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The Economic Case Against Drug Prohibition

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Drug use is widely blamed for a broad range of personal and social ills. According to many observers, drug users suffer diminished health, decreased earnings and moral degradation. Similarly, according to many accounts, the market in illegal drugs promotes crime, destroys inner cities, spreads AIDS, corrupts law enforcement officials and politicians, produces and exacerbates poverty and erodes the moral fabric of society.

The most common response to these perceptions is a belief that governments should prohibit the production, sale and use of the currently illegal drugs. This view presumes that drug use causes the problems associated with illegal drugs and that prohibition reduces these problems by discouraging use. A small but vocal minority, however, suggests that prohibition itself causes many of the problems associated with illegal drugs. This minority believes that policies other than prohibition might be preferable.[1]

The resolution of this debate matters. Almost a third of the population aged 12 and older claims to have used marijuana at least once, and more than 10 percent claims to have tried cocaine (U.S. Department of Justice, 1994, pp. 335–36). Revenues in the illegal drug industry almost certainly exceed $10 billion and by some estimates surpass $50 billion (WEFA, 1986, pp. 413–94). Federal, state and local governments currently spend more than $20 billion per year on drug enforcement (U.S. Department of Justice, 1994, pp. 22–3), and in 1992 law enforcement officials

[1] The literature on drug prohibition is too lengthy to cite in detail; see Evans and Berent (1992) and the references therein for a good sampling of the views on both sides.

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made more than one million arrests for drug law violations (U.S. Department of Justice, 1994, p. 418). More than 20 percent of the 700,000 state prisoners in 1991 and almost 60 percent of the 77,000 federal prisoners in 1993 were incarcerated for drug law violations (U.S. Department of Justice, 1994, pp. 612, 630). Rightly or wrongly, the enforcement of drug prohibition affects tens of millions of Americans, involves substantial amounts of resources and has a profound influence on the criminal justice system.

This paper discusses the costs and benefits of drug prohibition. It offers a detailed outline of the economic consequences of drug prohibition and a systematic analysis of the relevant empirical evidence. The bottom line is that a relatively free market in drugs is likely to be vastly superior to the current policy of prohibition.

The Positive Analysis of Drug Prohibition

As a starting place for analyzing the economic consequences of drug prohibition, we compare a prohibited market with a free market in drugs. By prohibition, we mean a regime something like current U.S. policy. By a free market, we mean a regime something like that surrounding most legal goods. Many intermediate policy regimes are available, and we discuss these later in the paper.

The Direct Effects of Prohibition on the Drug Market

Perhaps the most incontrovertible effect of prohibition is an upward shift in the supply curve for drugs. Enforcement and potential legal punishment effectively impose a "tax" on suppliers, thereby raising the costs of supplying drugs. This tax includes the jail sentences and fines that drug suppliers face if apprehended, along with any costs that suppliers incur in evading detection. In addition, supply costs increase because drug suppliers cannot rely on the legal and judicial system to enforce contracts or resolve disputes.

Prohibition is also likely to shift the demand curve for drugs downward. This shift results from legal penalties for possession of drugs, greater uncertainty about product quality, additional costs and danger associated with transactions in an illegal market and a "respect for the law" under which individuals abstain from illegal acts.

For several reasons, however, the downward shift in demand is likely to be small relative to the upward shift in supply. As a rule, both legal prescriptions and realized punishments are less extreme for consumers than suppliers (Bruno, 1984, p. 35). During alcohol Prohibition, for example, the purchase and use of alcohol were never explicitly prohibited (Clark, 1976), although some law enforcement officers and courts treated possession as evidence of intent to distribute. Similarly, increased transaction costs are likely to be greater for the supplier than for the consumer; for example, suppliers are more likely to be targets of violence than consumers.

The effect of "respect for the law" on the demand for drugs is also likely to be small. Many individuals regularly violate laws that are weakly enforced, including

parking and speeding laws, certain tax laws, sodomy laws and blue laws. These examples differ in some respects from drug restrictions, but they support the view that individuals comply with laws selectively, based on the actual costs and benefits of the action in question. Furthermore, any reduction in demand due to "respect for the law" is mitigated to the extent prohibition glamorizes drug use.

Thus, prohibition is likely to cause a substantial upward shift in supply and a smaller downward shift in demand. Unless demand is far more elastic than supply, therefore, prices will increase under prohibition. In fact, widespread evidence indicates that prices of prohibited goods—be they drugs, alcohol or prostitution—are higher under prohibition. For example, Warburton (1932) estimates that alcohol prices were approximately three times higher during alcohol Prohibition than beforehand, and Morgan (1991) estimates that cocaine currently sells for at least 20 times its free market price.

