

Addiction

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By Johnathan Caulkins and Peter Reuter

THE MEANING AND UTILITY OF DRUG PRICES

Introduction

The metaphor of markets has become standard in discussing policy toward illicit drugs, particularly in the United States. For example, policy is often debated in terms of the division of expenditures between supply side and demand side programs (Falco, 1994). Prices naturally play a prominent role in the metaphor, but they have been given only lip service in terms of analysis and data collection. That is unfortunate because: (1) price affects consumption, both in total and composition; (2) many harms relate to expenditure, which is the product of price and consumption; and (3) price data are a potentially important research tool for understanding the workings of policy. This paper makes the case for giving more priority to prices in analysis and data collection.

Consumption and prevalence

Prices are of interest in the first place because they affect drug use. Prices affect the quantity consumed, who uses, and even how drugs are used.

Economists are devoted to the proposition that for almost any good a higher price will lower consumption (Mansfield, 1988), and they have a broad array of evidence demonstrating that this does not apply only to "rational economic agents" making choices about conventional goods. Inmates of psychiatric institutions respond to prices in experiments, as do animals (Kagel et al., 1981), and there is a considerable literature (reviewed by Manning et al, 1991) showing that consumption of the two licit addictive substances, cigarettes and alcohol, responds to changes in price, as measured by the price elasticity of demand. Formally, the price elasticity of demand is the percentage change in consumption associated with a 1% change in price; it is a negative number.

Even though nicotine is a notoriously addictive drug, cigarette consumption turns out to exhibit substantial elasticity. Becker, Grossman & Murphy (1994) found short and long run elasticities of demand for cigarettes of -0.4 and -0.75, respectively. The long-run effect is greater because price increases reduce initiation as well as suppress consumption by current users. For alcohol similar elasticities have been observed, with surprisingly high figures specifically for heavy drinkers (Coate & Grossman, 1988).

Until recently elasticity estimates for illicit drugs were often simply borrowed from those for licit drugs (e.g. Rydell & Everingham, 1994), but empirical evidence is just now beginning to accumulate. van Ours (1995) estimated short and long run elasticities of demand for pre-World War II opium consumption in the Dutch East Indies (-0.7 and -1.0, respectively). Using survey data on the household population, Saffer & Chaloupka (1995) estimate elasticities for cocaine of

between -1.10 and -0.72, and for heroin between - 1.80 and - 1.60. Caulkins (1995a) estimates that for arrestees, a group responsible for much of the social harm related to drugs, elasticities of demand for cocaine are between -1.50 and -2.0. These findings suggest that if enforcement is able to raise prices, an untested proposition, then tougher enforcement can substantially reduce consumption. If the elasticity is less than one in absolute value, then that reduction in use will none the less result in increased expenditures.

Price can influence the nature and consequences of drug use, not just the quantity consumed. Changes in price have been linked to changes in the number of emergency room and medical examiner mentions for cocaine (ONDCP, 1992). Higher prices are likely to lead users to more efficient, and frequently dangerous, modes of drug-taking. The dominance of injection among American heroin users has many sources but the high price is certainly one of them. Similarly, the average THC content of marijuana rose during the late 1980s along with marijuana prices. Lower price also affects the character of the drug user population; the declining cocaine prices in the 1980s (Caulkins, 1994) seems to have increased the share of users from lower SES groups.

Expenditure

Although reducing use is the principal goal of current drug policy, many aspects of "the drug problem" are associated not so much with the quantity consumed or the number of users as with the dollar value of the black market (roughly \$50 billion/year for the United States according to Rhodes et al., 1995), which is the product of price and consumption. At the individual level, many heroin addicts' budgets are dominated by purchases of illegal drugs (Johnson et al., 1985), and higher drug expenditures immiserate the user.

Drug expenditures matter for non-users as well. The volume of property crime is plausibly related to total expenditure, given that a large share of expenditures are financed by such crime and about 30% of inmates serving time for property crimes report committing their crime to finance the purchase of illicit drugs (BJS 1991, 1994). The paucity of data on expenditures has led to no studies of this relation, although the classic Silverman & Spruill (1977) finding that heroin prices were positively related to property crime was probably mediated through expenditures.

