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Supply Reduction and Drug Law Enforcement

ABSTRACT

Efforts to control the supply of drugs to illicit markets in the United States through law-enforcement measures must be evaluated from three different perspectives: their efficacy in reducing the availability of drugs in illicit markets; their impact on the wealth and power of ongoing criminal organizations; and their impact on foreign-policy objectives of the U.S. government. Available evidence suggests that supply-reduction efforts have been successful in dealing with heroin and, perhaps, with marijuana, but not yet with cocaine. Government efforts to attack the supply system include an international program to eradicate crops, interdiction of shipments crossing U.S. borders, investigations and prosecutions of high-level drug trafficking networks, and state and local enforcement efforts directed at street-level drug dealing. A portfolio of programs is stronger than any single program alone. The primary thrust of the effort must be to frustrate illicit transactions at every level and to immobilize those groups that seem to have solved the problem of executing reliable transactions.

Within the United States, and throughout the world, psychoactive drugs are legally controlled.[1] Those with no legitimate uses are generally entirely prohibited. Those with recognized medical uses are more or less tightly regulated depending on their potential for abuse. In the United States, for example, heroin, marijuana, and hallucinogens are,

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[1] For an enlightening discussion of the origins of the international system of drug controls, see Bruun, Pan, and Rexed (1975).

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for all practical purposes, prohibited. Cocaine, which has limited medical uses, is very tightly controlled. Tranquilizers, which have more widely recognized medical uses, are more loosely regulated.

The aim of such regulation, of course, is to minimize drug abuse. It does so partly by affecting demand. By marking the boundaries of socially sanctioned drug use, the government teaches the proper uses of these drugs. To the extent that citizens accede to the government's judgments, or are deterred by the prospect of criminal sanctions, the statutes limit the demand for drugs.

The more important effect of these statutes, however, is probably to suppress supply. These laws guarantee that, at any given price, the quantity of drugs available to users will be less than would be true if the drugs were less tightly controlled.

This effect is, to some degree, produced directly by the statutes without any further governmental efforts. By outlawing drug distribution, the statutes remove drug traffickers from the protection of the law. As a result, they must operate without the police to guard them against robbery, and without the protection of courts to enforce contracts (Schelling 1980). In that underworld, dealers' fears of other criminals make them less efficient, higher-cost suppliers than they would be otherwise.

The supply-reduction effect is strengthened, however, by explicit government efforts to disrupt the supply of drugs to illicit markets. These efforts include the following: *international efforts* (including crop eradication, crop substitution, the negotiation of mutual legal-assistance treaties, and cooperative international enforcement efforts); *interdiction* (including border inspections and patrols conducted by the U.S. Customs Service and the U.S. Immigration and Naturalization Service, the interdiction of ships and planes suspected of carrying contraband by the U.S. Coast Guard, and, increasingly, the U.S. Armed Forces); *investigation* (including efforts by the U.S. Drug Enforcement Administration, the Federal Bureau of Investigation, and the U.S. attorneys to investigate and prosecute drug trafficking organizations); *state and local drug enforcement* (including the enforcement activities of the nation's 40,000 municipal police departments directed at traffickers and users). These efforts now absorb about $6 billion a year in government spending (Bodshaw, Koppel, and Pancoast 1987, pp. 1, 10).

Elsewhere in this volume, Kleiman and Smith address the issue of state and local drug enforcement. My task is to report what can be said about the efficacy of federal supply-reduction efforts—specifically, whether these efforts are worth their costs, and which approaches seem more promising than others. Although the evidence about these matters is not particularly strong, my principal conclusions are these:

1. While the value of supply-reduction efforts must be reckoned primarily in terms of their impact on the price and availability of drugs to illicit markets in the United States (and the impact that higher effective prices have on levels of drug use and their adverse consequences), it is also important that we consider the impact of supply-reduction efforts on the organized crime problem and the foreign policy objectives of the United States.

2. Supply-reduction efforts have raised the cost and (probably) reduced the consumption of heroin. They may also have succeeded to some degree with marijuana. So far, they have failed to produce these results with cocaine.

3. To improve supply-reduction efforts in terms of drug-policy objectives, we must identify the key factors of production and distribution that are in long-run short supply, and then attack those factors. Otherwise, our efforts will be absorbed by the illicit drug markets with little effect.

4. The factor that currently seems to be in long-run short supply is not land, personnel, raw materials, or technology but reliable "connections." By connections, I mean the continuing capacity among illegal traffickers to execute transactions in which huge financial sums and evidence that could condemn the parties to life imprisonment are on the table.

5. Connections and transactions can usefully be attacked by law enforcement at many different levels of distribution—including at the street level. Moreover, unselective enforcement efforts in foreign drug bazaars, along the borders, and on the streets of the nation's cities not only produce important supply-reduction benefits in their own right but also provide important intelligence about new, unsuspected trafficking networks. Thus, it is a mistake to think of "supply reduction" as chiefly involving crop eradication, transport interdiction, or arresting "Mr. Big."

6. Because we are uncertain about the effectiveness of any given instrument, because the world is dynamic and adaptive, and because there are important synergistic effects among the various instruments of the supply-reduction strategy, it is wise to rely on a portfolio of

supply-reduction programs—not on any single device. Wisdom in managing that portfolio requires adjustments in the balance of efforts in accord with policy objectives and information about which programs seem to be working.

Here is how this essay is organized. Section I sets out frameworks within which supply-reduction strategies can be evaluated. Section II examines how these strategies affect illicit drug pricing and availability and the organizational activities surrounding crop control and interdiction. Existing and alternative theories to guide supply-reduction efforts are discussed in Section III. The strengths and limitations of supply-reduction programs, from international efforts to local enforcement, are assessed in Section IV. Section V offers guidelines for supply-reduction efforts.

I. Supply Reduction: Three Evaluative Perspectives

In the past, supply-reduction strategies could be evaluated wholly in terms of the objectives of drug-abuse policy. The emergence of cocaine traffickers, powerful enough to intimidate national governments, has changed that. Now, prudent policymakers must evaluate supply-reduction efforts in terms of their impact on the wealth and power of organized criminal enterprises and their implications for the broader foreign-policy objectives of the United States.

Such aspects of supply-reduction policies have always been present, of course. In the late sixties, the zealous attack on the "French Connection" was animated at least partly by a desire to attack the Mafia, as well as to disrupt the flow of heroin to the East Coast (Select Committee on Crime 1970, pp. 45–70, 142–64; 1971, pp. 61–76). In Southeast Asia, efforts to reduce the export of opium and heroin were complicated by our interests in using Laotian tribesmen (who were notorious opium growers and traffickers) to help fight the Vietnam War (McCoy 1973, pp. 150–52; Bureau of International Narcotics Matters 1988, p. iv). The point, however, is that these concerns can no longer be treated as mere side effects; they have become sufficiently important to be reckoned alongside drug-policy objectives.

A. The Drug-Policy Perspective

From the perspective of drug-abuse policy, the objectives of supply-reduction efforts are to minimize the supply, increase the price, and reduce the availability of drugs to illicit markets.[2] Such objectives are valuable to drug policy insofar as they lead to reduced drug consumption and reduced adverse consequences of drug use.

Many analysts argue that the demand for drugs is "inelastic" and that supply-reduction efforts will therefore fail to reduce drug consumption. Or they argue that supply-reduction efforts alter the conditions of availability in ways that worsen the consequences of drug consumption—for example, by leading to sales of impure, unpredictable doses that threaten users' lives and health or by drawing users into an illicit underworld that tempts them to commit crimes to finance their drug use (e.g., Nadelmann 1988*a*).

This is not the place to examine the reasoning and evidence on the effects of drug prohibition on the *consequences* of illicit drug use. James Q. Wilson discusses these matters briefly in his essay in this volume. The issue of whether supply-reduction efforts can reduce drug consumption, however, is sufficiently germane to judging the value of supply-reduction strategies that it is worth pausing for a moment to consider the question.

Those who believe that the demand for drugs is "inelastic" rely on two different arguments. One is that drug users are addicted and, therefore, will do anything to maintain their consumption. A second is that there are certain kinds of people who want to use drugs, and they cannot be dissuaded by laws, social disapprobation, price, or inconvenience.

In evaluating these arguments, one must keep two quite different claims in mind. One is that drug consumption will not decrease *at all* in the face of price increases. That claim requires the demand for drugs to be "perfectly inelastic." A less restrictive claim is that the percentage reduction in consumption caused by an increase in the price will be less than the percentage change in price. That more modest claim is what it means for the demand for drugs to be "inelastic" but not "perfectly inelastic."

The difference between an "inelastic" demand for drugs and a "perfectly inelastic" demand is enormous. Unless the demand for drugs is "perfectly inelastic," drug consumption will decrease to some degree as a result of price increases. How much depends on how inelastic the

[2] I am following a line of argument developed previously and more extensively in Moore (1979, pp. 291–308).

demand. In all but those cases in which the demand for drugs is perfectly inelastic, then, there might be a justification for supply-reduction efforts if the amount that consumption can be reduced is large enough, and the cost of producing the price increases small enough.

There are many reasons to believe that the demand for illicit drugs is far from perfectly inelastic. For one thing, no good ever analyzed has ever been perfectly inelastic—not gasoline, not alcohol, not tobacco. Indeed, even those who are most dependent on these commodities, such as salesmen, alcoholics, and chain-smokers, seem to adjust their consumption as prices change (Nicholson 1985, pp. 184–87). Everything seems to respond to price.

For another, the equation of physiological dependence with a perfectly inelastic demand reveals a fundamental misunderstanding of addiction and dependence. The physiological mechanisms of addiction and dependence are nowhere near as compelling as this simple equation suggests. The physiological consequences of withdrawal are often overdramatized (Nyswander 1956, pp. 121–24). Drug users often stop using drugs with or without the aid of treatment (Vaillant 1969). Anthropological studies of users on the street reveal that they vary their drug consumption depending on how much money they have been able to obtain through fair or foul means (Johnson et al. 1985). So, addiction and dependence do not necessarily imply that users are entirely unresponsive to price or inconvenience.

Even if it were true that the physiological mechanisms of addiction and dependence were powerful in determining the consumption of committed drug users, they would not be relevant to those experimental users of drugs who were not yet addicted (Moore 1973). Indeed, one would expect inexperienced users to be among those most influenced by changes in price and availability since their knowledge and commitment to drug use are the weakest. To the extent that their demand was relatively elastic, they would make the aggregate demand for drugs at least somewhat elastic.

As to the claim that there are certain people who are destined to use drugs, one cannot help but be impressed by the enormous changes in the demographic patterns of drug use over the last few decades. Heroin use seems to have increased in the late sixties and early seventies, and then held steady (Kozel 1985). Marijuana use seems to have increased dramatically in the late sixties and early seventies, and recently declined (National Institute on Drug Abuse 1988). Starting in the middle classes in the late seventies, cocaine seems to have spread rapidly

through all segments of American society during the eighties (Kozel and Adams 1985). The fluidity of these patterns over time and across demographic groups seems inconsistent with the hypothesis that there are some people who by virtue of their biology, upbringing, or character are simply destined to use drugs. Those patterns seem much more consistent with the hypothesis that patterns of drug use, like the patterns of consumption for many other things, are vulnerable to changes in tastes, prices, and availability.

