



Whitney Economics

## Taxation and the Effects on the Illicit Cannabis Market

### Overview:

Taxation plays a critical role in addressing the level of illicit activities in the Cannabis industry. There is a balance that must be made. If taxes are too high, the illicit market will flourish. If taxes are too low, state and local communities run the risk of leaving tax revenues on the table. In addition, one must factor in the social benefits of reducing illicit activities that reduce incarcerations, underage consumption, and law enforcement. In order to ascertain where the taxation sweet spot is, policy makers must take into consideration how price sensitive cannabis consumers are. Tax policies from other states such as Washington and Colorado did not take consumer pricing sensitivity into consideration and, as a result, taxes in those jurisdictions have been too high and have had to be adjusted. The proposed increase of allowable local taxes from 3% to 8% will ultimately have a negative effect on the state. It will perpetuate the illicit market and will reduce the tax revenues in those jurisdictions that enact this change. Demand will decrease in the regulated market in excess of 10% and the illicit market will increase by \$60M.

### Background:

There are two forms of illicit cannabis activities; supply driven activities that divert supply out of state, and demand driven activities where demand is satisfied through channels other than the regulated stores. ***This analysis focuses on the demand driven illicit activity.***

In order to ascertain the effect of a proposed tax policy, one must have several key data points. The first is an approximation of the total demand and the amount of that demand that is from the illicit market, the second is an assessment of how sensitive consumers are to changes in price and the third is how much the proposed tax is. This is also known as the change in price. It is from these three data points, that an analyst can approximate the effects a proposed tax (increase or decrease) will have on the illicit market.

**Forecast:** The current 2017 forecast for the Oregon cannabis market is \$700M (Although some forecasters estimate the 2017 market in Oregon to be in excess of \$800M, I tend to take a very conservative estimate of the total market). The medical and adult use markets combined will account for between \$450M and \$475M of the total demand, leaving over \$250M in the illicit market.

**Pricing Sensitivity:** If a consumer's behavior changes significantly with a change in price, the demand for that product is called *elastic*. If a consumer's demand changes little when prices change, the demand for that product is called *inelastic*. The difference between elastic and inelastic is determined in part by the number of substitute options the consumer has for that product. Many analysts have assumed that since there are few substitutes for cannabis, that the demand is inelastic, however, ***data analysis from Oregon, Washington and California indicates that currently demand is quite elastic***, due to the fact that if prices are too high on the regulated markets, consumers will simply obtain their supply on the illicit market.