The prohibition-induced shifts in supply and demand also imply that under prohibition, equilibrium consumption falls. The magnitude of the decline depends on a number of additional assumptions, and we argue below that the total decrease is likely to be small. Unless prohibition glamorizes drug use to a surprising extent, however, consumption will be lower under prohibition than in a free market.

These direct effects of prohibition on the drug market imply a number of additional effects. In the remainder of this section, we discuss the most important of these.

Violence

Prohibition is likely to lower marginal costs and raise marginal benefits to violence in an industry in several important manners. Because participants in the illegal drug trade cannot use the legal and judicial system, the marginal benefits to using violence to resolve disputes increases. Indeed, it is well known that in many situations, the first best can be asymptotically obtained only when arbitrarily large punishments can be imposed for bad outcomes; see, for example, Mirrlees (1975). While such punishments may be restricted due to other considerations, they will look more attractive if alternative legal remedies are not available.

Additionally, the marginal cost of violent acts is likely to be smaller in a prohibited market than in a free market, because evading apprehension for one set of illegal activities—drug dealing—is complementary with evading apprehension for another set—initiating violence. Likewise, the costs of legal punishment if apprehended may be concave in the number of offenses for which one is convicted; in other words, an extra few charges often leads to a less-than-proportional increase in the penalty. Furthermore, participants in an illegal enterprise, having no recourse to the law, have a greater need to protect themselves. Hiring a security force for protection, however, further lowers the marginal cost of initiating violent acts.

In addition to promoting violence in the drug trade itself, prohibition likely increases non-drug-related violence as well. As violence from the drug trade makes headlines, law-abiding citizens buy guns in self-defense, and these weapons are

discharged accidentally or used in domestic and other non-drug-related disputes. The increased demand for guns, for both legal and illegal purposes, means that guns are widely available generally, for use in a broad range of violent activities.

Consequently, the marginal cost of violence is likely to decrease, and the marginal benefit is likely to increase under prohibition. This view proposed here, that drug *prohibition* promotes violence, contrasts sharply with the usual claim that drug *consumption* promotes violence. The evidence that drug consumption induces violence, however, is weak (Duke and Gross, 1993; U.S. Department of Justice, 1992). A host of historical examples supports the view that suppliers of various goods employ violence only when those goods are prohibited. We cite here only the most obvious examples.

Violence has occurred in the drug trade primarily since 1914, when drugs were first prohibited in the United States (Trebach, 1982). Similarly, violence was employed in the alcohol trade only during the years of Prohibition. The current lack of violence in this industry is notable given that alcohol consumption is widely linked with reduced inhibitions.

The behavior of the murder rate in the United States further supports the claim that prohibition increases violence (Friedman, 1991). The murder rate rose rapidly after 1910, when many states adopted drug and alcohol prohibition laws. The rate also rose through World War I, when alcohol and drugs were first prohibited nationally, and it continued to rise during the 1920s as efforts to enforce alcohol prohibition increased. The rate then fell dramatically after Prohibition's repeal in 1934 and (except for wartime) remained at modest levels for several decades. In the late 1960s, the rate increased dramatically again and stayed at historically high levels through the 1970s and 1980s, coinciding with a drastic increase in drug law enforcement.

A more detailed examination of the violent acts associated with drugs also suggests that prohibition is responsible for considerable drug-related violence (Goldstein, Brownstein, Ryan and Bellucci, 1989). During the period from March to October 1988, 414 murders were recorded in New York City. Of these, 218 were classified by police as drug related. Of drug-related murders, only 31 resulted from a state of mind induced by drugs or alcohol, and only eight of these involved crack and/or cocaine (in three cases in combination with alcohol). By contrast, 21 deaths were attributed to the psycho-pharmacological effects of alcohol. The remaining drug-related murders were all "economic compulsive," which refers to killing while stealing to pay for a drug habit, or systemic, which refers to battling over drug territory. Of these, the vast majority were systemic. No economic compulsive or systemic murders were reported relating to alcohol.

Cartelization, Profits and Violence

Together with increasing the incentives for violence, prohibition is likely to increase the ease with which a cartel can be established in an industry. Suppliers in a prohibited industry necessarily hide their activities from law enforcement officials, thereby lowering the marginal costs of evading the antitrust laws. Lower marginal costs to imposing severe punishments—violence—also serve to facilitate

cooperation in repeated interactions (see, for example, Fudenberg and Maskin, 1986).

