs.^{17 18 19} To determine expenditure for

¹⁵ As a check, it is useful to compare the \$5.1 billion figure provided here to that derived from an alternative methodology. ONDCP (1993) reports survey evidence on drug prohibition enforcement by state and local authorities for the years 1990/1991. Adjusting these data for inflation and the percent attributable to marijuana prohibition yields an estimate similar to that reported above.

¹⁶ The approach utilized here differs from that employed in the case of state and local expenditure because of differences in the kinds of data available. Utilizing an approach that is similar to the extent possible yields an estimate of federal marijuana enforcement expenditure that is similar to the estimate provided in the text.

¹⁷ This consists of expenditure in the following categories: DC Court Services and Offender Supervision (\$86.4 million); Department of Defense (\$1,008.5 million); Intelligence Community Management Account (\$42.8 million); The Judiciary (\$819.7 million); Department of Justice (\$8,140.1 million); ONDCP (\$533.3 million); Department of State (\$832.6 million); Department of Transportation (\$591.4 million); and Department of Treasury (\$1,546.8 million). See ONDCP (2002), p.29-31.

¹⁸ Murphy, Davis, Liston, Thaler and Webb (2000) examine the methods used by ONDCP to estimate this expenditure. They conclude that methodological problems render parts of the estimates biased, in some cases by substantial amounts. These issues do not imply major qualifications to the data considered here, however. Murphy et al. find that the anti-drug budgets of the Coast Guard and the Bureau of Prisons are

marijuana interdiction, it is necessary to adjust for the fraction of federal expenditure devoted to marijuana as opposed to other drugs.

Table 3 next shows possible indicators of the relative magnitude of marijuana interdiction as compared to other-drug interdiction. These indicators include use rates, arrest rates, and felony convictions for marijuana versus other drugs. For the purposes here, the most appropriate indicator is the percentage of DEA arrests or convictions for marijuana as opposed to other drugs.²⁰

The data therefore indicate that \$2.6 billion is a reasonable estimate of the federal government expenditure to enforce marijuana prohibition in 2002.

As with state and local revenue, this figure must be adjusted downward by the revenue from seizures and fines. Appendix B indicates that this amount has been at most \$214.2 million in recent years, implying a net savings of about \$2.39 billion. Adjusting for inflation implies federal expenditure for enforcement of marijuana prohibition of \$2.4 billion in 2003.²¹

accurate reflections of the resources expended while the reported expenditure of the Department of Defense probably underestimates its anti-drug budget. The overestimates that they identify occur for demand-side activities.

¹⁹ The 2003 *National Drug Control Strategy* adopts a new methodology for estimating the federal drug control budget. This new methodology implies a substantial reduction in supply side expenditure (ONDCP (2002, pp.33-34)). For the purposes of this report, the old methodology is more appropriate. For example, the new approach excludes expenditures on incarceration of persons imprisoned for drug crimes.

²⁰ The percentage of prisoners whose primary offense was a marijuana charge would also be relevant, but data are not readily available. Since most convictions at the federal level result in prison terms, incarceration data would imply a similar result to that provided above.

²¹ Inflation rate data are for the CPI - All Urban Consumers (Bureau of Labor Statistics, U.S. Department of Labor, <http://www.bls.gov/cpi/home.htm#data>).

IV. The Tax Revenue from Legalized Marijuana

In addition to reducing government expenditure, marijuana legalization would produce tax revenue from the legal production and sale of marijuana. To estimate this revenue, this report employs the following procedure. First, it estimates current expenditure on marijuana at the national level. Second, it estimates the expenditure likely to occur under legalization. Third, it estimates the tax revenue that would result from this expenditure based on assumptions about the kinds of taxes that would apply to legalized marijuana. Fourth, it provides illustrative calculations of the portion of the revenue that would accrue to each state.

Expenditure on Marijuana under Current Prohibition

The first step in determining the tax revenue under legalization is to estimate current expenditure on marijuana. ONDCP (2001a, Table 1, p.3) estimates that in 2000 U.S. residents spent \$10.5 billion on marijuana. This estimate relies on a range of assumptions about the marijuana market, and modification of these assumptions might produce a higher or lower estimate. There is no obvious reason, however, why alternative assumptions would imply a dramatically different estimate of current expenditure on marijuana. This report therefore uses the \$10.5 billion figure as the starting point for the revenue estimates presented below.