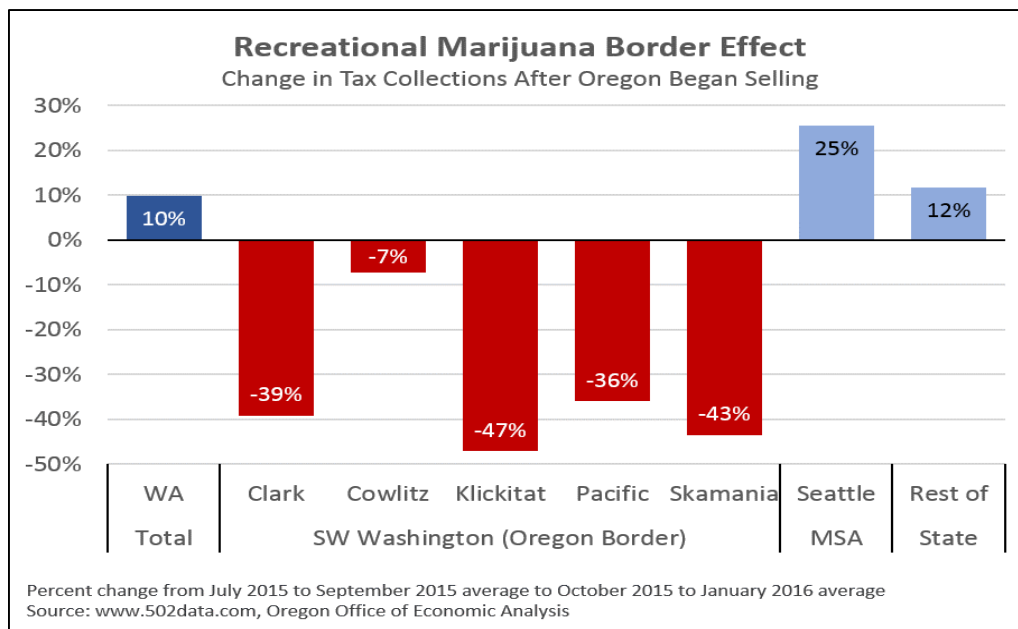


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**Definition of Elasticity:** In economics the level of pricing sensitivity can be calculated. The elasticity of demand is simply defined as the % change in demand divided by the percentage change in price. If this ratio is greater than one, the demand is *elastic*, if it is less than one it is considered *inelastic*. If prices increase for an elastic product, then demand will decrease significantly and consumers will pursue other options. The elasticity calculated in Oregon, Washington and California is remarkably consistent and ranges in the -2.24 to -2.4. This means that demand is very elastic and that a 5% change in price will decrease demand by 11.2% - 12.0%

$$\text{price elasticity of demand} = \frac{\text{percentage change in quantity demanded}}{\text{percentage change in price}}$$

**Elasticity and the Effect on Tax Policy:** Given that cannabis consumers are very price sensitive, even the slightest increase in taxation will have a significant effect on demand in the regulated market. The consumption surveys published by the federal Substance Abuse and Mental Health Services Administration (SAMHSA) show that the demand will still be there, however it will simply be satisfied by the illicit market. As an example, when Oregon first allowed limited adult use sales in medical dispensaries in October of 2015, there was a significant pricing differential between Oregon and Washington. As a result, demand in Washington border retail outlets decreased significantly. (See chart)





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While this is an example of illicit activities between two states, the main point of this example is to highlight the fact that consumers will go to great lengths to obtain a lower price, even if this means travelling across state lines. Tax policy must take this into consideration when establishing tax levels.

**One Important Note on Elasticity:** Once the illicit market is addressed and significantly reduced in size and influence, consumers will no longer have secondary markets to obtain their product. This in turn will make the demand more inelastic. It is at this point where taxes can then be raised and more revenue opportunities can be generated. However, it is too early in the Oregon market to begin to raise taxes.

**The Numbers:** Assuming a 55% illicit market, an increase in local taxes from 3% to 8% will reduce regulated demand by \$60M (10% - 12%), and will reduce tax revenues by \$300k. However, this will add \$60M to the illicit market, for a total of over \$360M. Assuming a 40% illicit market, the impact on taxes is positive, but the increases to the illicit market will be \$60M. (See charts below)

These numbers demonstrate the challenges associated with establishing what a reasonable tax rate is and whether it is solely about tax revenues or should the social impact of a \$60M increase in the illicit market also be included in the debate.

**Recommendations:** Although tempting to increase taxes to raise more revenue, the recommendation based on this analysis, is to keep tax rates at or below the current levels. (17% state, 3% local). This will allow the market to naturally drive down prices and compete head to head with the illicit market. It will also eliminate the incentive to remain in the illicit market, which in turn, will drive more participation into the regulated market. As participation in the regulated market occurs in larger numbers, demand will become more inelastic. Once the illicit market is significantly reduced through competition and price erosion, the state and local jurisdictions will be in a better position to gradually increase taxes.

There is a long term benefit of keeping taxes low in the form of reduced criminal activity, a reallocation of law enforcement resources, and less underage consumption. Raising taxes on cannabis will only perpetuate the illicit market rather than to eliminate it. This will have a higher social cost than the tax revenue benefits the state, counties and cities will receive.

**Summary:**

Demand for cannabis is very elastic. Consumers respond to changes in price. By allowing a 5% increase in local taxes, there will be a corresponding 10% - 12% increase in illicit market activities. There will also be an increase in social costs associated with increased criminal activity, law enforcement costs and increased underage consumption. By keeping taxes at or below their current levels, there will be a greater incentive to participate in the regulated market. With reasonable regulations, natural competition will drive down prices and will enable the regulated market to compete head to head with the illicit market. Once the illicit market is significantly reduced, demand will be more inelastic and taxes can then be raised. By resisting the temptation to raise taxes now, there will be a greater opportunity to increase revenue and allow for even greater social benefits as a result.



