WORKING PAPER

Smuggling and Excise Tax Evasion for Legalized Marijuana

Lessons from Other Excise Taxes

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Abstract

We explore three lines of evidence that may shed light on whether marijuana excise tax revenue could be threatened by black market sales and smuggling: (1) Comparing the Ammiano Bill's proposed $50 per ounce tax to various other current and proposed excise taxes on a variety of metrics, (2) Placing a $50 per ounce tax in the context of cross-sectional state-level data relating tobacco smuggling to tobacco excise taxes, and (3) Comparing the tax to current marijuana prices on a per pound basis.

This exercise suggests that:

- As compared with other familiar excise taxes, a $50 per ounce excise tax on marijuana is either very high or truly unprecedented depending on the metric employed.
- California should expect at least some degree of tax evasion; it is hard to see why evasion would be less of an issue than it is with cigarettes.
- California should not rule out the possibility that tax evasion would wipe out essentially all of the potential revenues from a $50 per ounce excise tax.

Introduction

One of the appeals of marijuana legalization is the prospect that it would generate tax revenues. The tax revenue estimates produced by both the California Board of Equalization (2009) and Miron (2005) assume there would be no tax evasion. Grossman et al. (2002) defend such assumptions, arguing that if resources diverted from the war on drugs were reassigned to funding enforcement of an excise tax, that enforcement could impose "a nonmonetary tax … whose expected value exceeds the tax in the legal market."

However, experience with other so-called "sin goods," such as cigarettes and alcohol, suggests that marijuana excise tax revenues may be undercut by black market sales and smuggling (Saba et al., 1995; Merriman, 2010). Indeed, this may be a serious concern given that commonly discussed marijuana excise tax rates are extraordinarily high per unit weight. For example, there is currently nontrivial evasion of California's a tobacco excise taxes, and a $50 per ounce tax on marijuana would be nearly twenty times higher than California's current combined excise tax on cigarettes on a per unit weight basis, and hundreds of times that of California's excise tax on alcohol (see Table 1).

This section explores some data that might inform judgments about the extent to which marijuana excise taxes might be evaded. In particular, we compare excise taxes across substances on a variety of bases, including but not limited to per unit weight. For various reasons tobacco seem like the best, albeit imperfect, analog. We investigate what tax evasion

rates might be expected if marijuana-like taxes were imposed on cigarettes based on the relationship between state-level tobacco excise taxes and estimated tobacco tax evasion rates in those states.

This exercise is not meant to be precise. There are any number of reasons why tobacco is an imperfect analog for marijuana and why factors other than tax rates influence rates of tax evasion.[1] Notably, smuggled cigarettes are usually still in branded packages, giving customers reassurance that they are buying the same product, just without the tax. Unless comparably strong brands develop in the legal marijuana market, those purchasing marijuana under the table might be sacrificing some predictability/quality control relative to legal, taxed purchases. Nevertheless, the exercise provides some perspective on what will inevitably remain judgments or guesstimates concerning what would actually transpire should marijuana be legalized and taxed.

The literature distinguishes two types of evasion of excise taxes: casual and commercial (Merriman, 2001). The former includes legal cross-border shopping, tourist shopping, and duty free sales. Commercial smuggling is sometimes further subdivided into bootlegging and wholesale smuggling (Merriman, 2001), with only the former necessarily involving transportation across jurisdictional boundaries. (Cannabis that is produced and sold in the same jurisdiction without paying taxes would be a form of wholesale smuggling but not bootlegging by this definition. Any of the three could reduce cannabis excise tax revenues.)

Comparing Excise Tax Rates Across Substances

There are many ways to compare excise taxes across substances. The tax per unit weight or volume is probably the most relevant since it governs the weight and bulk of material that must be covertly transported and sold per dollar of tax evaded. Value to weight and volume ratios capture this consideration, albeit inverted (i.e., in reciprocal form).