Expenditure on Marijuana under Legalization

The second step in estimating the tax revenue that would occur under legalization is to determine how expenditure on marijuana would change as the result of legalization. A simple framework in which to consider various assumptions is the standard supply and demand model. To use this model to assess legalization's impact on marijuana expenditure, it is necessary to state what effect legalization would have on the demand and supply curves for marijuana.

This report assumes there would be no change in the demand for marijuana.²² This assumption likely errs in the direction of understating the tax revenue from legalized marijuana, since the penalties for possession potentially deter some persons from consuming. But any increase in demand from legalization would plausibly come from casual users, whose marijuana use would likely be modest. Any increase in use might also come from decreased consumption of alcohol, tobacco or other goods, so increased tax revenue from legal marijuana would be partially offset by decreased tax revenue from other goods. And there might be a forbidden fruit effect from prohibition that tends to offset the demand decreasing effects of penalties for possession. Thus, the assumption of no change in demand is plausible, and it likely biases the estimated tax revenue downward.

Under the assumption that demand does not shift due to legalization, any change in the quantity and price would result from changes in supply conditions. There are two main effects that would operate (Miron 2003a). On the one hand, marijuana suppliers in a legal market would not incur the costs imposed by prohibition, such as the threat of arrest, incarceration, fines, asset seizure, and the like. This means, other things equal, that costs and therefore prices would be lower under legalization. On the other hand, marijuana suppliers in a legal market would bear the costs of tax and regulatory policies that apply to legal goods but that black market suppliers normally avoid.²³ This implies an offset to the cost reductions resulting from legalization. Further, changes in competition and advertising under legalization can potentially yield higher prices than under prohibition.

It is thus an empirical question as to how prices under legalization would compare to prices under current prohibition. The best evidence available on this question comes from

²² To be explicit, the assumption is that there is no shift in the demand curve. If the supply curve shifts, there will be a change in the quantity demanded.

²³ The underlying assumption is that the marginal costs of evading tax and regulatory costs is zero for black market suppliers who are already conducting their activities in secret.

comparisons of marijuana prices between the U.S. and the Netherlands. Although marijuana is still technically illegal in the Netherlands, the degree of enforcement is substantially below that in the U.S., and the sale of marijuana in coffee shops is officially tolerated. The regime thus approximates *de facto* legalization. Existing data suggest that retail prices in the Netherlands are roughly 50-100 percent of U.S. prices.^{24 25}

The effect of any price decline that occurs due to legalization depends on the elasticity of demand for marijuana. Evidence on this elasticity is limited because appropriate data on marijuana price and consumption are not readily available. Existing estimates, however, suggest an elasticity of at least -0.5 and plausibly more than -1.0 (Nisbet and Vakil 1972).^{26 27}

If the price decline under legalization is minimal, then expenditure will not change regardless of the demand elasticity. If the price decline is noticeable but the demand elasticity is greater than or equal to 1.0 in absolute value, then expenditure will remain constant or increase.

If the price decline is noticeable and the demand elasticity is less than one, then expenditure will

²⁴ MacCoun and Reuter (1997) report gram prices of \$2.50-\$12.50 in the Netherlands and \$1.50 - \$15.00 in the U.S. They speculate that the surprisingly high prices in the Netherlands might reflect enforcement aimed at large-scale trafficking. Harrison, Backenheimer, and Inciardi (1995) note that ONDCP data on drug prices in the U.S. are very similar to prices charged in Dutch coffeeshops. ONDCP (2001b) reports a price per gram for small-scale purchases of roughly \$9 per gram in the second quarter of 2000, while EMCDDA (2002) suggests a price of 2-8 Euros per gram, which is roughly \$6 on average. Various web sites that discuss the coffee shops in Amsterdam suggest prices of \$5 - \$11 per gram in recent years. These comparisons do not adjust for potency or other dimensions of quality.

²⁵ Clements and Daryal (2001) report marijuana prices for Australia that are similar to or higher than those in the United States. Since Australian marijuana policy is noticeably less strict than U.S. policy, this observation is consistent with the view that legalization would not produce a dramatic fall in price.

²⁶ The Nisbet and Vakil estimates that use survey data imply price elasticities of -0.365 or -0.51 in the log and linear specifications, respectively, while the purchase data imply price elasticities of -1.013 and -1.51. The estimates based on purchase data are plausibly more reliable. Moreover, as they note, these estimates are likely biased downward by standard simultaneous equations bias. Clemens and Daryal (1999) estimate a price elasticity of -0.5 for marijuana using Australian data. Estimates of the demand for “similar” goods (e.g., alcohol, cocaine, heroin, or tobacco) suggest similar elasticities.