The willingness of a cartel to use violence also discourages small competitors from challenging the cartel. When a large incumbent in a legal industry fights a price war with a smaller competitor, the incumbent pays a higher cost (foregone sales) because it is larger. In a battle of guns, however, an equal loss (perhaps measured in the number of lives) is likely to hurt a small challenger more. Furthermore, even if challenges occur, violence is likely to settle disputes faster than legal remedies, restoring the dominance of a cartel more rapidly.

To the extent that prohibition does encourage cartelization, this will exacerbate the reduction in supply and increase in price discussed above. Cartelization also yields real profits (rather than just quasi-rents offsetting law-evasion costs), which may further increase the marginal benefits of violence. Similarly, the feasibility of real profits under cartelization increases the marginal benefits to the corruption of law enforcement officials and politicians, and it give suppliers a reason to support legal prohibitions.

The explanation of profits offered here, and the link suggested with increased violence, is to the best of our knowledge novel. Many observers suggest that prohibition raises profits, and many assert that profits explain the level of violence. Yet the foundation for these claims has been lacking. The mere fact that prohibition raises costs does not suffice, since a tax on suppliers merely lowers short-run profits until exit from the industry restores a situation where zero profits prevail. Likewise, high profits alone cannot account for elevated levels of violence; profits by themselves merely induce entry. Nevertheless, our analysis suggests that profits and violence are intimately related under prohibition. Although hard evidence is difficult to obtain, anecdotal evidence is consistent with our conjectures. Cartelization in the drug trade appears to exist at every stage of production, and battles over turf—market share—appear to be a primary source of violence in the industry.

Increased Accidental Poisonings and Overdoses

Still another effect of prohibition is increased uncertainty about product quality. Government quality regulation does not exist for illegal commodities, and buyers cannot complain about quality without incriminating themselves. In response to such concerns, sellers of a prohibited product might endeavor to develop reputations for reliability through repeated transactions, but such reputation building is likely to be only a partial solution. Thus, accidental poisonings and overdoses will occur more frequently in a prohibited market.

A number of examples illustrate this point. During Prohibition, deaths due to alcoholism rose relative to other proxies for alcohol consumption (Miron and Zwiebel, 1991), presumably because consumption of adulterated alcohol increased. Indeed, federal regulation required manufacturers of industrial alcohol to adulterate their product with poisonous wood alcohol, knowing that much of this product was diverted to illegal consumption (Merz, 1932). In one case, an adulterant used by bootleggers to disguise alcohol as medicine turned out to cause permanent paralysis, victimizing thousands (Morgan, 1982). Similarly, the chemical paraquat, which

the U.S. government encouraged Mexico to spray on marijuana fields, has caused sickness in many consumers (Duke and Gross, 1993, p.195).

Increased Property Crime

Considerable evidence indicates a correlation between drug use and the perpetration of income-generating crimes such as theft or prostitution. A high fraction of those arrested for such crimes test positive for drug use, and several studies suggest that the rate of criminal activity is higher during periods of elevated drug use (Duke and Gross, 1993, pp. 65, 73, 108–10).

One interpretation of this correlation—the psycho-pharmacological explanation—is that drug consumption releases aggressions or reduces inhibitions, thereby making drug users more likely to commit crimes. Alternatively, drug users might commit crimes to finance their drug consumption. More specifically, if drug users have inelastic demands, face binding liquidity constraints and cannot supplement their income legally, increased prices are likely to both increase income-generating crime and induce substitution from consumption of "essentials." This effect may be magnified if individuals already inclined to commit crimes also happen to use drugs, a condition that appears consistent with the data (Greenberg and Adler, 1974).

Under the psycho-pharmacological explanation, prohibition should reduce crime by raising prices and decreasing consumption. Alternatively, if crimes are committed to finance drug consumption, prohibition should increase crime by raising prices. Reinforcing this effect, enforcement of prohibition may divert police resources from the deterrence of other crime.

Available evidence is generally consistent with the financing-consumption explanation and inconsistent with the psycho-pharmalogical explanation. For example, Silverman and Spruill (1977) document that increases in heroin prices are associated with increases in the rates of property crime, while Benson and Rasmussen (1991) and Benson, Kim, Rasmussen and Zuehlke (1992) find that increases in efforts to enforce prohibition are associated with increased rates of income-generating crime.

Other Effects

Prohibition has a number of other likely effects. Attempts to enforce drug prohibition have promoted asset-forfeiture laws, which allow local police and the DEA to seize cars, boats, houses and financial assets from suspected drug users and suppliers without a trial or anything resembling due process. Likewise, attempts to enforce prohibition have weakened protections against unreasonable searches (Schlosser, 1994a,b).