Market violence, probably the principal source of violent crime related to illegal drugs (Goldstein et al., 1989), is also a function of expenditures (and thus prices). If drugs were not enormously valuable per unit weight and if large quantities were not sold, then the incentives for violence, whether to protect territories or punish cheating, would be modest. The same can be said for corruption of authorities; high prices provide the incentive for paying police to overlook violations, and it is the total dollar volume that provides the means for doing so. The incentive of organized crime to enter these activities also is positively affected by price and quantity.

Research tool

Price data are an appealing research tool for three reasons. First, prices display enormous variation over time (Caulkins, 1994), between cities within the United States (Caulkins, 1995b), and across market levels. Cocaine that sells for scarcely \$3 per gram at the point of export from

the Andes fetches almost \$150 per gram (pure) on the streets of American cities (DEA, 1992) or \$250 in European cities (Hartnoll, 1993). Understanding the sources and consequences of this variation is an important task but the magnitude of that variation, particularly over time and place, offers prospects for gaining substantial insight into behavior.

Secondly, price data are easy to collect, as compared to either prevalence or consumption, because they can be obtained through interviews with users or through undercover purchases made as part of routine enforcement. For example, the DEA's STRIDE (System to Retrieve Information from Drug Evidence) contains about 6000 price observations per year, primarily from federal enforcement operations (Frank, 1987). Unfortunately, price data have traditionally been collected unsystematically and reported very casually, primarily because police have little motivation to take data collection seriously. Surveys, such as the National Household Survey, include questions about prices but usually in a rather primitive form. Few analyses of these data have been published; conversations with researchers involved in the surveys suggest that they have little faith in those data. The official published price series often provide little useful information since they do not report central tendency, just movements in extremes. In Europe it appears that only broad averages are available.

Thirdly, price data are directly related to the analysis, planning and evaluation of the whole range of drug policy issues. We offer here examples from epidemiology, treatment and enforcement.

Epidemiology

Changes in the incidence of drug use are not currently investigated with models that include price. Implicitly, it is assumed that drug epidemics have their origin in attitudinal changes, but supply shifts leading to lower prices may be an important factor in initiating an epidemic. Historically, it is fairly clear that the timing and speed of the crack epidemic in the US was a function of its lower cost per dose, compared to powder cocaine.

Treatment effectiveness

Motivations for entering treatment are various but for many patients it is the difficulty of coping with dependence on drugs which are so expensive. The incentive to remain in treatment will be attenuated if prices decline. Thus treatment evaluations would be enriched by including data on price variation faced by clients since this may explain some of the variation in outcomes across programs.

Enforcement

A principal argument for pursuing high-level enforcement (including source country control and interdiction) is that it imposes costs on suppliers and, therefore, raises prices. Hence, one way to evaluate the success of enforcement operations is to track changes in price.

Since different enforcement programs (e.g. interdiction vs street level enforcement) affect different levels of the drug distribution system, the analysis can be sharpened by examining the behavior of prices at the stage being targeted (see e.g. Rydell & Everingham, 1994).

Conclusion

Surveys should give more serious attention to the collection of price data by including more detailed questions. Ethnographic studies, which routinely include expenditure data (Needle & Mills, 1993), should also include more price observations. The numerous price observations made by state and local police should be collected systematically as STRIDE does for federal agencies.

It is not only better price data, but also better analyses that are needed. Prices can only be understood in the context of market dynamics. Too often the term "demand" is used when consumption is more appropriate, and supply is equated simply with the total quantity produced, thus suppressing important behavioral issues.

This is obviously a task for economists, who are trained in, and obsessed by, such analysis, although not nearly so good at or interested in data collection; with rare exception (see Wagstaff & Maynard, 1988), they have been notably absent from empirical work in this area.

Prices are central to understanding drug policy, but they are poorly measured and analytically marginalized. The development of better price data, along with their analysis, would serve well both researchers and policy makers.

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