It seems unlikely, then, that the demand for drugs is perfectly inelastic. Therefore, increases in the price of drugs will produce reductions in consumption. Exactly how much consumption can be reduced through price increases depends on exactly how inelastic the demand is. One can get a sense for the range of possibilities from the following estimates: the best estimate of the elasticity of the demand for marijuana is -1.50 (Misket and Vakil 1972); for alcohol, -0.8 (Cook 1988); for tobacco, -0.4 (Harris 1987). All these estimates, except for marijuana, indicate an inelastic demand. They also imply, however, that a doubling in the price of the good would result in reductions in consumption from 80 percent to 40 percent.

Whether this is important for policy depends on how easy it is to affect the price of the drugs, and how valuable the reductions in consumption are. It is significant, then, that the prices of heroin and marijuana have about doubled—even in constant dollars—over the last fifteen years (Flanagan and Jamieson 1988). It is apparently not so difficult to increase prices to levels that produce significant results. While a 40 percent reduction in drug consumption is not as good as a 100 percent reduction, it is nothing to sneeze at.

From the perspective of drug-abuse policy, then, the basic goals of supply reduction and drug law enforcement are to minimize the supply of drugs to illicit markets and to increase the price and inconvenience of acquiring drugs. Obviously, society would also like to pay the smallest possible cost in achieving these objectives. The costs are reckoned not only in terms of money but also in terms of reliance on our most intrusive investigative methods such as informants, electronic surveillance, and undercover operations for producing these effects, and in terms of increasing the vulnerability of criminal justice institutions to corruption.[3]

[3] For an explanation of why such methods are necessary, see Moore (1983). For a discussion of the costs of such activities, see Marx (1988).

B. Organized Crime Policy

From the perspective of organized-crime policy, supply-reduction objectives are slightly different. Here the principal concern is that illegal drug production and distribution provide an economic base that nourishes existing organized criminal enterprises or gives rise to new ones.

Drug traffickers behave in all the ways that make organized crime offensive to the society (Moore 1986). They frustrate the aims of drug policy by continuing to supply drugs to illicit markets. They produce a great deal of violence.[4] They corrupt, and sometimes intimidate, enforcement agencies. They grow rich in the process of violating the laws and taunt society with their financial success. The aims of organized-crime policy are to reduce these bad aspects of organized crime by weakening the organizations and bringing those who participate in the enterprises to justice.

To a degree, these objectives are congruent with the objectives of drug policy. To the extent that organized-crime policy attacks existing drug traffickers, reduces their capacity to supply drugs to illicit markets, and weakens them as ongoing criminal enterprises, the objectives of both drug policy and organized-crime policy are served.

There are, however, two ways in which the objectives of drug-abuse policy and organized-crime policy conflict. Suppose for a moment that society viewed the organized-crime aspects of drug trafficking as the worst part of the problem, and drug use itself as less urgent. In that case, a new option for controlling the organized-crime elements would become available, namely, legalizing the supply of drugs. If drug distribution were legalized, the organized criminal groups that now dominate the industry would have no particular competitive advantage. Their current capacity for violence and corruption, so essential in operating an illicit enterprise, would suddenly become nothing more than costly overhead. The corrupting, violent organized-crime groups would be outcompeted by legitimate firms that specialize in low prices, convenient access, and reliable quality, and who could mobilize the police to protect their operations from direct threats or indirect competition from organized-crime groups.

[4] For an analytic account of why violence is valuable to drug dealers, see Moore (1976, pp. 41–45). For more descriptive accounts of the activities of drug dealers, see Siegel (1978), Mills (1986), and Shenon (1988).

Legalization would not, of course, necessarily shrink the overall supply of drugs. Indeed, the supply would almost certainly increase as the licensed dealers took their place alongside the illegal dealers and developed their own markets. Nor would legalization entirely eliminate the black market. All plausible legalization schemes include restrictions on who can legally buy drugs. Minors, for example, are generally excluded. Any such restriction creates an incentive for a black market to emerge.

The point is simply that legalization would change the size and character of the illicit supply system that remained after legalization. The residual black market for heroin, cocaine, or marijuana would probably resemble the current black market for amphetamines and tranquilizers: a large number of small, transient firms supplied by diversion from the legitimate market. That sort of black market presents fewer organized-crime problems than does the current system.

That drug prohibition creates fertile soil in which organized-crime groups can grow is one way in which the objectives of drug policy are not quite aligned with the objectives of organized-crime policy. The second way is even more frustrating and paradoxical. Effective law-enforcement attacks on drug traffickers eliminate those drug dealers who are least resistant to law-enforcement efforts and leave in place those drug traffickers who are most resistant, thereby exacerbating the organized-crime aspects of the drug problem (Kleiman 1985, chap. 7). Criminal enterprises that are most successful in resisting effective enforcement are likely to be the ones that are large, violent, and corrupting.

Perhaps the easiest way to understand the relationship between organized-crime policy and drug-abuse policy is this: having decided to pay a price in terms of organized-crime control by prohibiting drug distribution in the interests of discouraging drug consumption, and having acknowledged that successful enforcement directed at drug traffickers can reduce the supply of drugs but only at the expense of making the remaining drug traffickers tougher and more powerful, it is still valuable to strike at the remaining drug traffickers to achieve additional results in both organized-crime and drug-policy terms.

C. The Foreign-Policy Perspective

Most of the drugs that reach illicit markets in the United States are produced, processed, and exported by foreign countries. In the past,

the impact of drug trafficking on relations with foreign governments and the objectives of U.S. foreign policy was considered sufficiently small as to be insignificant—something that could be handled at technical, bureaucratic levels rather than in meetings of heads of state (Nadelmann 1987*a*). No longer is this true.

What so dignifies drug use as an issue of foreign policy is the concatenation of two facts. First, the commerce in illegal drugs has become large enough to figure prominently in the international financial positions and the national political economies of some countries, principally in Latin America. As Richard Craig (1987, p. 4) reports, "Cocaine was perhaps the only Latin American commodity in the late 1970's and early 1980's whose price showed any real increase. Illicit narcotics have in fact kept several Latin American economies afloat in a sea of regional depression. It is even more ironic that the principal means by which peasants in many source countries manage to earn above starvation wages are both illegal drug cultivation and clandestine emigration."

Second, the countries for which the illegal drug trade has become economically important have recently assumed particular importance in the overall foreign policy of the United States. It was one thing to have the drug problem associated with Turkey, Afghanistan, and Southeast Asian countries at a time when U.S. foreign-policy interests in these areas were waning; it is quite another to have the drug industry be important in Colombia, Bolivia, Peru, Panama, and Mexico at a time when the U.S. government sees "stemming the tide of communism" in Central and South America as a dominant foreign-policy objective. That supply-reduction efforts have now become entangled in important foreign-policy issues complicates both the calculation of U.S. interests and the successful implementation of supply-reduction efforts.

In some cases, of course, the entanglement of drug trafficking and foreign policy is helpful: each gives impetus to the other. This occurs when a powerful regime, allied with the United States, sees drug trafficking as a threat to its internal security. It could make this judgment because the trafficking in the country is creating a domestic drug-abuse problem, or embarrassing the country in international diplomatic arenas, or fueling guerrilla movements, or distorting the national economy, or threatening to corrupt the regime. Whatever the reasons, if a friendly regime is opposed, the United States and its ally can join arm in arm to attack the traffickers.

In many other situations, however, foreign-policy interests diverge

from supply-reduction objectives. Consider, first, the situation in which the United States is dealing with a friendly regime. No significant external or internal political threat to the regime seems to exist. The only problem is that the regime seems to be founded at least partly on the control of narcotics trafficking. The profits to high officials are important to them—so important that if they are threatened, the leaders would move farther away from their current alignment with the United States. The enterprise as a whole is important enough to the overall economy that many ordinary citizens would support this move as well. In this situation, the United States is faced with a choice between advancing its foreign-policy interests or its supply-reduction efforts. While the analysis is far too simplified, this seems to have been the recent situation with Panama and might have been part of our problem in Vietnam (McCoy 1973, chap. 5; Bureau of International Narcotics Matters 1988, pp. 146–49).

Consider, now, a second situation in which the United States is dealing with a friendly but somewhat shaky regime. There is no substantial internal threat to the regime yet, but the economic and social situation is deteriorating. There is some question about the regime's capacity to solve economic and social problems and to enforce law and order throughout the country. Within the country, illicit drugs are becoming economically, and therefore politically, important.

The country is opposed to narcotics trafficking and is not thoroughly corrupted but is a little anxious about attacking the illegal drugs zealously lest these attacks create powerful political opposition. The political opposition could appear as legitimate political challenges from candidates and parties financed by drug traffickers, or it could take the form of more popular support for existing guerrilla movements.

An aggressive attack on drug trafficking would require tough action from the police and the military. Two things could happen if such an attack were launched: the police and military might destroy the drug trade and, in the process, create powerful political opposition, or they might become corrupted and undermine the government from within. In this case, the friendly government would like to avoid the issue for a while and not take zealous action against the drug traffickers.

Again, there is a trade-off between our interests in shoring up a friendly regime and in attacking the illegal drug industry. If we press the regime to take vigorous action against drugs, we may weaken it to the disadvantage of foreign-policy objectives. If we are tolerant of less

vigor, we will take a loss in terms of drug-control objectives in the short run, and perhaps allow the drug traffickers to become too powerful over the long run. Again, while far too simplified, this could be a sketch of the current situation in Mexico and Peru.[5]

Now consider a third situation in which the United States confronts an unfriendly regime in a politically important area. In that country, a guerrilla movement exists favorable to U.S. interests. The guerrillas are in need of both international financing to buy weapons and political support from the local peasantry. While the United States would like to support the guerrilla movement, it cannot do so overtly. The local peasantry is now growing marijuana, cocaine, or opium poppies. These crops, far from U.S. markets, have little value. Once connected to U.S. markets, however, the value of the crops soars. Consequently, there is an opportunity for the guerrilla movement to solve its financial and local support problem by becoming an international drug trafficker.

In this situation, the United States must choose between assisting the guerrilla movement by ignoring or facilitating their drug trafficking, or weakening the guerrilla movement by restraining it from the lucrative and locally attractive narcotics business. While much oversimplified, this seems to have been the situation the United States faced in Southeast Asia during the Vietnam War, recently faced in Nicaragua, and is facing now in Afghanistan (McCoy 1973, chap. 5; Bureau of International Narcotics Matters 1988, pp. iv, 144–45, 174–79).