The high prices caused by prohibition have increased the incentive to inject drugs (since this provides greater potency for a given expenditure) and, combined with restrictions on clean needles, thereby furthered the spread of HIV (Gostin, 1991). Restrictions on needle availability are not a necessary implication of drug prohibition, but these restrictions are widely imposed and usually supported by prohibitionists. This

effect of prohibition-cum-needle-restrictions is potentially substantial; cross-sectional evidence suggests that HIV infection rates are lower in cities or countries with needle exchanges or greater legal access to clean needles (Gostin, 1991).

Drug prohibition has also had an important impact on foreign policy. In extreme cases like Peru, anecdotal evidence suggests that U.S. drug prohibition has helped create profits for drug cartels, who in turn have supported terrorism and fostered political instability (Barro, 1992).

Finally, as noted above, prohibition has substantial direct costs for law enforcement. The $20 billion figure cited in the introduction is undoubtedly an enormous underestimate, since it includes only direct expenditures on enforcement of the drug laws themselves. The expenditures necessitated by increased violent or income-generating crime might easily multiply this figure several times over.

The Normative Analysis of Drug Prohibition

The discussion above has reviewed the most important economic consequences of drug prohibition without addressing the welfare implications of each effect. For most of these effects, the welfare consequences are clearly negative. The most important possible exception is any reduction in drug consumption caused by prohibition. This section discusses whether policy-induced reductions in drug use are welfare enhancing and whether prohibition is an effective method of achieving whatever reductions are desirable.

Irrational Behavior and Drug Consumption

In the standard economic paradigm, consumers make rational choices about consumption of goods. The fact that current drug consumption might lead to unpleasant future consequences in no way contradicts this presumption. Becker and Murphy (1988), for example, offer a model in which rational consumers anticipate any negative future utility from drug consumption, and they trade that off against present benefits. In this model, consumers only voluntarily initiate drug consumption when the effect on expected lifetime utility is positive. Thus, any reductions in drug consumption caused by prohibition constitute an additional cost of prohibition.

Despite this conclusion, however, many observers believe that policy should reduce consumption below the free market level. In particular, economists and others who espouse this view believe that some consumers systematically underestimate the degree to which current consumption of drugs influences the desire to consume drugs in the future—addictiveness—or underestimate the long-term costs of addiction. This kind of behavior is essentially equivalent to myopia and is usually referred to as such.

Even if some consumers underestimate the likelihood or costs of addiction, however, any benefits that drug users receive should still be included in cost-benefit calculations. Indeed, the utility obtained from social drinking is

generally recognized as a benefit in discussions of alcohol policy, and as such it is remarkable how uniformly the utility from drug consumption is ignored in public discourse on drug policy—even by economists. The extent to which users (both casual and heavy) have pursued drugs, despite severe penalties and inflated prices under prohibition, suggests that the utility many users believe they derive is substantial.

In addition, the view that drug users systematically underestimate the costs of drug use or the likelihood of addiction is problematic. Information on the negative potential consequences of drugs is pervasive, and some drug "education" overstates the likely costs of drug use. In the case of cigarettes, for example, consumers appear to *overestimate* the relevant health risks (Viscusi, 1994). Thus, while we cannot deny that some consumers make a mistake in using drugs, we see little reason to label most or all such behavior as myopic.

Just as importantly, existing research suggests that many drugs are either not "addictive" or at least far less addictive than commonly portrayed. For example, across all categories of drugs at most a third of those who have ever used a drug say they have used that drug in the past year (U.S. Department of Justice, 1994, Tables 3.87–3.90, pp. 335–37). This does not mean drugs are never addictive, but it fails to suggest a high degree of addictiveness. The fact that continued use rates for marijuana, which is not regarded as addictive, are similar to those for crack, which is regarded as highly addictive, also challenges the more extreme claims about addictiveness of drugs. A sizable percentage of heroin users consume only occasionally, without becoming heavy users (Zinberg, 1979), and measurable withdrawal symptoms from opioids rarely occur until after several weeks of regular administration (Jaffee, 1991).