Another relevant metric is the total cost of complying with the tax for a typical daily user, either in absolute terms or relative to such users' income. (The emphasis is on daily users since they dominated demand for most substances.) Even if an excise tax were easy to evade, users might not be tempted to break the law if the total dollar benefit of doing so is trivial.

Finally, behavioral decision theory has established that human consumption decisions are sometimes influenced by whether a savings is seen as a percentage discount or an absolute discount. The classic hypothetical concerns someone who is just about to purchase a consumer good, but then discovers that another store is selling the identical item for $5 less. Would one be willing to drive 20 minutes to save $5? More people say "yes" if it means saving $5 off a $15 calculator (33% discount) than if it means saving $5 on a $125 coat (4% discount). Logically whether it is worth the time, gas, and effort to save $5 ought not to matter whether the original item cost $15 or $125, but human decisions are often influenced by how they are framed (Tversky and Kahneman, 1981). Hence, we also look at the percentage "discount" one could obtain by evading the excise tax.

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[1] Several nations with low tax levels display high rates of cigarette smuggling, while some high-tax countries face relatively little tax evasion (Joosens & Raw, 2002), and von Lampe found that black market activity in the United Kingdom and Germany is not solely explained by cross-national price differences (von Lampe, 2006).

Our principal foils for marijuana are cigarettes, beer, distilled spirits, gasoline, and soda pop – all consumption goods that are or could be subject to a "sin tax". Tax rates for cigarettes, beer, and spirits are current California rates. Neither marijuana nor soda pop are currently taxed in California, so we use the commonly discussed hypothetical rates of $50 per ounce and $0.01 per ounce, respectively.

The table is full of approximations and ad hoc assumptions. For example, the volume of a pack of cigarettes is taken from that of a pack of Marlboro cigarettes, not some weighted average by brand popularity.[2] The assumptions that are most consequential and least empirical are:

1) We could not locate a specific gravity of marijuana so we simply used the same one we did for tobacco, which is based on the assumption that a pack of cigarettes includes 20 grams of tobacco in a pack that measures 8.5 X 5 X 2 centimeters.

2) The price of a 2-liter bottle of soda after imposition of a hypothetical penny-per-ounce tax would be a typical current price ($1.49 per bottle) plus $0.01 for each of the 67.6 ounces in a 2-liter bottle.

3) All of the retail prices are based on common sense and casual internet search, not authoritative sources.

4) Likewise average consumption rates for daily consumers are meant only to be typical round number consumption rates, nothing more.

5) We did not include the weight of any containers.

Nevertheless, the gist of the calculations is clear. A $50 per ounce marijuana excise tax would be almost 20 times greater on a per unit weight or volume basis than any of the other excise taxes, although California's tobacco excise taxes match it on a percentage basis and in terms of total annual burden for a typical daily user.

One case study that supports emphasizing the tax per unit weight, rather than the percentage rate, is diamonds in Canada. Canada recently repealed a 10% excise tax on jewelry that had been instituted during World War I to suppress luxury consumption (Canada Revenue Agency, 2006). The tax had generated only about $50 million a year (Stone, 2001-2007), suggesting that the illegal market for diamonds was up to 75% of the total market prior to the repeal (Hemeon, 1980; Other Facets, 2004). Presumably that is because for diamonds an excise tax that is quite modest in percentage terms (10%) is still enormously high on a per unit weight basis.[3]

We could not complete a systematic analysis of industrial excise taxes, but note that there have been reports of extensive international smuggling of Chlorofluorocarbon (CFCs) because U.S. prices are an order of magnitude higher than those elsewhere in the world ($20 vs. $2 per pound) due in part to the Federal excise tax of $12.10 per pound stemming from agreements in the Montreal Protocol (American University, 1996; Internal Revenue Service, 2010). A tax of $12.10 per pound is equivalent to about $0.75 per ounce, or less than one-sixtieth of the contemplated $50 per ounce tax on marijuana.

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[2] http://www.dimensionsguide.com/malboro-pack-dimensions/.