These scenarios illustrate the point that a foreign-policy perspective requires one to view supply-reduction efforts in terms of their impact on the power and stability of friendly regimes. If supply-reduction efforts will strengthen the hands of our friends, then the policy is clear. If supply-reduction efforts force previously supportive regimes to move away from support for the United States, or if they weaken regimes with which the United States has strong and valuable relations, then an issue arises as to which concerns should predominate. Often it will be the right judgment for the United States to advance foreign-policy objectives at the cost of reduced achievement of drug-policy objectives.

These complex interactions among legitimate public policy concerns relating to drug control, organized crime, and foreign policy are not new. They need to be highlighted, however, because they dictate that

[5] These comments are based in part on personal conversations with Mexican officials. See also Nadelmann (1987*b*, pp. 35–36); Bureau of International Narcotics Matters (1988, pp. iii, 131–43, 104–10).

efforts at drug control will inevitably sometimes be weaker and less single-minded than if drug-control policies were the only legitimate considerations shaping governmental policy.

II. Assessing Effectiveness

To base supply-reduction policies on firm knowledge, it would be necessary to know the impact of current (or proposed) supply-reduction strategies on drug policy, organized-crime policy, and foreign-policy objectives. Unfortunately, we have only recently begun to think systematically about the impact of our efforts on organized-crime and foreign-policy objectives. And, with respect to the more familiar and limited interests in the impact on drug-policy objectives, we are handicapped by the slowness with which experience accumulates and by the difficulty of capturing that experience with accurate data.

The sad fact is that, in gauging the potential efficacy of supply-reduction efforts, there is little a priori reasoning or knowledge from laboratory experiments that can give us the answer. We must rely instead on our cumulative, historical experience as it is reflected in our statistical systems. These systems are currently impossible to use in judging effectiveness in terms of organized-crime and foreign-policy objectives. They are only of limited value in judging effectiveness in drug-policy terms (e.g., Kleiman 1986*a*).

A. Price and Availability

The single most important bit of empirical evidence on the effectiveness of supply-reduction efforts is data on the price and availability of drugs in illicit markets in the United States. Such data provide direct measures of an important objective of supply-reduction policies. They are relatively easy to measure and record. And we have recorded these data long enough to observe trends. However, several complications arise in using these measures for assessing effectiveness.

First, the implicit sampling procedures for estimating retail price are quite weak. Basically, price data come from records of narcotics buys by agents or their informants. For any geographic area at any given time, very few transactions are recorded. Consequently, all price estimates implicitly have high variances.

An even greater sampling problem comes from worries about the consistency and representativeness of the transactions that make up the sample. Narcotics agents buy at different levels of the market—

sometimes at wholesale, sometimes at retail. Naturally, prices differ by level. Similarly, narcotics agents may not be typical customers. Less familiar to dealers, less knowledgeable about local conditions, and more eager to make purchases, drug agents might well pay systematically higher prices than other purchasers. These need not be problems if the biases introduced remain constant over time, and if analysts restrict their attention to trends in prices rather than absolute estimates. But if these assumptions are not true, the errors introduced by failing to take account of the level of the buy and the agents' unique status will be crippling.

Second, the purchase price may be the wrong measure of supply-reduction impact. It may be much more important to record how difficult, time consuming, and dangerous it was for consumers to obtain the drug. These elements of the street-level drug transaction are arguably more important than mere dollar price in discouraging new use and persuading older users to seek treatment. More important, these dimensions might be differentially affected by different supply-reduction instruments. Street-level drug enforcement, for example, affects convenience more than price, while crop eradication produces the opposite effect (Reuter and Kleiman 1986, pp. 328–29).

These observations have led some to the conclusion that the appropriate measure of price and availability is not the dollar price but the effective price of drugs—a measure that incorporates dollar cost, the time and effort required to "score," and the risks of being arrested or "ripped off" in the course of the purchase (Moore 1973). This concept adds precision to the measure, but at the price of necessitating additional data collection and introducing a difficult scaling problem in representing the "effective price" as a single index number. Moreover, to the extent that these other measures are highly correlated with money price, little new information is provided about the impact of supply-reduction efforts. So far, the collection and recording problems have proved so crippling, and the assumption that the effective price is highly correlated with the money price so convenient, that the dollar price of drugs remains the standard measure.

Third, there is a problem in separating the effects of supply-reduction efforts on the price of drugs from the many other factors that affect the price of drugs in illicit markets. The overall level of demand affects prices. Consequently, if supply remains constant but demand increases, prices will increase even if the supply-reduction efforts are

no more successful than in the past. Conversely, if the demand for drugs falls, the price of drugs may also fall even if supply-reduction efforts dramatically improve. On the supply side, many things that are beyond the control of supply-reduction efforts can also affect prices. Supplies can be reduced by bad weather, local labor shortages, and military hostilities.[6] All this makes the interpretation of the impact of supply-reduction efforts on drug prices a treacherous enterprise.

These problems can be dealt with, of course. Separate estimates of movements in the demand for drugs can be obtained by means of annual surveys of the population, or counts of people showing up in emergency rooms with drug problems, or overdose deaths (e.g., Kleiman 1986*a*). Estimates of growing conditions for illicit drugs can be obtained through satellite surveillance. Such observations might make it possible to tease out the independent effects of supply-reduction efforts. Alternatively, an arbitrary approach can be taken by setting the goal of supply reduction and drug law enforcement as increasing the effective price of drugs no matter what else is going on, and using that as a benchmark for evaluating performance regardless of its imprecision. In reality, however, these difficulties of interpretation weaken the usefulness of this measure as an indicator of supply-reduction effectiveness.

Despite these difficulties, the price of drugs in illicit markets remains one of the principal empirical measures available for assessing the effectiveness of supply-reduction efforts. That the problems described above exist, however, means that the data on prices reveal much less than might be imagined.

Table 1 compares the current retail prices of the primary drugs of abuse with their estimated prices in a regulated but legal market. In all cases, the drugs are significantly more expensive than legal substitutes. These data make it clear that prohibition and supply-reduction efforts can increase the price of psychoactive drugs well above levels that would obtain in a legal market. In an important sense, this difference constitutes the most significant result of supply-reduction efforts.

Note, however, that not all of the observed differential can be attrib-

[6] In Afghanistan, the 1985 and 1986 opium poppy harvests yielded considerably more opium than the abnormally small 1984 crop, which was reduced by unfavorable weather conditions and the disruptions caused by the war (National Narcotics Intelligence Consumers Committee 1987, p. 74).

TABLE 1

Illegal versus Legal Drug Prices

Drug	Current Retail Price ($)	Estimated Legal Price ($)	Ratio
Heroin (pure gram)	2,280	30–35	70:1
Cocaine (pure gram)	143	15–20	8:1
Marijuana (cigarette, in ¢)	95	6–7	15:1

SOURCES.—Retail prices from Flanagan and Jamieson (1988), table 3-76. Legal heroin price is estimated from prevailing legal prices for morphine and methadone. Legal cocaine price is estimated from prevailing prices for cocaine. See *Drug Topics Redbook* (1988). Legal marijuana price is estimated from prevailing prices of tobacco cigarettes.

uted to explicit supply-reduction efforts. Some portion must be attributed directly to the legal regime prohibiting drugs—leaving aside any specific effects of other concrete efforts to enforce these laws such as crop eradication, interdictions, or successful enforcement operations.

Figure 1 presents the available data on trends in the retail price of the principal drugs of abuse. The data indicate that the retail price of heroin steadily increased through the decade of the seventies and has since held constant or slightly declined. The price of marijuana has increased dramatically since the late seventies. The price of cocaine has declined since the late seventies. If we ignore the effects of everything else that might be influencing these observed prices, such as changing levels of demand or changes in growing conditions in foreign source countries, and impute all of the observed changes in price to supply-reduction efforts, the implications for the effectiveness of supply-reduction strategies are mixed. We seem to be able to control heroin, but not cocaine. We might be able to control marijuana. That conclusion is particularly discouraging because much of our recent effort has gone into the control of cocaine (U.S. Department of Justice 1986).

An improved estimate of supply-reduction effectiveness could be made if we could remove the effect of demand on the observed price. That could be done if we had good independent measures of the underlying demand for drugs, but we do not. All we have are imperfect measures of attitudes toward drugs and levels of consumption developed from surveys (Kleiman 1986*a*, p. 12) and changes in levels of adverse consequences of drug use such as overdose deaths, emergency room visits, and arrests of drug users (Kleiman 1986*a*, pp. 25–26).

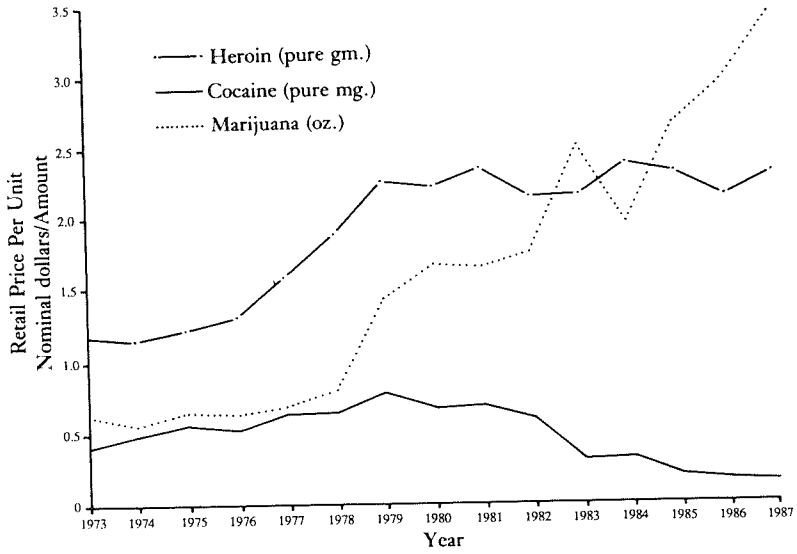

FIG. 1.—Retail price per unit of drug: heroin, cocaine, and marijuana. Sources.—Flanagan, van Alstyne, and Gottfredson (1982), p. 329; and Flanagan and Jamieson (1988), p. 289.

Still, there is a crude approach to this problem that is robust and yields some interesting results (Boyum 1989). By comparing the data on *prices* with the direct measures and indications of *consumption*, we can identify historical periods in which observed trends in prices and observed trends in consumption were moving in opposite directions. In some cases, prices were increasing while consumption seemed to be declining. Such situations indicate an *unambiguous downward* shift in the supply curve: at any given price, fewer drugs were being supplied in that period than previously. In other cases, prices were decreasing while consumption was increasing. These situations represent an *unambiguous upward* shift in the supply curve: at any given price, more drugs were being supplied than in the previous periods. Although shifts in supply curves can be clearly identified in new situations, a shift in the supply curve cannot be taken as clear evidence of successes and failures in supply-reduction efforts, however, for there are factors other than explicit supply-reduction efforts that are influencing the supply curves. Still, with this evidence, we are closer to observing real supply-reduction effects with these methods than with those previously relied upon.