²⁷ Pacula, Grossman, Chaloupka, O’Malley, Johnston and Farrelly (2000) summarize the literature on the relation between marijuana use and factors that can affect use, such as legal penalties. They conclude the evidence is mixed but overall indicates a moderate response of marijuana consumption to “price.” The papers summarized do not provide measures of the price elasticity. The results reported by Pacula et al. suggest an elasticity of marijuana participation between 0.0 and -0.5; this understates the total elasticity, which includes any change in consumption conditional on participation. The literature since Nisbet and Vakil is thus consistent with the elasticity estimate assumed above.

decline. Since the decline in price is unlikely to exceed 50% and the demand elasticity is likely at least -0.5, the plausible decline in expenditure is approximately 25%. Given the estimate of \$10.5 billion in expenditure on marijuana under current prohibition, this implies expenditure under legalization of about \$7.9 billion.²⁸

Tax Revenue from Legalized Marijuana

To estimate the tax revenue that would result from marijuana legalization, it is necessary to assume a particular tax rate. This report considers two assumptions that plausibly bracket the range of reasonable possibilities.

The first assumption is that tax policy treats legalized marijuana identically to other goods. In that case tax revenue as a fraction of expenditure would be approximately 30%, implying tax revenue from legalized marijuana of \$2.4 billion.²⁹ The amount of revenue would be lower if substantial home production occurred under legalization.³⁰ The evidence suggests, however, that the magnitude of such production would be minimal. In particular, alcohol production switched mostly from the black market to the licit market after repeal of Alcohol Prohibition in 1933.

The second assumption is that tax policy treats legalized marijuana similarly to alcohol or tobacco, imposing a “sin tax” in excess of any tax applicable to other goods.³¹ Imposing a high

²⁸ Given the uncertainties involved in calculating the tax revenue from marijuana legalization and the possibility that declines in marijuana prices have offset general inflation since 2000, this report omits any adjustment of the tax revenue for inflation. Such an adjustment would make only a small difference in any case.

²⁹ In 2001, total government receipts divided by GDP equaled 29.7%. See the *2003 Economic Report of the President* on-line, http://w3.access.gpo.gov/usbudget/fy2004/pdf/2003_erp.pdf, Tables B-1 and B-92, pp. 276 and 373.

³⁰ Whether such production is illicit depends on the details of a legalization law. Plausibly, growing small amounts for personal use would not be subject to taxation or regulation, just as growing small amounts of vegetables or herbs is not subject to taxation or regulation.

³¹ Schwer, Riddel and Henderson (2002) estimate the tax revenue from marijuana legalization in Nevada assuming “sin taxation.” Their estimates are not readily comparable to those presented here because they

sin tax can force a market underground, thereby reducing rather than increasing tax revenue. Existing evidence, however, suggests that relatively high rates of sin taxation are possible without generating a black market. For example, cigarette taxes in many European countries account for 75–85 percent of the price (US Department of Health and Human Services 2000).

One benchmark, therefore, is to assume that an excise tax on legalized marijuana doubles the price. If general taxation accounts for 30% of the price, this additional tax would then make tax revenue account for 80% of the price. This doubling of the price, given an elasticity of -0.5, would cause roughly a 50% increase in expenditure, implying total expenditure on marijuana would be \$11.85 billion ($=\7.9×1.5). Tax revenue would equal 80% of this total, or \$9.5 billion. This includes any standard taxation applied to marijuana income as well as the sin tax on marijuana sales.

The \$9.5 billion figure is not necessarily attainable given the characteristics of marijuana production, however. Small scale, efficient production is possible and occurs widely now, so the imposition of a substantial tax wedge might encourage a substantial fraction of the market to remain underground. The assumption of a constant demand elasticity in response to a price change of this magnitude is also debatable; more plausibly, the elasticity would increase as the price rose, implying a larger decline in consumption and thus less revenue from excise taxation. The \$9.5 figure should therefore be considered an upper bound.

These calculations nevertheless indicate the potential for substantial revenue from marijuana taxation. A more modest excise tax, such as one that raises the price 50%, would produce revenue on legalized marijuana of \$6.2 billion per year.

consider the situation in which one state legalizes marijuana while other states and the federal government prohibit marijuana. The same comment applies to Bates (2004), who estimates the tax revenue from marijuana legalization in Alaska. Easton (2004) estimates the tax revenue from marijuana legalization in Canada under the assumption of sin taxation. His estimates are comparable but modestly higher than those presented here, adjusted for the different size of the U.S. and Canadian economies. Caputo and Ostrom (1994) provide estimates for the overall economy that are similar to those obtained here.