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Analysis Using 55% Illicit Market (25% tax)

						0.55	0.1	0.35	Annual Spends				
Estimated Population	Usage	Total users	Estimated Black	Estimated Medical	Estimated Recreational							\$	1,050.00
4,141,485	0.1536	636,132	349,873	63,613	222,646								
Elasticity	2.2400	Open Market			Illicit Market	% of Illicit mkt	Total Medical Mkt	Total Adult Use mkt	Tax revenue	Cumulative Demand Increase			
Tax rate	0.2500	2.800		286,259	349,873	0.55	\$ 66,793,870.08	233,778,545.28	58,444,636.32				
	0.2000	2.688	4.00%	56,997	343,257	0.46	\$ 66,793,870.08	293,625,852.87	58,725,170.57	59,847,308			
	0.1700	2.621	6.40%	91,196	377,455	0.41	\$ 66,793,870.08	329,534,237.43	56,020,820.36	95,755,692			
	0.1500	2.576	8.00%	113,995	400,254	0.37	\$ 66,793,870.08	353,473,160.46	53,020,974.07	119,694,615			
	0.1250	2.520	10.00%	142,494	428,753	0.33	\$ 66,793,870.08	383,396,814.26	47,924,601.78	149,618,269			
	0.1000	2.464	12.00%	170,992	457,252	0.28	\$ 66,793,870.08	413,320,468.06	41,332,046.81	179,541,923			
	0.0750	2.408	14.00%	199,491	485,750	0.24	\$ 66,793,870.08	443,244,121.85	33,243,309.14	209,465,577			
	0.0500	2.352	16.00%	227,990	514,249	0.19	\$ 66,793,870.08	473,167,775.65	23,658,388.78	239,389,230			
				Illicit Mkt @ 25%	\$ 367,366,285.44								
				Illicit Mkt @20%	\$ 307,518,977.85								
				Illicit Mkt @10%	\$ 187,824,362.66								

Analysis of Illicit Market at 40%

						0.4	0.09	0.51	Annual Spends				
Estimated Population	Usage	Total users	Estimated Black	Estimated Medical	Estimated Recreational							\$	1,050.00
4,141,485	0.1536	636,132	254,453	57,252	324,427								
Elasticity	2.2400	Open Market			Illicit Market	% of Illicit mkt	Total Medical Mkt	Total Adult Use mkt	Tax revenue	Cumulative Demand Increase			
Tax rate	0.2500	2.800		381,679	254,453	0.40	\$ 60,114,483.07	340,648,737.41	85,162,184.35				
	0.2000	2.688	4.00%	438,677	197,455	0.31	\$ 60,114,483.07	400,496,045.00	80,099,209.00	59,847,308			
	0.1700	2.621	6.40%	472,875	163,257	0.26	\$ 60,114,483.07	436,404,429.55	74,188,753.02	95,755,692			
	0.1500	2.576	8.00%	495,674	140,458	0.22	\$ 60,114,483.07	460,343,352.59	69,051,502.89	119,694,615			
	0.1250	2.520	10.00%	524,173	111,959	0.18	\$ 60,114,483.07	490,267,006.39	61,283,375.80	149,618,269			
	0.1000	2.464	12.00%	552,672	83,461	0.13	\$ 60,114,483.07	520,190,660.18	52,019,066.02	179,541,923			
	0.0750	2.408	14.00%	581,170	54,962	0.09	\$ 60,114,483.07	550,114,313.98	41,258,573.55	209,465,577			
	0.0500	2.352	16.00%	609,669	26,463	0.04	\$ 60,114,483.07	580,037,967.77	29,001,898.39	239,389,230			
				Illicit Mkt @ 25%	\$ 267,175,480.32								
				Illicit Mkt @20%	\$ 207,328,172.73								
				Illicit Mkt @10%	\$ 87,633,557.54								