Figures 2, 3, and 4 present the relevant data for heroin, cocaine, and

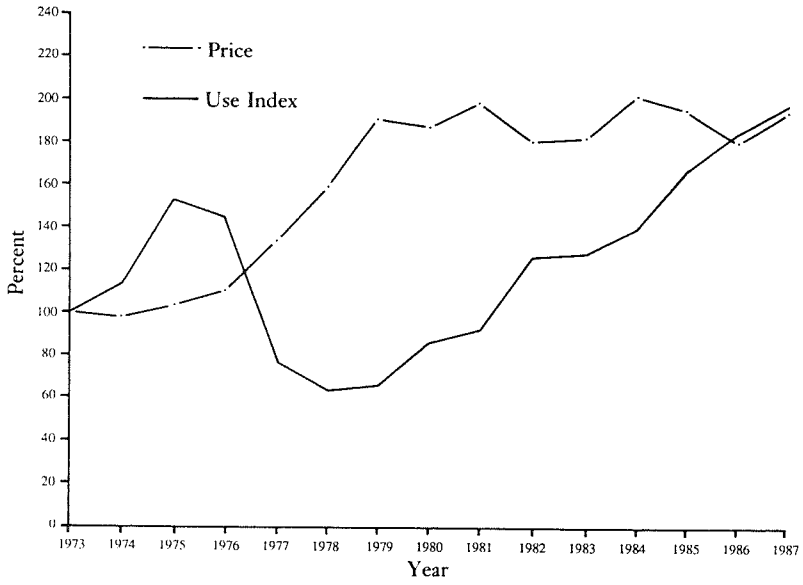

FIG. 2.—Relation between price and use index for heroin, 1973–87. Sources.—National Institute on Drug Abuse (1983, 1987); and see fig. 1 and n. 7.

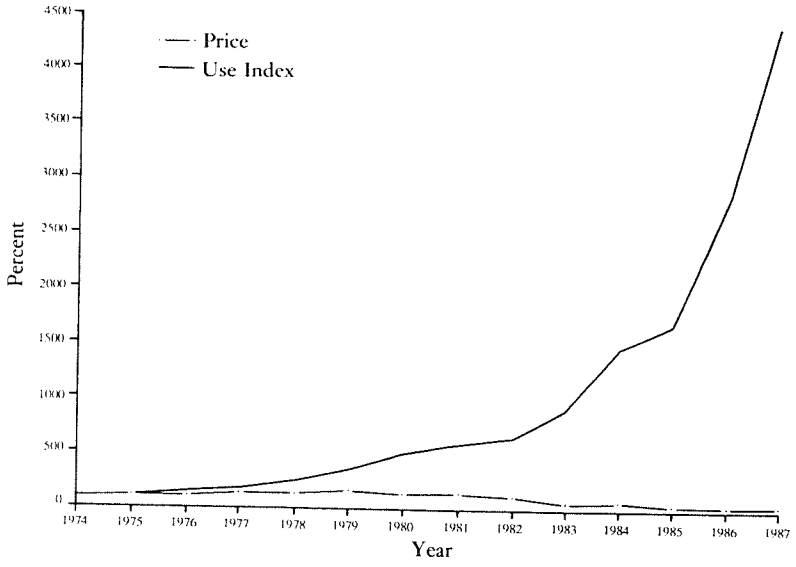

FIG. 3.—Relation between price and use index for cocaine, 1974–87. Sources.—National Institute on Drug Abuse (1983, 1987); and see fig. 1 and n. 7.

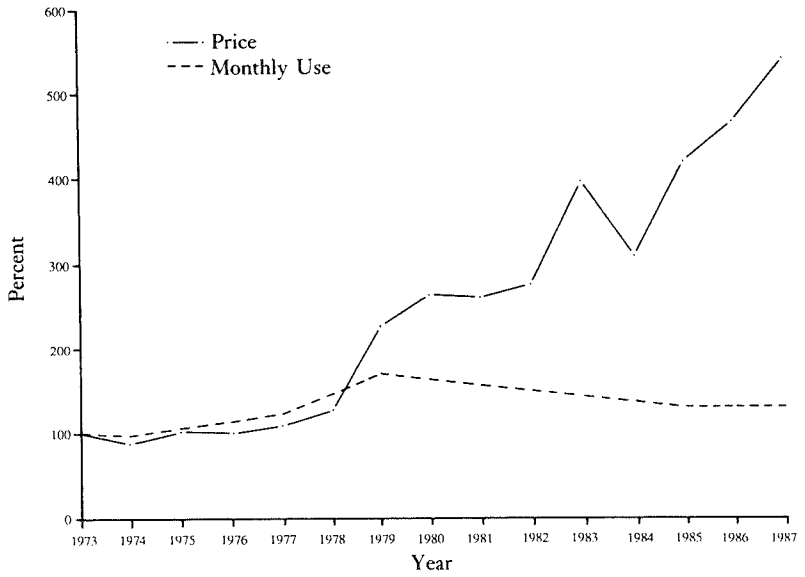

FIG. 4.—Relation between price and use index for marijuana, 1973–87. Sources.—National Institute on Drug Abuse (1983, 1987); and see fig. 1 and n. 7.

marijuana, respectively.[7] Table 2 describes these periods of apparent success and failure in supply-reduction efforts. Apparently, we were successful in controlling heroin in the later seventies. We may also have succeeded recently in reducing the supply of marijuana. We have failed dismally to deal with the cocaine problem in the eighties.

[7] Data collected by the Drug Abuse Warning Network (DAWN) were used to compose both the heroin and cocaine use indexes. There is no single source that presents all of the DAWN data, nor is there a single publication series for the entire period of DAWN data. Consequently, the DAWN data were pieced together from a variety of sources, doing a lot of arithmetic along the way. Most of the DAWN data are presented as gross figures. But these estimates are potentially biased over time since inconsistent reporting is widespread (hospitals drop in and out of the program or report infrequently). The National Institute on Drug Abuse occasionally publishes DAWN "consistent panel estimates" that only include data from particular hospitals that have reported consistently over a certain period of time. Since the consistent panel estimates offer more accurate figures—more accurate in terms of representing change—they were used wherever possible. Two problems arise, however. First, consistent panel estimates were not available for the early years. Second, the consistent panel is not always the same; it is merely "consistent" over a certain period of time. Since indexes were constructed, only data that accurately represented percentage changes—precisely what the "consistent panel" data does—were needed. Basically, gross figures were used for the first few years of the indexes, and then consistent panel estimates were used to determine the subsequent percentage changes in those indexes. Averages were made where conflicting information existed.

TABLE 2

Periods of Supply-Reduction Successes and Failures
(Values in Percent)

Heroin (1976–79)		Marijuana (1979–Present)		Cocaine (1979–Present)	
Retail price:	+73	Retail price:	+139	Retail price:	−82
Emergency room mentions:	−45	Monthly use:	−20	Annual use:	+20
Medical examiner mentions:	−65			Emergency room mentions:	+1,527
Treatment admissions:	−33			Medical examiner mentions:	+2,226

SOURCES.—Retail prices: Flanagan, van Alstyne, and Gottfredson (1982); Flanagan and Jamieson (1988). Annual use: Household Survey, National Institute on Drug Abuse. Emergency room mentions, medical examiner mentions: Drug Abuse Warning Network (DAWN). Treatment admissions: Client Oriented Data Acquisition Process (CODAP).

A third clue about the effectiveness of supply-reduction efforts comes from an examination of price differentials at different stages of production and distribution. Table 3 presents estimates of the price of drugs at four different stages in the process of production and distribution and the ratios of those prices (Reuter and Kleiman 1986).

One way to think about the observed differences in these prices is in terms of the value added at each stage of production and distribution. To a degree, the price differentials reflect added value associated with incurring real underlying costs of production and distribution—the costs of materials, personnel, supplies, and transportation.

The observed price differential could also reflect market power. The large ratio between the farm prices and the prices at the border, for example, may reflect the existence of a powerful monopoly or cartel at the export level that can claim a larger portion of the total value to be created by setting prices above the level that simply compensates them for their costs and risks.

From the perspective of those interested in analyzing supply-reduction efforts, however, the most interesting interpretations view the price differentials as indicators of where the greatest risks to dealers lie. Indeed, to the extent that the greatest cost associated with the illicit business is the risk of being caught, the value that is created in moving drugs along this pipeline is that some risks have been avoided. Similarly, to the extent that enforcement pressures tend to concentrate the market by eliminating inefficient firms, market power will be associated with high levels of enforcement pressure. Thus, the large price differentials observed between stages of production may indicate differences in the threats to dealers posed by supply-reduction efforts.

TABLE 3

Structure of Drug Prices, 1980 (per Pure Kilogram)

Drug and Stage of Production/ Distribution	Price ($)	Transfer Activity	Markup (×)
Heroin:			
Farm-gate	350–1,000	Cultivation and processing	11.9
Processed	6,000–10,000	Overseas packaging	11.9
Export	95,000	Smuggling	2.4
Import	220,000–240,000	Domestic distribution	8.3
Retail	1.6–2.2 million		
		Total markup	2,815
Cocaine:			
Farm-gate	1,300–10,000	Cultivation and processing	1.2
Processed	3,000–20,000	Overseas packaging	2.1
Export	7,000–20,000	Smuggling	3.7
Import	50,000	Domestic distribution	13.0
Retail	650,000		
		Total markup	115
Marijuana:			
Farm-gate	7–18	Cultivation and processing	4.4
Processed	55	Overseas packaging	2.5
Export	90–180	Smuggling	4.0
Import	365–720	Domestic distribution	3.1
Retail	1,250–2,090		
		Total markup	134

SOURCE.—Reuter and Kleiman (1986), p. 293.

If this interpretation were correct, one could plausibly draw the following conclusions. First, the greatest pressure seems to be on heroin. That is the implication of the overall markup from farm-gate prices.

Second, the location of the maximum pressures differs among drugs. For heroin, the principal difficulties seem to lie in processing, exporting, and distributing the drug in the United States, rather than in getting it across the border. For cocaine, the greatest difficulty lies in distributing it in the United States; getting it processed and smuggling it into the country appear much less difficult. For marijuana, the great-

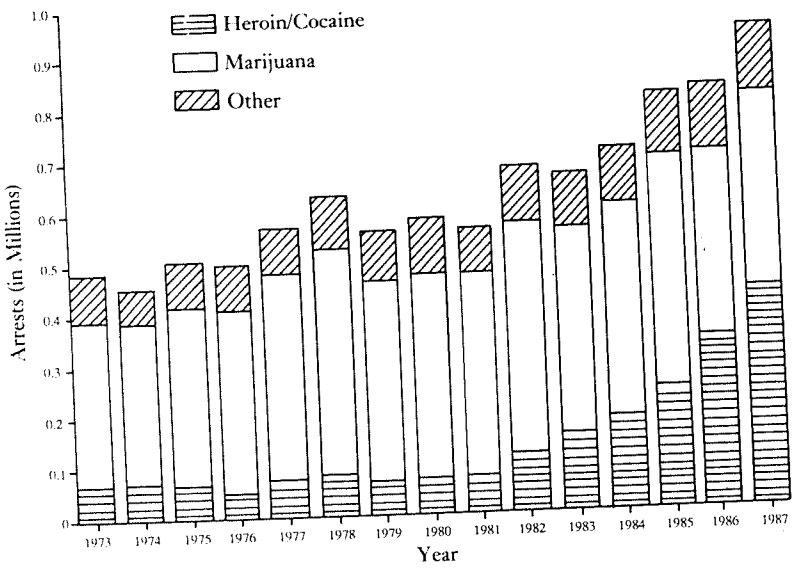

FIG. 5.—Arrests for drugs by type, 1973–87. Sources.—Federal Bureau of Investigation (1973–87).

est difficulties are in collecting and processing the plants and in smuggling it across the border.