[3] There are 142 carats per ounce, so a 10% tax on a 0.5 carat diamond valued at $1,000 works out to a tax rate of almost $30,000 per ounce.

Table 1: How A Contemplated $50 per Ounce Marijuana Excise Tax Compares to Some Other Familiar or Proposed Excise Taxes

	Marijuana	Cigarettes	Beer	80-Proof Distilled Spirits	Soda Pop	Gasoline
Unit base for taxation	Ounce	Pack	Gallon	Gallon	Ounce	Gallon
State/Local Excise Tax	$50	$0.87	$0.20	$3.30	$0.01	$0.466
Federal	$0	$1.01	$0.58	$10.80	$0	$0.184
Total	$50	$1.88	$0.78	$14.10	$0.01	$0.65
Specific Gravity	0.235	0.235	1.05	0.92	1.03	0.739
Grams per Unit	28.35	20	3974.7	3482.6	30.46	2797.4
cubic centimeters per unit	120.49	85	3785.4	3785.4	29.57	3785.4
Tax per gram	**$1.76**	**$0.09**	**$0.0002**	**$0.0040**	**$0.0003**	**$0.0002**
Tax per cubic centimeter	**$0.41**	**$0.02**	**$0.0002**	**$0.0037**	**$0.0003**	**$0.0002**
Basis for Retail Price (with taxes)	Guess of $50 per ounce untaxed	Midrange from casual internet search	$6 for a 6-pack of 12 ounce cans	$25 for 750 ml bottle	$1.49 for a 2-liter bottle (untaxed)	$3.11 per gallon state average
Approximate Retail Price (with taxes)	$100	$4.00	$10.67	$126.18	$2.17	$3.11
Tax as % of total (with tax price)	**50%**	**47%**	**7%**	**11%**	**31%**	**21%**
Daily consumption for a typical daily user	1 gram	1 pack	2 12-ounce cans of beer	2 1-ounce shots	2 16-ounce sodas	10,000 miles/yr at 25 mpg
Annual tax burden for typial daily user	**$644**	**$685**	**$53**	**$80**	**$117**	**$260**

Sources:
Cigarettes Tax Rate: (California State Board Of Equalization, 2009)
Weight of a cigarette pack (U.S. National Institutes of Health - National Cancer Institute, 2009).
Beer and Liquor Taxes: (California State Board of Equalization, 2009).
Specific gravity of beer (Brewer's Friend, 2009).

Tobacco Tax Evasion

There is an extensive literature on tobacco tax evasion not only in the U.S. but also abroad in countries such as Greece (Antonopoulos, 2008), Spain (Joossens & Raw, 2000), Canada (Galbraith and Kaiserman, 1997), and elsewhere (Chaloupka & Jha, 2000).[4]

Nevertheless, there is sharp disagreement about the extent of tax evasion. To generalize and simplify, some public health researchers and public-health minded economists downplay the extent of smuggling, a conclusion that is felicitous to the recommendation that excise taxes be raised as a way of suppressing smoking and smoking-related health harms. For example, Alamar et al. (2003) estimate that in California only 1% to 4.2% of cigarettes are smuggled to evade excise taxes. However, sometimes the claims are softer, asserting only that raising taxes will not stimulate so much additional smuggling that that total tax revenues would actually decline (e.g., Merriman et al., 2000; Farrelly, et al., 2003).

The other end of the spectrum is represented by free-market groups opposed to taxes, for whom findings of high rates of tax evasion are similarly convenient. For example, DeCicca et al. (2008) found that many cigarette taxes are above their optimal level resulting in an increase in tax avoidance, smuggling, and black market selling. Likewise, Lafaive et al. (2008) estimated

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[4] The Canadian experience is sobering. Smugglers evading excise taxes quickly stepped in to supply a large proportion of the market when Canada raised tobacco excise taxes in the early 1990s, forcing a repeal in five provinces in 1994 (Galbraith and Kaiserman, 1997; Contraband Tobacco, 2009). The tax varied from province to province and over time, but typically was on the order of $30 per 300 gram carton. That $0.10 per gram rate is equivalent to less than $3 per ounce, or a small fraction of the contemplated $50 per ounce marijuana tax. Smuggling declined after the tax increases were repealed, but did not disappear, suggesting that established illegal marketing channels need a smaller incentive to remain in business than is necessary to create such channels de nouveau.

that in 2006 almost 19% of tobacco sales in California were of smuggled cigarettes, depriving the state of between $50 and $103 million in cigarette excise tax revenue.