Existing evidence also suggests that the negative health consequences of drug use or addiction are often overstated. All drugs carry some health risk, but the degree to which illegal drugs are physically detrimental is far less than generally portrayed, provided they are consumed under safe circumstances. The *Merck Manual* (Berkow, 1992, pp. 1556–63) a standard reference book on diagnosis and treatment of diseases, states that "people who have developed tolerance [to heroin] may show few signs of drug use and function normally in their usual activities. . . . Many but not all complications of heroin addiction are related to unsanitary administration of the drug." It also writes that "there is still little evidence of biologic damage [from marijuana] even among relatively heavy users." Concerning cocaine, the manual does not mention effects of long-term use but emphasizes that all effects, including those that promote aggression, are short-lived. Many of the health risks discussed for all drugs result from overdoses or adulterated doses, not moderate or even heavy levels of use.[2]

Similarly, little evidence suggests that drug use lowers productivity. Laboratory studies have failed to document consistent effects—positive or negative—of drugs

[2] For more detailed discussions of health effects, see Grinspoon and Bakalar (1979) on cocaine, Grinspoon and Bakalar (1993) on marijuana and Trebach (1982) and Zinberg (1979) on heroin.

on performance, and individual earnings display, if anything, a positive relation with self-reported drug use, except for the very heaviest users (Normand, Lempert and O'Brien, 1994, pp. 107–23, 160–68). Winick (1991) documents that many regular drug users are productive, functioning members of society (as are many heavy alcohol users), with many claiming their greatest problem related to drug use is obtaining a steady supply.

Finally, the question for policy is not simply whether myopia has negative consequences but whether these consequences are greater under prohibition or an alternative policy. For example, prohibition raises the short-term rewards to working in the drug trade relative to the short-term benefits of getting an education. The "rational" choice—taking into account long-term considerations—might be education, but under prohibition, myopia could lead some teenagers to choose the drug trade. Similarly, prohibition might glamorize drugs, especially for those with myopic preferences.

Externalities of Drug Consumption

An alternative justification for policies to reduce drug consumption is that such consumption generates negative externalities. The existence of such externalities does not justify ignoring consumer benefits in an overall evaluation of drug policies, but their presence may imply that the socially optimal level of consumption is less than the individually optimal level. Again, the critical question is not whether drug consumption generates externalities, but how any such externalities compare to those generated by prohibition. In fact, it is possible that prohibition might increase certain externalities associated with consumption.

Note first that while prohibition (and other restrictive policies) might reduce the consumption of illegal drugs, these policies might increase the consumption of other products that also generate externalities, like alcohol and tobacco. Marijuana use increased and other drug use decreased in the 12 states that decriminalized marijuana during the 1970s (Model, 1993), and marijuana consumption of high school seniors rose while alcohol consumption fell after increases in minimum drinking ages during the 1980s (DiNardo and Lemieux, 1992). Similarly, data on actual marijuana prices along with indicators for decriminalization indicate that drinking frequency and heavy drinking episodes are positively related to the price of marijuana (Chaloupka and Laixuthai, 1994). Anecdotal evidence suggests that opiate consumption increased during the first few years of alcohol Prohibition (Feldman, 1927), and patients in drug-treatment programs appear to increase their marijuana and alcohol consumption as their opiate consumption declines (Apsler and Harding, 1991).

Existing evidence also suggests that externalities generated by consumption of substitutes for illegal drugs are at least as great as those for illegal drugs. For example, the deleterious effects of alcohol on driving ability are at least as great as those of marijuana (U.S. Department of Transportation, 1993; Crancer et al., 1969), and, consistent with this evidence, a decrease in the price of marijuana leads to a lower number of traffic fatalities, presumably because the lower price induces a

substitution from alcohol to marijuana (Chaloupka and Laixuthai, 1994). The negative effects of cigarette smoking on pregnancy outcomes appear greater and are more consistently documented than those of marijuana or cocaine (Rosenzweig and Wolpin, 1995; Shiono et al., 1995).

It is also possible that prohibition increases rather than decreases the use of publicly funded health care resources. Prohibition raises the frequency of accidental poisonings and overdoses, contributes to the spread of HIV and increases emergency-room treatment of gunshot wounds. Additionally, prohibition has discouraged the use of illegal drugs for medical purposes. Marijuana cannot be used to treat a number of conditions for which it appears both safe and efficacious (Grinspoon and Bakalar, 1993); many doctors appear to undertreat pain because of hysteria over the use of narcotics (Trebach, 1982); and some patients refuse narcotics and other pain medication due to exaggerated fears of addiction (*New York Times*, 1994). Moreover, the net impact of drug policy on public funding is confounded by evidence that dying early, before receiving much Social Security or Medicare, may yield a net public inflow (Manning et al., 1989; Viscusi, 1994).

The externality-reducing effects of prohibition are further limited by the fact that externalities are likely to be disproportionately associated with heavy use, but enforcement probably discourages casual use more than heavy use. For example, the price elasticity of heavy drinkers is far less than that of moderate drinkers (Manning, Blumberg and Moulton, 1993). Thus, whereas proponents of the "war on drugs" cite survey evidence that use has fallen over the past 10–15 years, several factors suggest that heavy use has declined far less or even increased (Normand, Lempert and O'Brien, 1994, pp. 71–73). Meanwhile, many of the externalities that ostensibly justified the "war" remained constant or increased. For example, the reported rate of property crime is virtually unchanged compared to the late 1970s or early 1980s, and the rate of violent crime has increased substantially (U.S. Department of Justice, 1994, Table 3.107, p. 352).