B. Measures of Organizational Production

The other empirical measures of supply-reduction effectiveness are measures of organizational activity rather than the achievement of social objectives. With respect to the international crop-control programs, there are the counts of acreage destroyed. With respect to interdiction and domestic enforcement, there are measures of arrests made, drugs seized, and, more recently, assets seized in association with drug investigations.[8] Figure 5 presents the available data on drug arrests by type of drug. Table 4 presents the data on drug seizures (represented in terms of dosage units) by type of drug.

Two points seem worth making about these data. First, the trends in these data are up sharply since 1980, reflecting both the onslaught of cocaine and the former and current administrations' emphases on drug

[8] The National Narcotics Intelligence Consumers Committee (e.g., 1987) and the President's Commission on Organized Crime publish these figures. Reuter and Kleiman (1986) point to the limited value of these figures as a measure of the effectiveness of supply-reduction efforts.

TABLE 4

Drug Seizures by U.S. Customs Service, U.S. Coast Guard, and Other Agencies with Coast Guard Participation (in Thousands of Dosage Units)

Type of Drug Seized	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Heroin	5,221	16,694	12,608	8,562	5,562	12,199	10,655	13,161	26,949	30,159	35,621	31,417
Cocaine	18,912	28,427	24,699	36,804	37,307	123,300	100,582	310,963	535,643	767,046	1,502,054	1,666,644
Marijuana	897,901	1,771,094	4,583,872	13,223,596	10,592,146	8,216,836	12,698,921	12,285,950	8,438,244	9,673,519	7,647,063	6,249,099

SOURCES.—Flanagan, van Alstyne, and Gottfredson (1982); Flanagan and Jamieson (1988).

control, particularly supply-reduction efforts. Second, the focus of the effort seems to be shifting from marijuana to cocaine.

These measures are much maligned by academics, policy analysts, and program evaluators who are interested in measuring the ultimate effectiveness of supply-reduction efforts. To a great degree, their disdain is justified, for it is true that these measures of enforcement efforts alone cannot justify supply-reduction efforts. Still, there are some important contributions that these measures make to our understanding and control of supply-reduction efforts. The contributions are of two kinds.

First, they help us evaluate programs by providing direct evidence on the extent to which a given policy is being implemented. The alternative measures of governmental effort such as the passage of a law or the expenditure of money intended for a given purpose do not really measure the implementation of a policy and therefore leave us uncertain about whether a finding that a policy has had little impact should be attributed to a faulty program design or a faulty process of implementation.[9]

Second, these measures are managerially useful. When paired with cost data, they allow public managers and those who oversee their operations to determine how much it costs to produce outputs that are thought to be related to the overall objectives of supply reduction and to see whether productivity is increasing or decreasing. As such, they provide information useful to policymakers and incentives for managers to improve their performance (Brace et al. 1980).

The more important weakness of these measures is not that they fail to describe the ultimate, socially valuable impact of supply-reduction efforts but that they are essentially unaudited. Given that they are under the control of operating agencies and are routinely used for performance measurement, it is always possible that they will be distorted to make the agency look better. These fears are reasonable, for the occasional audits that have been done have revealed substantial double counting (e.g., General Accounting Office 1983, pp. 35–39). The only way to make these measures credible is by routine outside auditing.

In addition, these output measures ignore quality differences. A crop destroyed after the yield has been harvested is worth less in supply

[9] That implementation of policies cannot be taken for granted is now well established in the political science literature (see, e.g., Mazmanian and Sabatier 1983; Wildavsky and Pressman 1984).

reduction than the same crop destroyed before the crop has been harvested. This distinction is not reliably made (nor audited) in crop-eradication programs. Similarly, the arrest of a major trafficker or the immobilization of a whole network is probably worth more than a large number of arrests of low-level traffickers in terms of interrupting the supply of drugs, but that difference is only imperfectly reflected (and unaudited) in the existing arrest data.[10] Arrests that lead to convictions are also more valuable than those that do not. Without such distinctions, it is hard to know what exactly is being produced.

III. Theories Guiding Supply-Reduction Efforts

Given the weakness of the empirical evidence, we are thrown back on common sense and theory to guide judgments about supply-reduction effectiveness. The concepts that now shape policy debates about supply-reduction efforts are what might be called "theories in use."[11] They are broad concepts that appeal to common sense and serve political mobilization purposes but have not been clearly set out, reasoned through, or empirically tested.

A. Theories in Use

The conventional theory of supply reduction is that the best place to strike is "at the source."[12] That assertion appeals to the common intuition that permanent solutions to problems can be found by striking at root causes.

The difficulty is that it is not clear what "the source" is. Does this refer to the crops in the field, the traffickers who organize the collection, refinement and export, the laboratories and processing facilities, or the users whose willingness to purchase the drugs seems to generate such powerful economic forces that agricultural patterns and cultures are transformed throughout the world?

Moreover, the logic is incomplete. What if the source cannot be reached because the sovereignty of another country intervenes, or the operational capacities to implement the desired program do not now

[10] This statement is strictly applicable to the hundreds of thousands of arrests made by state and local governments. For a while, the Drug Enforcement Administration sought to grade arrests through the G-DEP system. For a description, see Wilson (1978, pp. 113–22). This system does not seem to be used in the Federal Bureau of Investigation's drug enforcement work.

[11] See Argyris and Schon (1978), in which the theory of action perspective is applied to the problem of organizational capacity for learning.

[12] I am, again, following a line of analysis that is presented in more detail in Moore (1979).

exist and cannot easily be created? Is it still desirable to strike at the source?

Another conventional theory much in use is that it is best to stop drugs at the border.[13] There may be some merit to this claim insofar as there are special legal powers at the border that facilitate searches and insofar as these searches lead to the seizure of particular shipments headed for the nation's streets. But stopping drugs at the border is no easy task given the thousands of miles of U.S. borders that must be patrolled, the huge volumes of cargo and people who daily cross these borders, and the relative ease with which shipments and smugglers can be replaced by others waiting to take their places.[14]

A third conventional theory is that supply-reduction efforts will be effective if only the major traffickers are arrested and successfully prosecuted (Moore 1979, pp. 300–301; 1986, pp. 70–71). Again, there may be merit in this view insofar as the major traffickers provide much of the capital and managerial impetus behind drug trafficking. But if it proves impossible to arrest high-level traffickers, or if there are many traffickers positioned to take the places of those arrested, or if those arrested can continue to operate from behind prison walls, then this argument is called into doubt.

Examination of these theories in use reveals them for what they are: pieces of organizational ideology buttressing the bureaucratic claims of the principal operating agencies involved in supply-reduction efforts. The question is whether there is anything better. Or, in the absence of any better current theory, we need to know which of these theories has the soundest reasoning behind it.

B. An Alternative Theory: The Economics of Supply

The principal competitive theory to those now in use is an economic theory of drug supply that seeks to identify the effects of attacking the industry through crop-eradication efforts, legal prohibitions, and enforcement.[15] This reasoning typically proceeds through an analysis of

[13] New York Mayor Ed Koch, Florida Congressman Larry Smith, and Harlem Congressman Charles Rangel, who recognize government's inability to deal with the drug problem in the cities, are among the most vocal supporters of stepping up interdiction efforts (see Nadelmann 1988*a*, p. 6).

[14] For a detailed account of the problems with stopping drugs at the border, see Reuter (1988, pp. 51–65).

[15] See, e.g., Wisotsky (1983). Economic theories and graphs are used throughout the article to illustrate and analyze the effects of various forms of enforcement on the illegal industry. Also see Reuter and Kleiman (1986).

"comparative statics"—a time-honored methodology in economics. The idea is to compare the structure, conduct, and performance of the drug industry in a legal, competitive market with its performance in a highly taxed or regulated market or in an illegal market. More precisely, the likely directions of change in the performance of the industry are analyzed as a function of changing the legal regime or altering the levels of taxation and enforcement.[16]

This method leads to some important predictions and conclusions. For example, compared with a legal market in drugs, an illegal market will supply less drugs for any given price, charge higher prices for any given quantity supplied, and will be more concentrated in its structure. It will also engage in violence and corruption. To the extent that the screws are tightened with more aggressive enforcement, these effects will be exaggerated. Moreover, money profits (but not necessarily gains in the overall welfare of the dealers) will increase because the suppliers will be dealing with increased likelihoods of arrest and successful prosecution, and will demand compensation for these risks.[17]

Similarly, economic theory tells us that there will always be some offsetting reactions to any control measures.[18] If crops are successfully eradicated in one area, new areas, previously underused because of undertrained labor or poor soil conditions, might suddenly attract development. Similarly, if enforcement gets much tougher at the ports of entry along the border, drug traffickers might reduce the size of their shipments, or elaborate the hiding places in which the drugs are stored. Or, if enforcement becomes more effective through reliance on infor-

[16] For a discussion of this methodology, see Samuelson (1983). For an application to supply-reduction efforts, see Wisotsky (1983), which discusses the characteristics of the industry under a variety of assumptions, and Nadelmann (1988*b*, p. 105).

[17] This is best understood in terms of "economic welfare," which is often expressed through a person's "utility." For example, given a set of occupational characteristics (e.g., income, hours, risks, boredom, flexibility), a person will have a certain level of "utility" for the job (which translates into happiness or satisfaction with the job). Assuming that the person dislikes risks, many increases in the riskiness associated with the occupation (e.g., a higher rate of lung cancer) will lower his "utility" for the job, everything else constant. Now, assume that the person likes money and prefers more to less so that any increase in the income of the job will also raise his "utility" for the job, everything else constant. Thus, it is conceivable that a combination of increased risks and increased pay might leave him at the same level of "utility" as before. In this case, his overall welfare will not change. The effect of greater enforcement on the overall welfare of the drug dealers can be assessed under the same analysis. Their monetary rewards rise, but since the risk of going to prison also rises, their overall welfare will not necessarily rise.