A number of studies published in economics and tax journals also find high rates of tobacco tax evasion. Merriman (2010) provides a review as well as a new finding that 41% of cigarette packages discarded on the streets of Chicago lacked an Illinois tax stamp and three-quarters did not display a Chicago tax stamp.[5]

The California Board of Equalization (1999) appears to side with Lafaive et al., not the public-health community, in its estimates that 12% to 27% of cigarettes in California are sold without payment of excise taxes.

Lafaive et al. (2008) provide state-by-state estimates of rates of excise taxes and tax evasion. Figure 1 plots the proportion of consumption due to untaxed sales vs. the tobacco excise tax, supplemented with a simple regression line showing that half of the cross-state variance in smuggling rates can be explained by differences in tax rates. The point corresponding to California is identified by the large square; it is considerably above the regression line, suggesting that state-specific factors make California more vulnerable to tobacco smuggling than are other states with comparable excise tax rates.

Figure 1: Tobacco Smuggling Appears to Increase Systematically with Excise Tax Rates
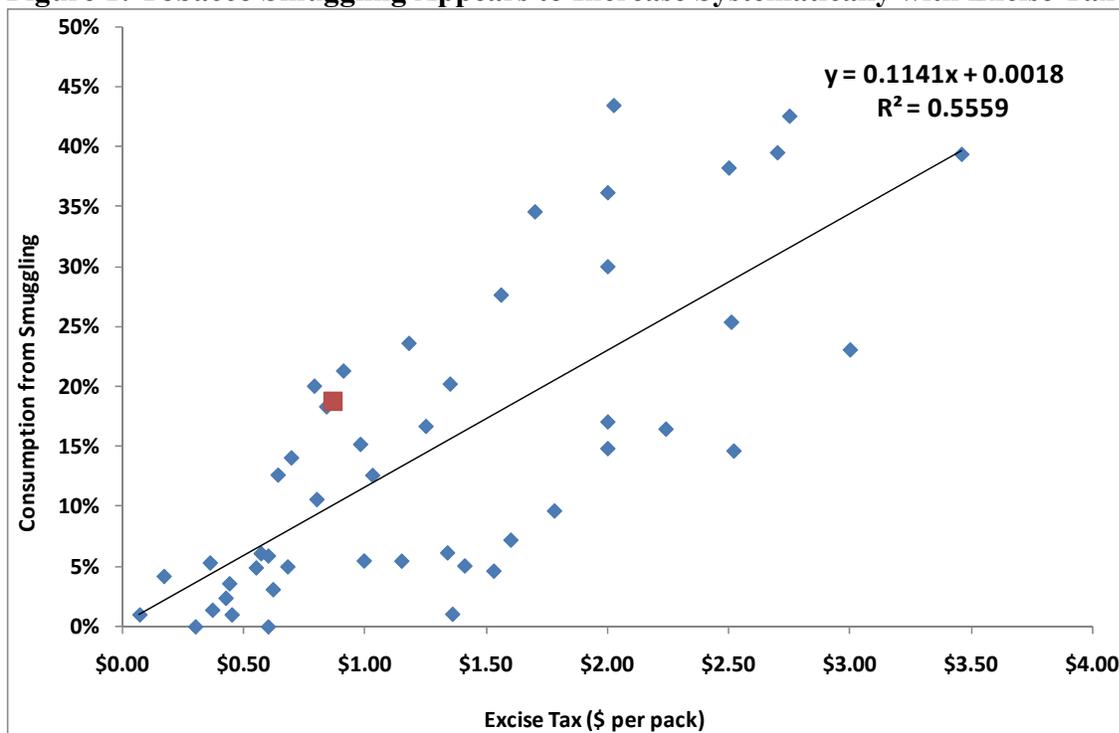