Distribution of the Marijuana Tax Revenue

The estimates of tax revenue discussed so far indicate the total amount that could be collected summing over all levels of government. In practice this total would be divided between state and federal governments. It is therefore useful to estimate how much revenue would accrue to each state, and to state governments versus the federal government, under plausible assumptions.

Table 4a indicates the tax revenue that would accrue to each state and to the federal government under the assumption that each state collected revenue equal to 10% of the income generated by legalized marijuana and the federal government collected income equal to 20%. This is approximately what occurs now for the economy overall, except that the ratio of tax revenues to income varies across states from the 10% figure assumed here. The table indicates that under these assumptions, the federal government would collect \$1.6 billion in additional revenue while on average each state would collect \$16 million in additional tax revenue.

These calculations ignore the fact that marijuana use rates differ across states, so application of identical policies would yield different amounts of revenue per capita. Wright (2002, Table A.4, p.82), for example, indicates that the percent of those 12 and over reporting marijuana use in the past month ranged in 1999-2000 from a low of 2.79% in Iowa to a high of 9.03% in Massachusetts. Table 4b therefore shows the breakdown of revenue by state under the assumption that tax revenue is proportional to state marijuana use rates. A third possibility, which cannot easily be examined with existing data, is that revenue by state differs depending on the distribution of marijuana production.

V. Summary

This report has estimated the budgetary implications of legalizing marijuana and taxing and regulating it like other goods. According to the calculations here, legalization would reduce government expenditure by \$5.3 billion at the state and local level and by \$2.4 billion at the federal level. In addition, marijuana legalization would generate tax revenue of \$2.4 billion annually if marijuana were taxed like all other goods and \$6.2 billion annually if marijuana were taxed at rates comparable to those on alcohol and tobacco.

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Table 1: Percentage of Arrests Due to Marijuana Prohibition

	Total Arrests	MJ Possession	MJ Sale/Man.	Poss %	S/M %	Poss % /2
	1	2	3	4	5	6
Alabama	215587	11501	258	0.053	0.001	0.027
Alaska	40181	1239	200	0.031	0.005	0.015
Arizona	304142	16288	1233	0.054	0.004	0.027
Arkansas	218521	6846	928	0.031	0.004	0.016
California	1428248	50149	12338	0.035	0.009	0.018
Colorado	282787	12067	604	0.043	0.002	0.021
Connecticut	146992	6751	773	0.046	0.005	0.023
Delaware	41515	2151	131	0.052	0.003	0.026
D.C.*	4009	32	0	0.008	0.000	0.004
Florida*	0	0	0	0.043	.006	0.022
Georgia	429674	24321	4093	0.057	0.010	0.028
Hawaii	64463	1110	167	0.017	0.003	0.009
Idaho	76032	2949	219	0.039	0.003	0.019
Illinois*	319920	0	0	0.043	0.006	0.000
Indiana	270022	14484	1806	0.054	0.007	0.027
Iowa	113394	6054	551	0.053	0.005	0.027
Kansas	78285	3277	594	0.042	0.008	0.021
Kentucky*	160899	10669	1188	0.066	0.007	0.033
Louisiana	297098	14941	2526	0.050	0.009	0.025
Maine	57203	3294	554	0.058	0.010	0.029
Maryland	318056	17113	2711	0.054	0.009	0.027
Massachusetts	160342	8975	1365	0.056	0.009	0.028
Michigan	413174	14629	2050	0.035	0.005	0.018
Minnesota	269010	9325	6782	0.035	0.025	0.017
Mississippi	202007	9925	1054	0.049	0.005	0.025
Missouri	322775	13202	1338	0.041	0.004	0.020