[18] Economic adjustments and adaptations are bound to occur. For examples of how the market has adapted to drug enforcement efforts in the past, see Reuter (1988, pp. 54–56).

mants, drug traffickers may shrink the number of new people with whom they deal, or deal more harshly with those they suspect of informing. Such adaptations often mean that control efforts will have less impact on original objectives than anticipated or that unintended consequences of the policy will occur.

These insights are extremely valuable. Indeed, the power of economic theory to give reasonably good predictions with very little data about the responses to changes in controls is crucial to our current beliefs and understandings about supply-reduction efforts. What this sort of economic theory cannot do, however, is tell us much about how much difference marginal changes in the current control regime will make over the next few years.

A concrete example may make the point. In 1973–74, due to a confluence of luck and skill, the U.S. government was able to produce a significant interruption in the flow of heroin from Turkey and France to the United States. This was achieved by new restrictions on and more effective control of opium poppies in Turkey, by effective enforcement by the French and Italians, and by effective enforcement by the United States. The result was a shortage of heroin use on the East Coast that seemed to last for about two years (Bartels 1975). Eventually, supplies from Mexico and Southeast Asia expanded and reduced the net effect of the successful control of Turkish heroin (Nadelmann 1987*b*, p. 40).

From one perspective, interruption could be seen as unimportant, or even counterproductive. The shortage soon disappeared, and the attack on Turkey resulted in a more diversified supply system that made control more difficult for the future. Alternatively, one could say that the effort was valuable because a cohort of American teenagers passed through a period of vulnerability under relatively safer conditions, and because it led to a lower level of heroin use than would have existed if the Turkish ban had not succeeded.

The point of the example is not to prove that the Turkish effort was successful. It is simply to illustrate the difference between viewing things in terms of "comparative statics" versus the "dynamics of adjustment." The mere fact that there are offsetting reactions to a policy intervention does not mean that it was useless. The crucial questions involve the detailed, quantitative characteristics of the dynamics that result in a shift from one position to another and the new position that is achieved.

Economic analysts are now beginning to develop dynamic theories

describing the adjustments and adaptations that the illegal drug industry makes to different kinds of supply-reduction efforts (e.g., Crawford et al. 1988). These analyses demand more data and produce less deterministic results than the simpler comparative statics models.

C. *An Alternative Theory: The Organization of Production and Distribution*

A different way to analyze the likely effects of supply reduction is to identify the particular factor of production or distribution for illicit drugs that is in long-run short supply (Moore 1979). As a matter of logic, some such factor must exist. It will be the factor that is exercising the most important constraint on the overall performance of the system. The difficulty is that we do not know what it is. Moreover, it may not remain constant over time. A certain amount of informed speculation is possible.

To supply drugs to illicit markets in the United States, certain factors of production and distribution must be combined. There must be sufficient capital to see farmers through growing periods, to buy chemicals and equipment to process and package the drugs, and to purchase land for airfields and warehouses. There must be technical knowledge about growing and processing the drugs and about smuggling them past interdiction efforts. There must be entrepreneurs willing to risk arrest or criminal attack by their colleagues, and laborers willing to engage in illegal activity for wages rather than equity. There must be enough structure and governing capacity in the illegal enterprise to insure that those who engage in the activity will be able to conduct their business without constant violence and theft and to hold onto their returns. And there must be some prospect that the dealers will be able to spend their profits.

If one considers which of these factors of production and distribution are expensive and in short supply, certain things become obvious. First, raw materials and suitable growing areas are far from limited. The total U.S. demand for illicit drugs accounts for a tiny fraction of the overall world production and can be supplied by crops grown on a very small amount of acreage. Moreover, it now seems that there are many parts of the world in which opium poppies, coca shrubs, and marijuana plants can be grown (Reuter and Kleiman 1986, pp. 306–15).

Second, there is no scarcity of human capital prepared to enter the business. Entrepreneurs have arisen in many different parts of the world. They have come from many different ethnic and class back-

grounds. The supply is not limited to those with prior criminal records or with a taste for violence and corruption. Laborers and specialists are easily recruited. All that seems to matter in constructing trafficking networks is some degree of personal connection with one's associates and a desire for money (Reuter and Haaga 1987).

Third, technical knowledge and equipment are not tightly constraining. Not much technical knowledge is required for crop production or drug processing, and that which is required is relatively easy to learn. Although the chemical precursors required to process some drugs are in somewhat short supply owing to governmental restrictions, most of the necessary materials and equipment are readily available because they have legitimate as well as illicit uses. A cocaine "laboratory" is often nothing more than a set of barrels, water tubs, and hoses.

As analysts have considered which factor of production or distribution is in short supply, they have tended to come to the conclusion that what is consistently difficult about drug trafficking is the process of reliably executing large financial transactions in a crooked world with no police or courts to enforce the contracts. The importance of this problem is signaled by the importance of a "connection" in the parlance and operations of the trade. Dealers at all levels of the system constantly talk in terms of "making connections." When they have a "connection," things go well. When they do not, they are essentially out of business.

Making a connection is a difficult, somewhat haphazard process of finding others who are involved in drug dealing and persuading them that one can be trusted. The problem of making connections exists on both sides. Looking up, one must find someone with regular access to drugs. Looking down, one must find customers who buy drugs regularly and can be trusted to pay cash and not to inform. As Reuter and Haaga (1987) describe it, most of the business is the process of "brokerage."

The reason this is true, of course, is that transactions are vulnerable in a world of prohibition and active law enforcement. They are vulnerable to theft and violence by greedy business associates and to the enforcement efforts of informants, undercover operations, and electronic and physical surveillance. Protecting transactions from these vulnerabilities absorbs resources and time. That, in turn, increases the price of any given supply of drugs or reduces the volume supplied at any given price. It also gives a competitive advantage to any illegal

enterprise that learns how to solve the problem of making the transactions secure by building confidence through repeated deals, or by developing a sufficient reputation for violence that it can do its own contract enforcement.

If it is correct that what is scarce in the illicit drug industry is the ability to execute transactions, then it follows that the most important supply-reduction instruments will be those that continue to exacerbate these problems (assuming that they are as easy to deploy as other instruments). Other instruments that attack other factors of production may occasionally be valuable if they can produce a large gain all of a sudden. But over the long run, the instruments that will be doing the most work in reducing the supply of drugs will be those that keep making it difficult to establish "connections" in the drug business.

IV. Assessing Strengths and Limitations of Programs

With neither empirical evidence nor proven theory to guide us, we find ourselves in what could best be called a clinical world. Government efforts are now under way to reduce the supply of drugs. These efforts are undoubtedly producing effects. We are just not sure what they are or how they could be improved. Given an understanding of the organizational vulnerabilities of drug production and distribution systems, it is nonetheless possible to advance some hypotheses about the features of current policies that are more or less effective and about what could be done to improve our overall performance.

A. The International Program

The international program has two major limitations. First, it is inevitably hostage to the interests and capabilities of source country governments. Second, it now tends to be focused primarily on crop-control strategies such as eradication and crop-substitution programs.

Of course, there are things the United States can do to increase the motivation and capacities of source country governments to control drugs. It can point to the obligations a country has under international treaties, or appeal to the country's self-interest by documenting the extent of the country's domestic drug problem, or indicate the importance the United States attaches to drug control by its willingness to sacrifice other interests. To strengthen capabilities, the United States can contribute money, equipment, technical assistance, or training. In the end, though, these efforts run up against limitations such as the inefficiency and corruption of government agencies, or the limited con-

trol of central governments over outlying areas of a country, or the reluctance of the U.S. government to elevate its drug-control objectives over other foreign-policy concerns.[19]

Moreover, even if the United States could be successful in persuading or equipping foreign countries to control crops, it would run up against the limitations of controlling crops as a supply-reduction strategy. There is no particular reason to believe that the raw materials for heroin, cocaine, or marijuana are in long-run short supply. Indeed, as noted above, all our experience and intelligence suggest that potential growing areas for these drugs are widespread and that the elimination of fields in one place will soon be replaced by cultivation elsewhere (Reuter 1985, pp. 13–16).

These limitations are sufficiently forbidding that it would probably be a mistake to rely on the international program as the primary instrument of an overall supply-reduction strategy. It simply cannot do enough work to affect prices reliably enough to merit that position. Having said this, however, there are two important contributions that the international program *can* make.

First, occasions will arise when the focus on crop controls suddenly *does* become effective in constraining the supply of drugs. This occurs when an important source country suddenly becomes highly motivated to control drugs. Then, support from the United States can produce a significant shortage. Typically, the shortage lasts no longer than a year or two as the illicit industry adjusts to the new conditions. But even so, that temporary shortage is often worth producing.

Indeed, as noted above, this is what happened in the early part of the seventies when Turkey suddenly shut down its legitimate production of opium and helped to produce a two- to three-year shortage in the supply of heroin. It seems to have occurred again in the latter part of the seventies when Mexico introduced an effective program of aerial spraying of poppy fields (Kozel 1985). The results of these successes were increased effective prices for heroin in the United States and reduced incidence and prevalence of heroin use. Keeping open such opportunities and being in a position to exploit them when they come along is an important contribution of the international drug program.

Second, the international program can contribute to supply-reduction efforts by shifting its focus from crop-control efforts to international criminal enforcement. Concretely, this means that the international program should negotiate extradition treaties with countries that now harbor traffickers and improve operational coordination between foreign and U.S. police agencies to take advantage of both extradition and of investigations and prosecutions within the host country.[20]

[19] For a powerful critique, see Nadelmann (1987*a*).

Such a thrust has potential for two reasons. First, an enforcement program is narrowly focused. It has none of the logistical and bureaucratic difficulties of massive crop-control programs. Second, it is targeted against a factor of production and distribution that is likely to be in long-run short supply, namely, individuals with a sufficiently well-established reputation for both reliability in successful transactions and viciousness in betrayals that they become major connections.

B. Interdiction

In recent years, the interdiction program has grown faster than any other component of the supply-reduction effort. The growth has come primarily as a result of engaging the U.S. Coast Guard and other military agencies in the pursuit of smugglers on the ocean and in the air. As table 4 indicates, this has produced large increases in the volume of seized drugs. Indeed, the best current estimate is that we are now seizing a quarter to a third of all the marijuana shipped to U.S. markets (Kleiman 1985, chap. 3). The results of this effort can be seen generally in the dramatic difference in the price of drugs that land in the United States as compared with prices offshore or in source countries, and in the recent increases in the retail price of marijuana (Reuter and Kleiman 1986).

Two main limitations hamper the ultimate effectiveness of the interdiction program. First, it is limited by its dominant focus on finished inventories of drugs rather than trafficking networks. Of course, there is much to be said for the value of drug seizures. There is undeniable, concrete satisfaction in capturing drugs that would otherwise reach illicit markets. It is also true that the seized drugs have economic value. If these drugs are eliminated, drug traffickers are deprived of valuable working capital (e.g., Stellwagen 1985).