Historical Evidence on Prohibition

The case for prohibition must rest on its ability to reduce drug use, especially that sort of use that produces externalities or is individually irrational. A critical empirical question is therefore whether drug prohibition produces a large or small effect in this direction. Historical evidence is informative here.

Although drug prohibition is almost universally practiced by the governments of the modern world, it is a recent phenomenon by historical standards. In the United States, federal prohibition of opium, heroin and cocaine dates only from 1914 and of marijuana only from 1937.[3] Before these dates, currently prohibited

[3] Some states prohibited drugs before federal prohibition. These laws are not believed to have depressed consumption, however, because smuggling across state borders was easy and resources allocated for enforcement were modest.

drugs were not only legal but widely available from drug stores, street vendors and mail-order catalogs. They were also dispensed by pharmacists and physicians for a host of medical problems, particularly the alleviation of pain.

The lessons from this period are instructive. Although drugs were legal and widely available, the United States was not a country of addicts (Clark, 1976). Many individuals used opium, heroin, cocaine and other drugs without significant ill effects. For example, it was common to administer opium to infants and children, as in cough syrups, yet very few of these children became addicts.

Additionally, before 1914, opium use fluctuated substantially from year to year and declined significantly from about 1895 to 1914, in the absence of significant government prohibitions (Terry and Pellens, 1928). This implies that factors other than government drug policy, such as demographics, urbanization, the price of alcohol and unemployment rates, are important determinants of drug use. To the extent drug use was associated with negative outcomes, these were mainly confined to users, and society was not afflicted with the drug-related social ills that are commonly attributed to drug use today (Trebach, 1982). While a variety of factors make this evidence hard to apply to the present, it suggests the most dire predictions of prohibitionists—for example, that legalization would produce a boom in the number of "addicts"—were not borne out prior to prohibition restrictions.

Another source of historical evidence is provided by the U.S. experience with alcohol prohibition.[4] Prohibition began in 1917 as an emergency wartime measure, was made permanent by the 18th amendment in 1920 and continued until repeal at the end of 1933. Although no official data exist on alcohol consumption during Prohibition, data are available on a number of closely related series. These include the death rate from cirrhosis of the liver, the death rate from alcoholism, the drunkenness arrest rate and the number of first admittances to mental hospitals for alcoholic psychosis. In the periods before and after Prohibition, when official statistics on alcohol consumption are available, each of these measures seems to be an accurate proxy for the per capita consumption of alcohol.

The four different proxies tell a similar story about alcohol consumption during Prohibition. Taken together, they indicate that at the onset of Prohibition, consumption declined sharply, to approximately 30 percent of its pre-Prohibition level. Through the early 1920s, however, alcohol consumption increased significantly, rising to about 60–70 percent of the pre-Prohibition level.[5] Consumption grew slightly over the last few years of Prohibition and stayed approximately constant after repeal.

One natural interpretation of this pattern is that it took several years for illegal supply networks to organize, but by the early 1920s they were sufficiently well developed so that the return to a legal market for alcohol did not have a significant effect on availability. This pattern is particularly notable given the sharp increase

[4] The discussion here is based on Miron and Zwiebel (1991).

[5] Similarly, data on convictions for drunkenness suggest that consumption of alcohol grew rapidly during Finnish prohibition in the 1920s after an initial sharp decline (Wuorinen, 1932).

in enforcement over this period.[6] Also notable is a shift from the consumption of beer and wine to hard liquors.

The data described above should not be taken as a direct estimate of alcohol Prohibition's effect on consumption, since other factors may have influenced consumption as well. For example, the political factors that led to passing Prohibition probably also reflected a social climate that frowned on alcohol consumption, while the political factors that led to repeal expressed a social climate that did not find alcohol consumption as threatening. Nevertheless, these data do not suggest that alcohol Prohibition had a significant deterrent effect on alcohol use. The absence of a substantial increase in alcohol consumption upon repeal is particularly relevant. Just as the illegal liquor supply was well developed by the late 1920s, the supply of illegal drugs is pervasive today.

What is the Optimal Drug Policy?

The possible policies toward drugs include many options between prohibition and a free market. This section offers a brief discussion of several main possibilities.

The Degree of Enforcement

One alternative to current prohibition is a regime with similar laws but substantially different amounts of resources devoted to enforcement. In the United States, the level of enforcement has changed substantially over time, and the level of enforcement varies widely across countries.