Table 1: Percentage of Arrests Due to Marijuana Prohibition, continued

	Total Arrests	MJ Possession	MJ Sale/Man.	Poss %	S/M %	Poss % /2
	1	2	3	4	5	6
Montana	30396	384	35	0.013	0.001	0.006
Nebraska	97324	6787	326	0.070	0.003	0.035
Nevada	148656	3828	933	0.026	0.006	0.013
New Hampshire	50830	3706	550	0.073	0.011	0.036
New Jersey	375049	20285	3058	0.054	0.008	0.027
New Mexico	112829	2966	325	0.026	0.003	0.013
New York	1295374	101739	11309	0.079	0.009	0.039
North Carolina	523920	21179	2539	0.040	0.005	0.020
North Dakota	27846	896	137	0.032	0.005	0.016
Ohio	533364	25420	1863	0.048	0.003	0.024
Oklahoma	166004	11198	1302	0.067	0.008	0.034
Oregon	157748	6336	283	0.040	0.002	0.020
Pennsylvania	493339	16471	5057	0.033	0.010	0.017
Rhode Island	35733	2200	293	0.062	0.008	0.031
South Carolina	216451	14348	2370	0.066	0.011	0.033
South Dakota	41615	2449	153	0.059	0.004	0.029
Tennessee	232486	12869	2586	0.055	0.011	0.028
Texas	1074909	55509	1926	0.052	0.002	0.026
Utah	125553	4192	311	0.033	0.002	0.017
Vermont	17565	632	65	0.036	0.004	0.018
Virginia	303203	13140	1443	0.043	0.005	0.022
Washington	298474	13146	1329	0.044	0.004	0.022
West Virginia	51452	2618	248	0.051	0.005	0.025
Wisconsin	322877	45	16	0.000	0.000	0.000
Wyoming	34243	1633	164	0.048	0.005	0.024

* Quoting <http://fisher.lib.virginia.edu/collections/stats/crime/2000cb.pdf>: “(3) No arrest data were provided for Washington, DC, and Florida. Limited arrest data were available for Illinois and Kentucky.”

Source: FBI Uniform Crime Reports accessed at <http://fisher.lib.virginia.edu/collections/stats/crime/>.

Table 2: Expenditures Attributable to Marijuana Prohibition (\$ in millions)

<i>State</i>	<u>Police Budget</u>		<u>Judicial Budget</u>		<u>Corrections Budget</u>		<u>Total</u>	
	<i>Total:</i>	<i>MJ Prohib:</i>	<i>Total</i>	<i>MJ Prohib:</i>	<i>Total</i>	<i>MJ Prohib.</i>	<i>Total</i>	<i>MJ Prohib.</i>
Alabama	656	18.28	262	28.56	404	4.04	1,322	51
Alaska	177	3.61	130	14.17	175	1.75	482	20
Arizona	1096	33.79	611	66.60	955	9.55	2,662	110
Arkansas	351	6.99	156	17.00	328	3.28	835	27
California	8703	227.97	6255	681.80	7170	71.70	22,128	981
Colorado	830	19.48	329	35.86	820	8.20	1,979	64
Connecticut	682	19.25	430	46.87	554	5.54	1,666	72
Delaware	166	4.82	90	9.81	228	2.28	484	17
Florida	3738	103.19	1396	152.16	3272	32.72	8,406	288
Georgia	1279	48.38	525	57.23	1375	13.75	3,179	119
Hawaii	222	2.49	180	19.62	153	1.53	555	24
Idaho	207	4.61	102	11.12	191	1.91	500	18
Illinois	3053	84.28	961	104.75	1763	17.63	5,777	207
Indiana	843	28.25	325	35.43	727	7.27	1,895	71
Iowa	426	13.44	253	27.58	298	2.98	977	44
Kansas	430	12.26	206	22.45	349	3.49	985	38
Kentucky	488	19.78	290	31.61	610	6.10	1,388	57
Louisiana	829	27.89	359	39.13	780	7.80	1,968	75
Maine	164	6.31	69	7.52	123	1.23	356	15
Maryland	1120	39.68	489	53.30	1104	11.04	2,713	104
Massachusetts	1479	53.98	628	68.45	795	7.95	2,902	130
Michigan	1792	40.62	905	98.65	1853	18.53	4,550	158
Minnesota	874	37.18	442	48.18	591	5.91	1,907	91
Mississippi	404	12.03	154	16.79	292	2.92	850	32
Missouri	886	21.79	359	39.13	627	6.27	1,872	67
Montana	136	1.02	66	7.19	125	1.25	327	9
Nebraska	235	8.98	96	10.46	231	2.31	562	22
Nevada	539	10.32	248	27.03	471	4.71	1,258	42
New Hampshire	187	8.84	92	10.03	115	1.15	394	20
New Jersey	2231	78.52	948	103.33	1480	14.80	4,659	197

Table 2: Expenditures Attributable to Marijuana Prohibition (\$ in millions), continued