As in the case of crop eradication, however, one must wonder

[20] For a detailed country-by-country account of the problems associated with drug supply-reduction efforts within the host country (i.e., hindered investigations and prosecutions, slow negotiations of extradition treaties), see Lupsha (1988).

whether seizing inventories has a substantial long-run impact on drug supplies. After all, we do not think of inventories of finished goods as particularly important for the future of legitimate businesses. For example, when Tylenol had to be taken off the market in response to the poisoning of the capsules, no one expected the company to go out of business, even though a month's worth of production had to be written off. It seemed far more likely that the company would continue to produce and market Tylenol, for there were still people who wanted the product and the organization still had the capacity to produce it. It is hard to understand, then, why we think it is so important when finished inventories of drugs are seized.

Moreover, the financial impact of the seizure is important only if the seized shipment represents a large fraction of the entrepreneur's total assets. But there is no particular reason to believe this. Indeed, smugglers often divide shipments precisely to hedge against the loss of their total shipment. Thus, seizures usually represent only a minor inconvenience to continued operations.

The second limitation of the interdiction program is that it is primarily focused on marijuana. A review of table 4 clearly indicates the extent to which the interdiction effort is absorbed by the flow of marijuana. It also seems clear from table 3 that interdiction efforts are relatively more important in affecting the price of marijuana than the other drugs.

The reason for the emphasis on marijuana is not that anyone intends that result. It is simply that the current interdiction efforts seem most effective against bulk shipments in noncommercial vessels. Marijuana is the drug whose sheer volume makes shipment in noncommercial vessels the most attractive option. Smugglers of heroin and cocaine have many more options—including general aviation and shipments through commercial ships and planes.[21]

The implicit focus on marijuana is shifting a little as cocaine interdiction efforts gather momentum and as the flow of cocaine has increased. But it seems unlikely that cocaine will ever replace marijuana as the drug most often seized. To the extent that marijuana is currently believed to be a high-priority drug to control, this may be counted a benefit rather than a problem. To the extent that other drugs warrant

[21] For an estimate of interdiction seizures by drug, see Reuter and Kleiman (1986, p. 316). The amount of marijuana seized far exceeds that of cocaine.

higher priority, however, or to the extent that one wanted flexible supply-reduction instruments that could be used for controlling several different drugs, the current interdiction program has significant disadvantages.

C. *Federal Investigation*

The standard criticism of the federal investigative program is that it is too far from the source of drugs to allow effective control. By this reckoning, both the international program and the interdiction program are preferred instruments because they attack the chain of production and distribution at an earlier stage than federal investigation. Moreover, the quantity of drugs seized in federal investigations seems too small for it to produce much supply reduction.

The difficulty with these criticisms is that they rely on assumptions about the best way to control the supply of drugs that have little evidence or reasoning to back them up. They emphasize physical relationships over economic relationships. A priori there is no particular reason to assume that resources are better spent nearer the source. True, if drugs are stopped earlier rather than later, they need not be worried about in the later stages. And, true, the drugs may be at their maximum concentration with respect to volume at the point where they are processed into finished products.

But neither of these points indicates that the source is the most important target to attack. As we have seen, it may be quite difficult to mount an attack at that point. Moreover, both these arguments make too much of the drugs and not enough of the entrepreneurs and firms whose continued determination and adaptability keep the drugs coming even if production runs are spoiled and inventories seized.

If the principal risks facing dealers are risks posed by enforcement agents and other criminals, then the crucial factors of production and distribution are not raw materials, technology, or warehouses but the capacity to complete transactions in this risky environment. It is with respect to transactions that the federal investigative program has distinct advantages.

The principal tactics include informants, undercover agents, and wiretap investigations. The first two attack the ability to make transactions by forcing dealers to be wary of associates, employees, and customers since any of these might become an informant or might be an undercover agent. The third makes it difficult for traffickers to com-

municate efficiently with associates, employees, and customers. Thus, domestic enforcement presses hard on the factors of production and distribution that seem in long-run short supply.

It is worth noting that forcing dealers to be cautious and therefore slowing transactions has value in reducing supply at all stages of production and distribution. Even at the lowest levels of distribution, such efforts have value, for they slow the recruitment of new customers and the flow of drugs to regular customers. At intermediate or high levels, each slowed transaction reduces the overall capacity of the system to supply drugs, and each trafficking network that is taken out results not only in the loss of current inventories but also of the future capacity to supply.

Moreover, it is possible that the same techniques of attacking transactions and immobilizing those networks that have developed a continuing capacity to execute transactions in a risky environment would have enormous value in the international program as well as in the domestic program. Indeed, while it cannot be assumed that foreign countries have laws and enforcement agencies that allow them to attack criminal trafficking organizations, it is primarily convention that makes us think of the international program as focused on raw materials and the domestic program as focused on trafficking networks. In principle, a criminal enforcement program could move across national boundaries. And that might hold the best chance not only for minimizing the supply of drugs to illicit markets but also for advancing the objectives of organized-crime policy as well.

D. State and Local Enforcement

The impact of the state and local enforcement program on drug-related crime is the subject of a detailed analysis by Kleiman (1986*b*). What is important to consider here is the impact that state and local enforcement efforts might have on broad supply-reduction objectives.

Many people believe that state and local efforts, particularly those directed at street-level dealing, are not important in reducing supplies. In their view, there are so many locations in which street-level drug dealing can occur and so many people willing to enter the business at this level that any effects of local enforcement pressure soon disappear. Even worse, this sort of activity tempts local and state police into corruption and abuses of state power and therefore should be resisted.

Recently, this thinking has been challenged by a revisionist view that sees far more value in attacks directed at street-level drug dealing—

even if one restricts one's attention to the impact that these efforts will have on supply-reduction objectives (Kleiman 1986*b*). Three points from that analysis are worth making in the context of assessing the contribution to supply-reduction objectives.

First, if it is true that the important objective of the supply-reduction strategy is to increase the effective price of drugs rather than simply the money price, then street-level enforcement is important because that program has the greatest impact of any supply-reduction instrument on the openness of drug dealing and the amount of time it will take drug users to score. The impact of international crop control, interdiction efforts, and high-level drug enforcement is generally reflected in wholesale prices of drugs and the difficulty of making wholesale transactions. They do not necessarily produce much of an impact on the ease of availability at the street level.

Street-level drug enforcement, on the other hand, forces dealers at the street level to operate more covertly. They must hide their transactions in alleyways and hallways. They must change the location of their business often. And they must screen their customers for informants and undercover agents. All this reduces the openness and accessibility of drugs on the street. To the extent that "time to score" is an important component of the effective price of drugs, street-level drug enforcement is uniquely able to increase the effective price at retail levels.

Second, street-level drug enforcement plays an important role in facilitating higher-level enforcement activities. A key to the success of high-level investigative efforts is an informant who can guide investigative efforts, interpret what the investigators are observing, introduce undercover agents, or help directly gather evidence of crimes by wearing a wire or purchasing drugs. Such informants are hard to come by. Some are recruited with monetary rewards. Some do the job for vengeance. But most do it to work off a charge that is pending against them (Wilson 1978, pp. 65–68). An important source of informants is the users and dealers who are picked up in street-level investigations.

This pool of potential informants is not necessarily a rich one. The street-level people may not know much about higher-level traffickers, or they may be terrified of revealing what they do know. But even if there is a low probability of any particular arrest producing a valuable informant, if there are enough arrests, state and local enforcement can be an important source of informants for high-level investigations. The crucial issue is not how many local arrestees turn out to be valuable informants, but rather how many informants who turn out to be valu-

able were initially encountered in state and local enforcement operations. Currently, we do not know the answer to this question, but it would be worth finding out.

Third, state and local enforcement may help to target higher-level investigations by alerting them to the existence of previously unknown trafficking networks. The strength of investigative agencies is their capacity to establish links among known facts and figure out how to penetrate known trafficking organizations. Their weakness is that they become narrowly targeted on the particular trafficking organizations that are their current targets. They tend to discount, even discard, information that comes their way but cannot be related to their main investigative targets. That is not a problem if the investigative agencies do, in fact, have the major trafficking organizations in their sights. But it is a problem if there are newly emerging trafficking organizations that they do not know.

In attacking something as mysterious and dynamic as the illicit drug industry, this tendency to become narrow is potentially very dangerous. There is always the chance that attention is concentrated on only a small piece of the overall supply system, and that there is a newer or better-shielded trafficking organization that has so far escaped notice. If this is true, the only way that enforcement agencies could discover this is to look in areas that are not now being closely investigated. That is an important contribution that broad, untargeted low-level enforcement agencies make to the overall supply-reduction strategy. Like pickets and patrols sent out by a main military force to maintain contact with a mysterious enemy force, police on the street help the main investigative forces stay in touch with the emergence and development of new trafficking capabilities (Moore 1987). Indeed, it was precisely through such efforts that the "pizza connection" was discovered in New York City.

V. Toward an Effective Supply-Reduction Strategy

Given the complex objectives and instruments of supply-reduction efforts, the lack of evidence or well-developed theory to guide calculations of effectiveness, and the limitations of any particular approach, it is impossible to reach a simple, definitive conclusion about the most efficient overall supply-reduction strategy. Instead, wisdom in guiding supply-reduction efforts consists of the following key recommendations.

1. *Instead of choosing one particular program as essential to supply-reduction efforts, it is better to think in terms of managing a portfolio of programs.*

The concept of a portfolio seems useful for at least three reasons

(Moore 1979). First, when not enough is known, a useful strategy is to hedge. One can and should emphasize the programs that seem most likely to be effective in reducing the supply of drugs, disrupting organized-crime groups, and strengthening the political economies of our foreign allies. But because we cannot be certain that our judgment is correct about the efficacy of the other approaches, it is worth also pursuing them. It might be that a successful eradication program is right around the corner. It might be that the military could effectively seal the border. It might be that local law enforcement could produce the informants that would allow enforcement agencies to penetrate previously unknown and significant trafficking groups. Without being able to eliminate these possibilities, it is wise to keep the programs in place that create the opportunities to exploit them.

Second, investing in the portfolio of programs is probably more effective than investing the whole lot of resources in a single approach. This is true even if we hold costs of the overall effort constant and ignore the benefits that are associated with hedging against our current uncertainty. The reason is that there do seem to be some synergistic effects among the programs. The most important is that operations in source-country fields, at the border, and on city streets all help to expose drug trafficking entrepreneurs who would otherwise not be noted by investigative agencies. It also seems significant that street-level operations can have an important impact on the effective price of drugs by forcing street-level dealers to be cautious. This is an effect that cannot be produced by crop eradication, interdiction, and high-level enforcement. Synergistic effects such as these make the overall strategy more effective than the sum of its parts.

Third, the world keeps changing. The supply system changes as new drugs are created, new methods of growing and processing the drugs are invented, new routes for smuggling the drugs and laundering the profits are devised, and new entrepreneurs become involved in the business. The supply-reduction efforts change as foreign governments change, new laws are passed that facilitate or frustrate criminal investigations, new technologies become available to support supply-reduction efforts, and new investigative and patrol tactics emerge. Since we cannot know how the supply system will adapt in the future, or where valuable innovations will occur in the supply-reduction effort, it is probably wise for the effort to be distributed across a variety of approaches rather than concentrated in a single all-or-nothing effort that risks becoming obsolete.