One key consideration in determining the optimal level of enforcement is that such expenditures likely exhibit decreasing marginal returns in reducing drug consumption. Cost-effective law enforcement is likely to address the easiest targets first, implying a diminishing marginal effect of enforcement in raising price. Moreover, any increases in price will yield diminishing returns in reducing consumption if market demand is convex, a condition that seems likely for drugs. Casual consumers have cheap substitutes like alcohol and tobacco available and thus have relatively elastic demands for drugs, while heavy users are likely to have inelastic demands. As price rises, the latter group will make up a higher proportion of the market, leading to a convex demand curve.

The U.S. experience with alcohol Prohibition is consistent with this conjecture. Early in alcohol Prohibition, enforcement was weak and alcohol consumption declined substantially; later enforcement was stronger, but consumption failed to decline further and actually increased. Part of the explanation is presumably that illegal supply networks became more efficient over time, but this evidence still

[6] Money appropriated by the federal government for enforcing Prohibition increased from $6.3 million in 1921 (the first year of large-scale enforcement) to $9.2 million in 1925 and to $13.4 million in 1930 (U.S. Department of Treasury, 1930, p. 2).

suggests that increased enforcement yielded decreasing returns in reducing consumption.

Similarly, federal drug enforcement expenditures increased from less than $1 billion in 1981 to more than $7.5 billion in 1994.[7] Survey estimates indicate, however, that the fraction of the population using drugs declined by at most 50 percent (Normand, Lempert and O'Brien, 1994, p. 54), and this number almost certainly exaggerates the decline in drug consumption, both because heavy use appears to have remained relatively constant and because increased social stigmatization is likely to have biased survey responses.

Thus, while many prohibitionists believe present levels of enforcement are "inadequate," we see little evidence that increased enforcement would reduce drug use further. In contrast, decreases in enforcement would likely reduce violence—insofar as violence is likely to increase with higher prices—while leading to only modest increases in consumption, mainly by casual consumers. In the 1950s and 1960s, for example, the resources devoted to prohibition were proportionally smaller than during the last two decades, yet drug-related violence was less common and the consumption of drugs was, if anything, lower than during the 1970s and 1980s.

Which Drugs to Target

Any policy toward illegal drugs must decide whether all drugs should be treated alike. It is common for legalization advocates to focus on marijuana, for example.

If the only objective of drug policy were to reduce myopic or externality-producing *consumption,* without regard to externalities induced by prohibition, the case for a free market in marijuana might be clearer than that for cocaine or opiates. Marijuana is not believed to be physically addictive, nor does it appear to have significant negative health consequences, even in large doses. Although opiates and cocaine can be used safely over long periods, both can cause lethal overdoses, and both are potentially addictive.

Nevertheless, we have argued above that most of the negative consequences associated with illegal drugs derive from the prohibition rather than the consumption of the prohibited good. Although drugs differ from other commodities in important respects, their distinctive characteristics do not explain the effects of drug prohibition on the market for drugs. The markets for commodities that display similar distinctive characteristics but are not prohibited (like cigarettes and coffee) fail to exhibit the features of the market for drugs discussed here. Conversely, the markets for commodities that do not display these distinctive characteristics but that are often prohibited (like gambling and prostitution) exhibit many of the same negative features as the market for drugs.

[7] For data, see U.S. Department of Justice (1991, Table 1.12, pp. 16–17) and U.S. Department of Justice (1994, Table 1.14, pp. 19–21). The behavior of arrest rates suggests that state and local expenditures increased substantially as well, but precise estimates do not appear to be available.

The externalities generated by the prohibition of different drugs *are* likely to differ according to their respective supply and demand conditions. Perhaps most significantly, prohibitions of drugs with more inelastic demands are likely to cause a greater increase in violence and property crimes, through channels discussed above. Similarly, prohibitions of drugs that are more likely to be administered through injections will generally lead to greater externalities, through accidental poisonings and the spread of HIV. As such, the drugs that are primary targets of current enforcement policies—like cocaine and heroin—are likely to be among those whose restriction produces the most significant externalities.

Harm Reduction and the Dutch Model

One perspective often advanced by opponents of prohibition is that policy should continue to criminalize the supply of drugs while reducing or eliminating the penalties against possession and use. In addition, advocates of such an approach often suggest subsidizing treatment and encouraging needle exchanges to reduce the likely harm to users (Gostin, 1990). Such a system is often referred to as "harm reduction" or, slightly inaccurately, as the Dutch model. In Holland, possession and use are *de facto* decriminalized, although the legal penalties are similar in structure to those in the United States. The Dutch do devote considerable resources to harm reduction (Engelsman, 1991; Leuw, 1991; Oppenheimer, 1991).