<i>State</i>	Police Budget		Judicial Budget		Corrections Budget		Total	
	<i>Total</i>	<i>MJ Prohib.</i>	<i>Total</i>	<i>MJ Prohib.</i>	<i>Total</i>	<i>MJ Prohib.</i>	<i>Total</i>	<i>MJ Prohib.</i>
New Mexico	382	6.12	167	18.20	315	3.15	864	27.47
New York	5717	274.42	2262	246.56	4392	43.92	12,371	564.90
North Carolina	1318	33.03	470	51.23	1159	11.59	2,947	95.85
North Dakota	68	1.43	55	6.00	40	0.40	163	7.82
Ohio	2124	58.03	1158	126.22	1937	19.37	5,219	203.63
Oklahoma	518	21.53	193	21.04	511	5.11	1,222	47.68
Oregon	696	15.23	356	38.80	747	7.47	1,799	61.50
Pennsylvania	2220	59.82	1067	116.30	2221	22.21	5,508	198.33
Rhode Island	211	8.23	105	11.45	139	1.39	455	21.06
South Carolina	653	28.79	179	19.51	559	5.59	1,391	53.89
South Dakota	88	2.91	40	4.36	81	0.81	209	8.08
Tennessee	940	36.47	399	43.49	604	6.04	1,943	86.00
Texas	3204	88.47	1355	147.70	3755	37.55	8,314	273.71
Utah	381	7.30	202	22.02	351	3.51	934	32.83
Vermont	78	1.69	39	4.25	66	0.66	183	6.60
Virginia	1176	31.08	513	55.92	1246	12.46	2,935	99.46
Washington	1007	26.66	470	51.23	1053	10.53	2,530	88.42
West Virginia	171	5.17	108	11.77	184	1.84	463	18.79
Wisconsin	1124	0.13	440	47.96	1030	10.30	2,594	58.39
Wyoming	99	2.83	50	5.45	98	0.98	247	9.26
	56,398	1,707.41	26,984	2941.26	48447	484.47	131,829	5,133

Arrest Data: <http://fisher.lib.virginia.edu/collections/stats/crime/>
 Budget Data: <http://www.census.gov/govs/www/state00.html>

Judicial Percent: Pastore and Maguire (2003), Table 5.42, p.444
 Incarceration Percent: Pastore and Maguire (2003), Table 6.30, p.499

Table 3: Federal Expenditure on Marijuana Prohibition, 2002

1. Prohibition Enforcement, All Drugs		\$13.6 billion
2. Marijuana Use Rate, Past Year, 2002	11.0%	
3. Any Illicit Drug Use Rate, Past Year, 2002	14.9%	
4. Ratio	74%	
5. Ratio x Line 1		\$10.0 billion
6. Percent of All Drug Arrests for MJ, 2001	46.0%	
7. Line 6 x Line 1		\$6.3 billion
8. Percent of All Trafficking Arrests for MJ, 2001	26%	
9. Line 8 x Line 1		\$3.6 billion
10. Percent of DEA Drug Arrests for MJ, 2002	18.6%	
11. Line 10 x Line 1		\$2.5 billion
12. Percent of DEA Drug Convictions for MJ, 2002	19.9%	
13. Line 12 x Line 1		\$2.7 billion

Sources:

Line 1: Miron (2003b, p.10).

Lines 2-3: SAMHSA, Office of Applied Statistics, National Survey on Drug Use and Health, 2002, <http://www.samhsa.gov/oas/nhsda/2k2nsduh/Results/apph.htm#tabh.2>.

Lines 6 and 8: Sourcebook of Criminal Justice Statistics Online, <http://www.albany.edu/sourcebook/1995/pdf/t429.pdf/>

Line 10: Sourcebook of Criminal Justice Statistics Online, <http://www.albany.edu/sourcebook/1995/pdf/t440.pdf/>

Line 12: Sourcebook of Criminal Justice Statistics Online, <http://www.albany.edu/sourcebook/1995/pdf/t538.pdf>