Uncertainty, potential synergies, and change make it wise for society

to diversify its supply-reduction effort. But to say that diversification is valuable is not quite the same thing as saying that the resources should be evenly distributed across all the programs or distributed as they now are. To determine the focus and concentration of the portfolio as well as its range, one must decide where the society should place its biggest bets.

2. *The main thrust of the diversified supply-reduction strategy should be to make it hard for drug traffickers to make connections. More specifically, the objective should be to frustrate transactions at all levels of the system and to immobilize those particular trafficking networks that develop enough experience with one another to complete transactions easily and efficiently.*

This conclusion is based on a judgment—not yet firmly established by evidence and reasoning—that the difficulty of executing transactions in the illicit industry is the principal factor constraining the supply of drugs (for any given price) over the long run, and is therefore the most valuable target for the supply-reduction strategy to attack.

If this judgment is accepted, it changes fundamentally the way that we should view and evaluate supply-reduction efforts. First, it alerts us to the fact that legal prohibition in itself, independent of any concrete enforcement efforts, contributes to supply-reduction efforts by making transactions vulnerable to theft and betrayal by other criminals.

Second, the focus on transactions shifts judgments about the relative importance of the different programs. The international efforts to control crops retain their special but occasional value. The arguments about the value of keeping pressure on street-level drug dealing also remain strong. But if the principal operational objectives of the supply-reduction strategy are to frustrate transactions and disrupt successful trafficking networks, then the investigative program moves to the position of central importance. It is drug investigations that put pressure on transactions and make it possible to disrupt and immobilize trafficking networks that become expert in completing the transactions.

Third, the focus on transactions indicates how the other programs might be improved. The international program's focus on crop control looks less important than strengthening foreign governments' capacities to pressure drug transactions and immobilize trafficking networks. Interdiction programs and state and local enforcement programs contribute less by removing drugs or disrupting open markets than by producing intelligence on heretofore unknown trafficking networks.

3. *Success in frustrating transactions and immobilizing trafficking networks depends on the development of more successful enforcement capabilities than now exist. That, then, requires us to strengthen current capabilities in the areas of investigation, intelligence, and patrolling, and to insure that these diverse functions are effectively coordinated.*

If the task is to frustrate transactions at all levels of the system, then it is clear that drug investigations are the key function in the supply-reduction strategy. It is the prospect that transactions will be physically observed by agents, recorded through electronic equipment, or infiltrated by informants or undercover agents that is the government's contribution to the difficulty of making transactions.

If the objective is also to immobilize those trafficking networks that have become particularly effective in executing transactions, then the general increase in investigative activity must also be able to disrupt the trafficking networks that have become most effective. That means that the investigators must be able to determine who the traffickers are and develop evidence against them. To do this effectively requires much greater investigative capabilities than now exist and much greater coordination among the investigators, the intelligence analysts, and those involved in broader, less focused enforcement activities along the border, on city streets, and in foreign drug-growing areas.

With respect to the investigative function, two new capabilities must be developed. First, the international program has to raise the priority now given to strengthening international investigative efforts. Second, it is important that investigative agencies be prepared to undertake the sophisticated investigations that expose trafficking networks to criminal liabilities associated with conspiracy laws, violations of banking and tax laws, and anti-organized-crime statutes such as the Racketeering Influenced and Corrupt Organizations (RICO) laws. Such approaches are proving to be quite effective in prosecuting individuals and crippling networks (Lynch 1987; U.S. Senate Permanent Sub-committee on Investigations 1988). But they demand a great deal from investigative agencies and prosecutors.

The challenges are partly technical. Electronic surveillance is often essential and requires a high degree of technical sophistication. Financial investigations are also extremely valuable not only to identify silent partners but also to expose traffickers to additional penalties through the use of forfeiture statutes that will take from convicted traffickers money, vehicles, and other property used to carry out their illegal enterprise (Fried 1988). These, too, require special training.

Another part of the challenge, however, is not so much technique as style and attitude. These elaborate investigations require patience, a

patience that extends to allowing dealers to continue to operate even though enough evidence has already been gathered to make the arrests. They also require agents to pass over good arrests that could be made now for uncertain but more important cases later. The hope that other defendants might become visible and indictable if one continues the investigation is not always realized. The targets of the investigation may discover the investigation and flee before they can be arrested.

Finally, these cases depend on elaborate accounts of ongoing activities and relationships revealed through patterns of events rather than single events. Even though such accounts constitute a more accurate description of what has been done that is both problematic to the society and illegal, it requires a real knack for analysis and inference to make such stories plausible. It is much easier to plunk a bag of powder down on the evidence table, testify that it was in the possession of the defendants, and leave it at that. Patience, a willingness to take current risks for uncertain future gain, and careful thought are required of investigators and prosecutors. These qualities are not always in plentiful supply in action-oriented enforcement agencies (Wilson 1978).

To support these investigative efforts, it is also important that the operational intelligence capabilities of investigative agencies be developed. By operational intelligence, I mean the capacity of international, national, state, and local enforcement agencies to use their past investigative efforts and their current access to informants to identify trafficking networks that are emerging as unusually efficient suppliers of drugs. For the most part, improvements in this area do not require more intelligence *collection*. The agents and their informants, if induced to divulge what they know and think about it, have a great deal of information. In essence, it is the intelligence *analysis* function that must be improved. If improved, it will help to support the sophisticated investigations described above.

There is one further reason to be interested in improving the quality of the intelligence function at all levels of the enforcement system. It has to do with being able to keep informants productive. One of the sad ironies of drug law enforcement is that the agencies must often rely on drug dealers to help them make cases against other drug dealers. That makes sense if the drug dealers who are acting as informants are less active and less dangerous than those on whom they are informing. But there is no guarantee that this is true. Moreover, there are some reasons, other than corruption, for enforcement agencies to want to avoid

looking too closely at this problem. After all, if an informant is helping an agent make cases, that makes the agent and his agency look good.

The fact that the informant might be systematically misleading the agency and focusing their attention on relatively unimportant traffickers is unwelcome. The only way to guard against such problems is to have as accurate information as one can get on both the informant and the investigative targets and to have someone other than the case agent monitoring the situation. That function is something that good intelligence analysis, carried out by a separate organizational unit, could supply.

To wring the maximum advantage from investigative efforts, coordination between the investigative capabilities and the broader "patrol functions" carried out by the interdiction program, the local enforcement effort, and the source country enforcement efforts must be improved. I describe these efforts as "patrol" efforts precisely because they are not focused on particular trafficking networks. Instead, they attack drugs when they become visible in foreign drug markets, along the borders, and on the streets. They attack what is visible in these locations. This relatively unfocused enforcement effort is a crucially important complement to the investigative and intelligence functions for two reasons.

First, the patrol function produces a general deterrent effect on drug trafficking. Its persistent vigilance forces caution at all levels of drug distribution. Its more or less random quality means that no transaction, shipment, or trafficking organization is ever entirely secure. Slight mistakes can be discovered and exploited by a large, observant patrol function.

Second, the patrol function, if properly executed and integrated into the investigative effort, can insure that the investigative function is properly targeted on the most important drug trafficking networks. As noted above, the strength of the investigative function is its ability to focus on known trafficking networks. If the supply system is dynamic in that new groups are always arising, then the strength of the investigative function becomes its weakness. Its tendency to narrow its focus and concentrate on known traffickers prevents it from noticing the emergence of new trafficking groups. The best way to counteract that tendency is to have some portion of the supply-reduction strategy remain in intimate contact with the markets for the drugs where they come into the open. That typically occurs overseas as drugs are being

grown and collected for processing, along the border as special attention becomes focused on movements of people and goods, and on the streets as dealers search for customers. It is in those places that the police can find the threads that lead back to new, unsuspected trafficking networks, and correct the focus of investigative efforts.

Note that a key feature of the scanning function is that it not be too specifically targeted. If it is narrowly focused to increase the chance of arrests, its efficiency in making cases and removing drugs might be enhanced, but its crucial role in providing a general deterrent and a check on investigative efforts would be lost. The supply-reduction strategy as a whole would be weakened by becoming too narrowly targeted on trafficking networks that were assumed but not definitively known to be the most important.

4. *Since the current strategy is based on bets and gambles, it is vital that capacities be improved for measuring not only the impact of the supply-reduction effort but also its own operations. Without such measurements that provide evidence about what works and what does not, there is no prospect for improving either our knowledge or our performance.*

The key to improving measurement is to spend more money to take the measurements. It is absurd to spend $750 million on federal supply-reduction efforts and begrudge $10 million to measure the effective prices of drugs in illicit markets in the United States, to analyze growing conditions in host countries, and to produce responsible estimates of supplies reaching the United States. But it is also essential that the measurements be audited by people who have no stake in the success of the strategy to insure that they are accurate numbers. And, it is important that there be some mechanism for resolving interagency disputes about the numbers and their implications.

A useful model might be the establishment of the National Defense Intelligence Board after the Second World War that assumed the responsibility for reconciling conflicting estimates of Soviet intentions and capabilities. Over time, this agency, with its complement of academic outsiders, dramatically improved both the quality of the estimates made and the underlying data. So far, informal arrangements among the drug-law-enforcement agencies have failed to produce even a coherent language and concept, much less an analysis, of supply-reduction efforts based on solidly established measurement systems.

These observations and judgments lead to some obvious implications for the important academic research that must be conducted in this area. Probably the most important study would be one that attempted

to draw together a variety of sources and give as accurate a report as possible about the dynamics of the illicit supply system over the last twenty-five to thirty years. A great deal of experience has accumulated over that period. There are also some good historical sources. If the agencies could be induced to open their files for a historical study, we would learn a great deal more than we now know about the structure of the illicit supply systems and how they react to supply-reduction efforts.

It would also be extremely valuable to do more detailed analytic and modeling work than has so far been attempted. A great deal more can be done to describe and analyze the industrial organization of the illicit drug industry. And simulation models might tell us a great deal about the likely efficacy of supply-side interventions.

Finally, it would be important to see whether any relation can be established between the effective prices of various drugs and the incidence and prevalence of use. The few pieces of evidence now available on this subject are remarkably thin, given the importance of this assumed relationship as a justification for supply-reduction efforts. Obviously, this study cannot be done until we develop improved measures of price and consumption and allow them to be recorded long enough to develop variation for us to analyze.

The more one thinks about and analyzes supply-reduction efforts, the more one realizes that our efforts in this domain are guided by hopes and intuitions rather than by facts and analysis. It is essential that our society invest in an analysis that can underwrite and guide a federal effort, the annual costs of which now exceed $1 billion. What is now available is simply not enough to satisfy any reasonably demanding investor such as a U.S. citizen.

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