Risks, Prices, & Structural Consequences of Product Illegality: What Cannabis Legalization Tells Us about Black Markets

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#1: Prices of Illegal Drugs Are Often High and That Matters
Heroin and Cocaine In Sweden Are Worth Their Weight in Gold (even at wholesale prices)
At Retail, They Are Dearer than Gold

USD per Gram

- Heroin (Retail)
- Cocaine (Retail)
- Gold (start of year)

Prices Matter: US Cocaine and Heroin ED Mentions Are Inversely Related to (Purity-Adjusted) Prices

![Graph showing the relationship between drug prices and ED mentions](image-url)
Price Raised to a Constant Elasticity Can Explain Most Variation in ED Mentions

Cocaine Mentions Predicted by Price
Actual Cocaine Mentions
Heroin Mentions Predicted by Price
Actual Heroin Mentions

Number of ED Mentions per Year

#2: Two Theories for Why Drug Prices are So High – Both by Peter

• Rejected theory: Monopoly power
  – Often there are few barriers to entry
  – Most of the markup happens at bottom of chain
    • 40-75% of retail price is wholesale-to-retail markup
  – Prices fell when Medellin “Cartel” was most powerful

• Structural consequences of product illegality

• “Risks & Prices”
Structural Consequences of Product Illegality

• Need to avoid arrest forces inefficient practices
  – Sales rates
    • 20 per day for street dealers
    • 20 per minute for grocery store checkout clerk
  – Cost to package for retail sale
    • $0.08 - $0.20 to package a 0.1 gram vial of crack
    • $0.006 - $0.008 to buy 2.85 gram of packet of sugar
  – Scale of growing operations
    • 99 plants common under prohibition (so < 1,000 sq. ft.)
    • 3,267 sq. ft. (average of 8 commercial MJ growers in 2013)
    • 1,000,000 sq. ft. (Aphria’s Lemington, ON greenhouses)
Risks & Prices

• Competitive markets imply zero rents (aka “economic” profits)
  – Prices should be explainable by costs
• High money (aka “accounting”) profits compensate dealers for risks, notably of violence, arrest, and incarceration
• Theory of “compensating differentials” is common
  – Dates at least to Smith, Adam (1776)
  – A 2002 estimate for the US economy as a whole was $6,600 per 1-in-1000 chance of death
Good News! Risks & Prices Can Explain High Levels of Drug Prices Circa 1990

Table 1: Estimates of Magnitude of Cost Components for Cocaine Sold at Retail, 1990

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Table 1: Estimates of Magnitude of Cost Components for Coca

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Mark up from $1,500/kg in Colombia to $15,000/kg at import is 12% of $110/gm retail price

Value dealers’ time at $7 per hour ($14/hr in 2019 $)
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325,000 incarcerated at $43,500 compensation per year divided by $60B total sales

Reuter et al. (1990) estimate risks of violence ~1.4 times the risks of prison
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Structural consequences seem to account for less than 20% of retail price.
Bad News! Risks & Prices Cannot Explain Price Trends
Prices Collapsed in the US During the 1980s Expansion in Drug Enforcement

- Drug Inmates (1000s)
- Cocaine $/pure gram (divided by 2)
- Meth $/pure gram (divided by 2)
- Heroin $/pure gram (divided by 10)
Prices Collapsed in the US During the 1980s Expansion in Drug Enforcement

Data series from

See also
Caveats

• US squanders a lot of imprisonment on people who are cheap to replace
• Risks and prices theory is about risk per market participant, not aggregate punishing
• Maybe prices would have fallen even faster in the absence of enforcement ramp up
  – Rydell et al. (1996) predict similar to K&L
#3: Lessons Drawn from Failure of Risks & Prices Theory Are Many

• Eschew long mandatory minimum sentences

• Free law enforcement to mold market into less destructive forms

• Hate all law enforcement

• Legalize drugs
#4: What Cannabis Legalization Says about Structural Consequences

• Note: Cannabis prices in the U.S. were never about risk compensation
  – Not a very violent market
  – Cannabis accounted for at most 10% of incarceration but 40-50% of retail market value
“Iron Law of Prohibition” is Wrong
Potency Rose with Policy Liberalization

And extracts are often 70% pure
Price Declines of Marijuana in WA State

Retail price has fallen below $1 per hour of intoxication for a naïve user.

OR price fell from $9.27/gm in Jan ‘16 to $4.27/gm in Nov ‘18.
Wholesale Price Declines

$600 per pound is less than $1 per joint

National spot index declines about 2.5% per month, compounded.
Production Costs Are Falling

- CA Pound Price (2008)
- Wholesale Price (2013)
- PC of Small Firm (WA, 2013)
- PC of Large Firm (Nov '16)
- PC of Canadian Medical MJ
- PC of Dutch Medical MJ
- PC reported by Aphria (2019)
- Growhouse
- Industrial Warehouse
- Greenhouse
- Outdoor Farm

Current USD per Pound

$4,000
$3,500
$3,000
$2,500
$2,000
$1,500
$1,000
$500
$0

--- Prohibition

--- Quasi-legalization

-- Legal, regulated

--- Projected cost with light regs and no taxes
Simple Math of Legal Production

• Current retail cannabis price is ~$10 per gram
• Could production cost fall to ~$10 per pound?
  – Cannabis yields ~1,000 pounds per acre
  – Production cost for tomatoes is $10,000 per acre
  – That’d be ~$0.02 per gm, or ~$0.01 - $0.02 per joint

Long-run profitability requires getting consumers to pay much more than it costs to produce the product. Parallels with Starbucks & bottled water.
Structural Consequences Repealed When Prohibition Was Repealed

• Harness scale economies
  – Continuous not batch production
• Extract cannabinoids outside of flowers
• Tap skilled horticulturalists
  – Develop better strains
  – Modern agricultural science approach
• Offer a variety of products
• Develop brands and market them
• Increase retail sales per sales-staff hour
Conclusion

• CW: Risks & prices model failed for hard drugs

• New wisdom: Structural consequences were large for cannabis

• Policy implications
  – Cannabis legalization is not just same old, same old but without the arrests. It will affect supply.
  – Maybe (?) think about law enforcement & prohibition differently for hard drugs???
    • Do least amount of enforcement necessary to keep people’s heads down & minimize collateral harm
    • Don’t maximize pain inflicted on dealers
    • And ...? [insert your ideas here]