Table 4a: State Marijuana Tax Revenue – Population Method

	<i>Population</i>	<i>Proportion</i>	<i>Tax Revenue</i>
Alabama	4,447,100	0.016	12.6
Alaska	626,932	0.002	1.8
Arizona	5,130,632	0.018	14.6
Arkansas	2,673,400	0.009	7.6
California	33,871,648	0.120	96.3
Colorado	4,301,261	0.015	12.2
Connecticut	3,405,565	0.012	9.7
Delaware	783,600	0.003	2.2
Dist. Columbia	572,059	0.002	1.6
Florida	15,982,378	0.057	45.4
Georgia	8,186,453	0.029	23.3
Hawaii	1,211,537	0.004	3.4
Idaho	1,293,953	0.005	3.7
Illinois	12,419,293	0.044	35.3
Indiana	6,080,485	0.022	17.3
Iowa	2,926,324	0.010	8.3
Kansas	2,688,418	0.010	7.6
Kentucky	4,041,769	0.014	11.5
Louisiana	4,468,976	0.016	12.7
Maine	1,274,923	0.005	3.6
Maryland	5,296,486	0.019	15.1
Massachusetts	6,349,097	0.023	18.0
Michigan	9,938,444	0.035	28.3
Minnesota	4,919,479	0.017	14.0
Mississippi	2,844,658	0.010	8.1
Missouri	5,595,211	0.020	15.9
Montana	902,195	0.003	2.6
Nebraska	1,711,263	0.006	4.9
Nevada	1,998,257	0.007	5.7
New Hampshire	1,235,786	0.004	3.5
New Jersey	8,414,350	0.030	23.9
New Mexico	1,819,046	0.006	5.2
New York	18,976,457	0.067	53.9
North Carolina	8,049,313	0.029	22.9
North Dakota	642,200	0.002	1.8
Ohio	11,353,140	0.040	32.3
Oklahoma	3,450,654	0.012	9.8
Oregon	3,421,399	0.012	9.7
Pennsylvania	12,281,054	0.044	34.9
Rhode Island	1,048,319	0.004	3.0
South Carolina	4,012,012	0.014	11.4
South Dakota	754,844	0.003	2.1
Tennessee	5,689,283	0.020	16.2
Texas	20,851,820	0.074	59.3
Utah	2,233,169	0.008	6.3
Vermont	608,827	0.002	1.7
Virginia	7,078,515	0.025	20.1
Washington	5,894,121	0.021	16.8
West Virginia	1,808,344	0.006	5.1
Wisconsin	5,363,675	0.019	15.2
Wyoming	493,782	0.002	1.4

State Populations: <http://www.census.gov/popest/states/NST-EST2003-ann-est.html>

Table 4b: State Marijuana Tax Revenue – Consumption Method

	<i>Use Rate</i> †	<i>User Population</i>	<i>Use Proportion</i>	<i>Tax Revenue</i>
Alabama	0.044	193,449	0.011	8.9
Alaska	0.098	61,251	0.004	2.8
Arizona	0.055	284,237	0.016	13.0
Arkansas	0.054	145,166	0.008	6.7
California	0.068	2,296,498	0.132	105.4
Colorado	0.089	383,672	0.022	17.6
Connecticut	0.063	213,529	0.012	9.8
Delaware	0.068	53,206	0.003	2.4
Dist. Columbia	0.108	61,897	0.004	2.8
Florida	0.066	1,051,640	0.060	48.2
Georgia	0.051	420,784	0.024	19.3
Hawaii	0.072	87,110	0.005	4.0
Idaho	0.056	72,461	0.004	3.3
Illinois	0.056	689,271	0.040	31.6
Indiana	0.064	388,543	0.022	17.8
Iowa	0.046	135,489	0.008	6.2
Kansas	0.053	143,024	0.008	6.6
Kentucky	0.055	221,489	0.013	10.2
Louisiana	0.064	284,227	0.016	13.0
Maine	0.069	88,352	0.005	4.1
Maryland	0.057	302,959	0.017	13.9
Massachusetts	0.063	401,263	0.023	18.4
Michigan	0.071	705,630	0.040	32.4
Minnesota	0.063	311,403	0.018	14.3
Mississippi	0.050	142,802	0.008	6.6
Missouri	0.061	339,070	0.019	15.6
Montana	0.087	78,581	0.005	3.6
Nebraska	0.064	109,179	0.006	5.0
Nevada	0.086	172,450	0.010	7.9
New Hampshire	0.099	121,725	0.007	5.6
New Jersey	0.050	420,718	0.024	19.3
New Mexico	0.059	106,596	0.006	4.9
New York	0.075	1,427,030	0.082	65.5
North Carolina	0.056	448,347	0.026	20.6
North Dakota	0.056	35,771	0.002	1.6
Ohio	0.067	759,525	0.044	34.8
Oklahoma	0.052	180,469	0.010	8.3
Oregon	0.090	306,557	0.018	14.1
Pennsylvania	0.054	664,405	0.038	30.5
Rhode Island	0.095	99,485	0.006	4.6
South Carolina	0.050	198,996	0.011	9.1
South Dakota	0.057	42,875	0.002	2.0
Tennessee	0.047	266,827	0.015	12.2
Texas	0.049	1,015,484	0.058	46.6
Utah	0.046	102,502	0.006	4.7
Vermont	0.100	61,126	0.004	2.8
Virginia	0.064	455,149	0.026	20.9
Washington	0.081	479,192	0.027	22.0
West Virginia	0.050	90,056	0.005	4.1
Wisconsin	0.054	291,784	0.017	13.4
Wyoming	0.052	25,578	0.001	1.2