If harm reduction means that supply restrictions are not seriously enforced, then harm-reduction regimes are likely to be significantly superior to current U.S. policy, consistent with our discussion above. On the other hand, if harm-reduction policies coexist with substantial enforcement of supply restrictions, the undesirable consequences of prohibition—violence, uncertainty over product quality and so on—will still occur, so harm reduction might differ insignificantly from current U.S. policy.

In addition, any policy that attempts to reduce the harm associated with drug consumption potentially encourages such consumption. For example, the availability of clean needles or subsidized drug abuse treatment might affect the likelihood that some consumers begin or renew their drug use. Moreover, such policies transfer resources from the population generally to those who willingly accept the risks of drug use and who, in some cases, are imposing externalities on others. This does not mean compassion for drug users is misplaced, nor that, say, clean needles should not be legally available. But it does suggest caution in adopting policies that in effect subsidize drug consumption. These policies require their own cost-benefit analyses, which in some cases do not appear favorable (for example, see Apsler and Harding, 1991, on treatment).

Medicalization and the British Model

A different model for drug policy that receives widespread attention is the "British system." The system first evolved in the 1920s, shortly after Britain criminalized narcotics. In this system, doctors could legally prescribe narcotics not only for short-term pain relief but also to maintain a patient's habit over long periods if the doctor thought such a course the best option available. This policy continued

until the 1960s, when the ability to maintain addicts was transferred from individual doctors to government clinics. With this exception, official British drug policy resembles U.S. drug prohibition (Oppenheimer, 1991; Turner, 1991; Howitt, 1990; Pearson, 1991).

Medicalization allows many drug users, especially those with the most inelastic demands and greatest consumption, to obtain drugs legally. Under such a policy, the size of the black market is likely to be smaller than under the pure prohibitionist model. In the extreme, the black market might never develop, because the unsatisfied demand is insufficient to overcome the fixed costs of setting up an illegal supply network. British experience is generally consistent with this view. Drug-related social ills such as violent crime were virtually nonexistent before the 1960s, when doctors prescribed narcotics freely. These ills have increased over the last three decades, but this increase is consistent with the view of many observers that government-operated maintenance clinics are far more restrictive in their supply of narcotics to users.

The Alcohol/Cigarette Model

Although above we compared prohibition to a free market, most advocates of legalization endorse a number of government policies designed to reduce drug consumption, including taxation, drug education and/or subsidized treatment, age restrictions and similar policies. Loosely speaking, this means the legal regime associated with the production, sale and consumption of drugs would resemble that which is currently associated with alcohol and cigarettes.

We make two points about this type of regime. First, under this regime, the restrictions on supply are likely to be insufficient to generate a black market, so the most significant harms done by prohibition would be absent. For example, no well-developed black market in cigarettes or alcohol currently exists in the United States despite significant restrictions on their supply and use. Consumption of drugs might be higher than under prohibition, but our analysis suggests the difference would be smaller than commonly perceived and not necessarily undesirable. Moreover, some evidence suggests that policies like age restrictions can reduce consumption and related externalities (Safer, 1994; Grossman, Chaloupka, Safer and Laixuthai, 1993). Thus, such a regime is likely to be a vast improvement over prohibition.

Second, any particular policy toward drugs requires its own cost-benefit analysis. Certain restrictions may be beneficial in reducing externalities or uniformed consumption, but these restrictions are likely to have costs as well. Moderate "sin" taxes are plausibly a desirable policy, but they can easily be raised to levels that generate black markets. Age restrictions might make sense up to some age, but if extended too far, simply breed contempt for the law as widespread noncompliance occurs. Thus, while such policies are potentially useful, we believe they require more careful analysis and justification than has usually been given.[8]

[8] By the same token, policies toward drug testing need their own cost-benefit analyses. Most legalizers not only oppose government-mandated drug testing but believe policy should prohibit private drug testing. Nothing in our argument for legalization requires this conclusion, however. Normand, Lempert and O'Brien (1994) provides a good introduction to these issues.

Conclusion

The existing evidence relevant to drug policy is far from complete. Given the evidence, however, our conclusion is that a free market in drugs is likely to be a far superior policy to current policies of drug prohibition. A free market might lead to a substantial increase in the number of persons who use drugs and possibly to a significant increase in the total amount of drugs consumed. But that policy would also produce substantial reductions in the harmful effects of drug use on third parties through reduced violence, reduced property crime and a number of other channels. On net, the existing evidence suggests the social costs of drug prohibition are vastly greater than its benefits.

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