Figure 2 shows the same plot, just with the horizontal axis modified to express the excise tax in dollars per ounce, assuming a pack of cigarettes weighs 20 grams. The points from Figure 1 are supplemented by three points at the contemplated marijuana excise tax rate of $50 per ounce. The top point projects a smuggling rate using the regression line from Figure 1. The

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[5] Illinois tobacco taxes are higher than in adjoining states, and Chicago imposes its own additional tax, so purchases in Chicago are taxed more heavily than elsewhere in Illinois.

bottom point is what would be projected if we deflated all of Lafaive et al.'s estimates of smuggling rates by a factor of 2.6% / 18.78%, where 2.6% is the midpoint of the 1% - 4.2% range of California smuggling rates mentioned public health researchers and 18.78% is Lafaive et al.'s estimate for California. In effect, this lowest point uses the relationship between tax rates and smuggling from Lafaive et al.'s data but adopts the public health community's skepticism about the overall rate of tobacco tax evasion. The middle point also adopts the public health community skepticism, but then adjusts back upwards by the extent to which California's smuggling rate in Figure 1 exceeds that predicted by the regression line.

The central message of Figure 2 is that both the middle and high points project that a $50 per ounce excise tax would provide sufficient motivation for literally all of the market to be supplied via tax evasion, unless marijuana is harder to provide in bootleg form than is the case for cigarettes. Even the most conservative point, the one that adopts the public health community's skepticism about smuggling and makes no adjustment for California's exceeding the regression line, would project that more than half of the market would be supplied in ways that evade the excise tax.

Figure 2: Extrapolating the Relationship Between Tobacco Excise Taxes and Smuggling Observed in Figure 1 to Tax Rates Contemplated for Marijuana Would Project Most if not Essentially All of the Market Would Be Supplied without Paying the Excise Taxes
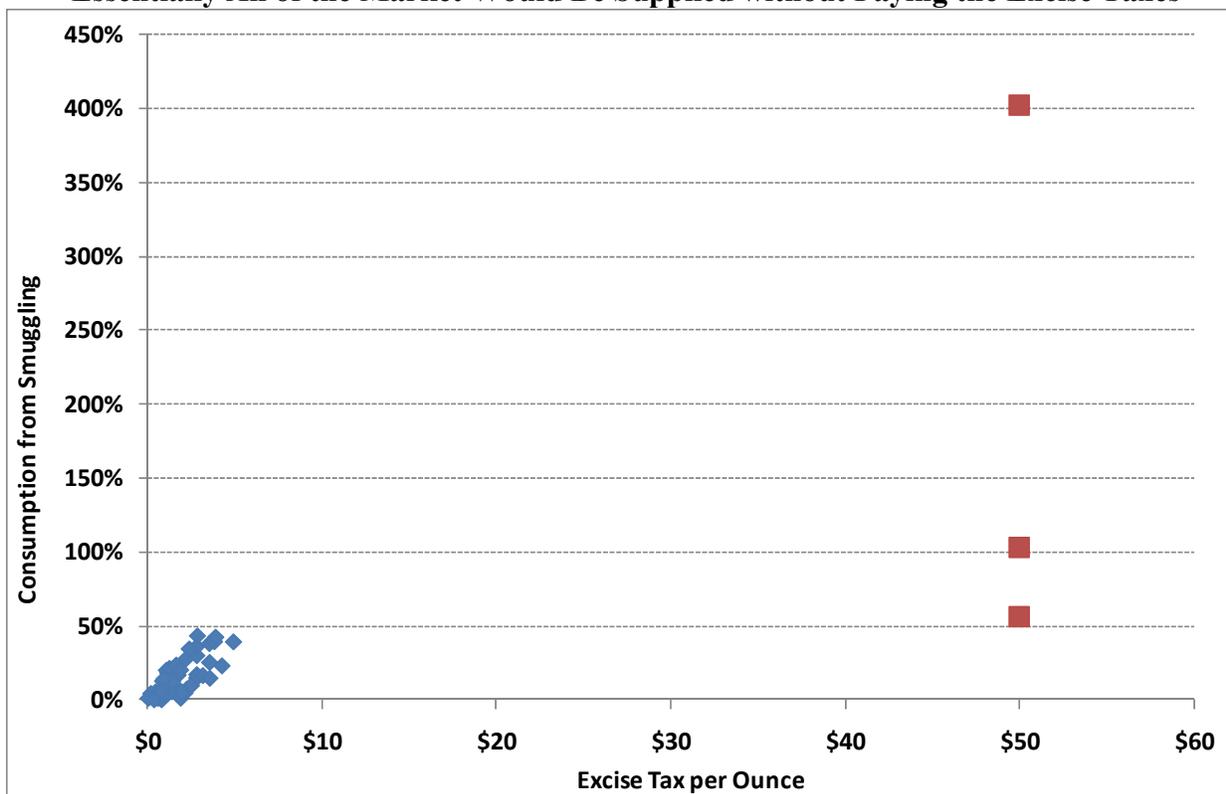
Comparing the Proposed Marijuana Excise Tax to Current Marijuana Prices