†Marijuana Use Rates: <http://oas.samhsa.gov/2k2State/html/appA.htm#taba.1>

Appendix A: Percentage of Corrections Population Incarcerated on Marijuana Charges

State-by-state data on the fraction of prisoners incarcerated on marijuana charges are not available, but data for a few states provide reasonable estimates of this fraction. This appendix displays the available information.

Appendix Table A1

State	Year	% Incarcerated for MJ Violation	Population	Pop %	Weighted Share
California	2003	0.008	33,871,648	0.568	0.005
Georgia	2000	0.014	8,186,453	0.137	0.002
Massachusetts	2000	0.017	6,349,097	0.107	0.002
Michigan	2001	0.006	9,938,444	0.167	0.001
New Hampshire	2002	0.016	1,235,786	0.021	0.000
Total		0.061	59,581,428		
Average:		0.012			
			Weighted Average		0.010

Sources:

New Hampshire: <http://www.state.nh.us/doc/population.html>.

California: <http://www.corr.ca.gov/OffenderInfoServices/Reports/Annual/CensusArchive.asp>.

Michigan: http://www.michigan.gov/documents/2001Stat_79881_7.pdf

Georgia: <http://www.dcor.state.ga.us/pdf/inms03-12.pdf>

Massachusetts: Miron (2002, pp.4-5).

Appendix B: Revenue Under Prohibition from Seizures and Fines

State-by-state data on fines and seizures are not available. There is sufficient information, however, to estimate an upper bound on the revenue from fines and seizures. There are also data on federal fines and seizures.

Seizures:

The two main sources of federal seizure revenue are the Drug Enforcement Administration (DEA) and the U.S. Customs Service. In 2002, the DEA made seizures totaling \$438 million.³² In 2001, the U.S. Customs Service seized property valued at \$592 million.³³ These figures overstate revenue since some defendants recovered their seized property. The Customs seizures overstate revenue related to drugs because the figure includes seizures for all reasons, such as violation of gun laws, intellectual property laws, and the like. There may also be double-counting between the DEA seizures and the U.S. Customs seizures.

Summing together the two components yields \$1,030 million (= \$438+\$592 million) as the seizure revenue that results from enforcement of drug laws. This figure must be adjusted downward, however, to separate out the portion due to violation of marijuana laws as opposed to other drug laws. As shown in Table 3, approximately 20% of the federal drug enforcement budget is attributable to marijuana, so it is reasonable to assume approximately 20% of the fines and seizures correspond to enforcement of marijuana laws.

Thus, seizure revenue at the federal level due to marijuana prosecutions is roughly \$206.0 million annually.

State and local data on forfeiture revenue are not readily available for all states. Baicker and Jacobson (2004), however, estimate using a sample of states that state forfeiture revenue per capita was roughly \$1.14 during the 1994-2001 period. This implies aggregate state forfeiture revenue of \$342 million. Deflating by 26%, the fraction of all drug trafficking arrests due to marijuana, implies that marijuana seizures yield \$89 million to state governments.

Fines: In 2001, the total quantity of fines and restitutions ordered for drug offense cases in U.S. District Courts was just under \$41 million.³⁴ Adjusting this by the 20% figure implies \$8.2 million from marijuana cases. Assuming the ratio of state/local to federal fine revenue is similar to ratio of state/local to federal seizure revenue implies that state and local fines/restitution from marijuana cases is about \$3.5 million.

³² See <http://www.albany.edu/sourcebook/1995/pdf/t442.pdf>.

³³ See <http://www.albany.edu/sourcebook/1995/pdf/t444.pdf>.

³⁴ See <http://www.albany.edu/sourcebook/1995/pdf/t531.pdf>.