With a $50 per ounce excise tax, the financial reward for evading the taxes on a pound of legal marijuana will exceed the current financial reward of smuggling a pound of Mexican marijuana into California. The excise tax per pound would be $50 per ounce * 16 ounces per pound or $800 per pound. The sales tax on a pound of legal marijuana depends on the selling price. Caulkins (2010b) estimates wholesale prices of $413 per pound and an untaxed retail price of $38 per ounce, suggesting a 9% sales tax would add another $37 - $54 per pound. For round numbers, we might consider the financial benefit of avoiding paying taxes on a pound of legal marijuana in California to be $800 - $850 per pound, at these tax rates.

LA CLEAR (2006) lists the price of a pound of Mexican low-grade marijuana as $300 - $340. The Narcotics News website (described in Bond and Caulkins, 2010) lists pound prices for commercial grade marijuana in Fresno ($400 - $600), Los Angeles ($300- $450), San Diego ($250 - $450), and San Francisco ($375 - $500); all are well below $800. Also, all of the intercepts of the pound price regressions in Bond and Caulkins (2010) are below $700. Commercial grade prices tend to be lower in California than in the U.S. as a whole, presumably in part because California is so close to the Mexican border (Bond and Caulkins, 2010). Nevertheless, the national price per pound estimated for DEA STRIDE purchases of more than 100 grams (all grades combined) was still only about $1,020 in 2007, the most recent year for which such estimates are available (Fries et al., 2008).

As noted above, it is sometimes argued (e.g., Grossman et al., 2002) that resources saved by not having to enforce drug prohibition can be used to punish and thus deter tax evasion. These figures raise the possibility that the sanction risk needed to deter tax evasion will be comparable to that now imposed on people smuggling marijuana across the U.S. border, or perhaps, even greater sanctions would be needed inasmuch as Mexico continues to be a major source of marijuana today, despite the existing prohibition risks.

Conclusion

This review suggests several conclusions:

- As compared with other familiar excise taxes, a $50 per ounce excise tax on marijuana is either very high or truly unprecedented depending on the metric employed.
- California should expect at least some degree of tax evasion; it is hard to see why evasion would be less of an issue than it is with cigarettes.
- California should not rule out the possibility that tax evasion would wipe out essentially all of the potential revenues from a $50 per ounce excise tax.

Although we have not investigated the matter, one would expect the extent of tax evasion to be affected to some degree by mechanics of the tax's design, collection, and enforcement, as well as its size. Hence, it would seem prudent for jurisdictions contemplating imposing marijuana taxes of this magnitude to invest substantial energy in crafting wisely the particulars of those mechanics.

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