Violence, Guns, and Drugs: A Cross-Country Analysis

Jeffrey A. Miron
Bastiat Institute and Department of Economics, Boston University

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Abstract

Violence rates differ dramatically across countries. A widely held view is that these differences reflect differences in gun control and/or gun availability, and certain pieces of evidence appear consistent with this hypothesis. A more detailed examination of this evidence, however, suggests that the role of gun control/availability is not compelling. This more detailed examination, however, does not provide an alternative explanation for cross-country differences in violence.

This paper suggests that differences in the enforcement of drug prohibition are an important factor explaining differences in violence rates across countries. To determine the validity of this hypothesis, the paper examines data on homicide rates, drug prohibition enforcement, and gun control policy for a broad range of countries. The results suggest a role for drug prohibition enforcement in explaining cross-country differences in violence, and they provide an alternative explanation for some of the apparent effects of gun control/availability on violence rates.

Bastiat Institute
42 Cartwright Road
Wellesley, MA 02482-7103
(781) 856-0086
bastiat@mediaone.net
http://people.ne.mediaone.net/bastiat/

Department of Economics
Boston University
Boston, MA 02215
(617) 353-6819
jmiron@bu.edu
http://econ.bu.edu/miron/

1 Introduction

Violence rates differ dramatically across countries. Each year there is roughly 1 homicide per 100,000 persons in England or Japan but 9 per 100,000 in the United States. Moreover, these differences have persisted over long time periods; they suggest fundamental differences in the determinants of violence across countries, not just transitory variation.

A widely held view is that these differences result from differences in gun control and/or gun availability, and certain pieces of evidence appear consistent with this hypothesis (e.g., Killias (1993a, 1993b)). Most notably, England and Japan have restrictive gun control laws that border on complete prohibition with respect to handguns, and they appear to have relatively low numbers of guns per capita. The United States, in contrast, despite its many regulations and restrictions, allows legal ownership and use of a broad range of firearms and appears to have the highest rate of gun ownership in the world.

A more detailed examination of the evidence, however, suggests a less compelling role for gun control/availability in explaining cross-country differences in violence rates (Kleck 1997). Several countries (e.g., Israel, Switzerland, New Zealand) have relatively lax gun control laws and/or high firearms availability, yet homicide rates little different from those in England or Japan. More generally, cross-country studies of the relation between homicide rates and gun control/availability suffer numerous deficiencies, including reliance on small samples, sensitivity to outliers, and an almost total lack of control variables. Perhaps most importantly, existing analyses fail to identify the direction of causation between guns and violence; a positive correlation between gun ownership and violence might indicate that violence creates a demand for guns rather than that guns cause violence. The existing literature thus fails to make a convincing case that guns and gun control are quantitatively important determinants of violence rates across countries.

The question remains, however, as to what factors *do* explain cross-country differences in violence? One possible answer is that culture – history, social norms, and the like – makes attitudes toward both violence and gun control substantially different across countries (Kopel 1992), simultaneously explaining both the differences in violence rates and the differences in gun control laws. Culture is likely an important determinant of cross-country differences in violence, but explanations based on culture are difficult to examine empirically. An alternative possibility is that various economic and social factors, such as demographics, ethnic diversity, education, income,

inequality, deterrence and the like all contribute to the differences in violence across countries. There is empirical support for many of these effects (e.g., Fajnzylber, Lederman, and Loazya (1998, 1999)), but it is not clear why such factors would explain the large differences in violence between the United States and other rich countries, nor how these factors can explain the existing patterns of gun availability, gun control, and violence.

This paper suggests that differences in the enforcement of drug prohibition are an important factor explaining differences in violence rates across countries, and it argues that omission of this factor from previous analyses explains much of the apparent effect of guns or gun control. The reasoning is as follows.

In a black market, participants cannot resolve commerical disputes using lawsuits or battle over market share using advertising; they are thus likely to use violence instead. This means that prohibition of drugs potentially causes increased violence, even if prohibition reduces drug use and drug use itself causes violence. Moreoever, the degree to which prohibition encourages violence is likely increasing in the degree to which it is enforced: higher enforcement reduces the scope for legal circumvention of the prohibition, thus increasing the size of the black market; and higher enforcement disrupts contractual arrangements and destroys reputational capital, thus increasing violence for a given sized black market.

This reasoning suggests an explanation for many of the cross-country differences in violence rates. Virtually all countries have drug prohibition regimes that are similar in broad outline to that in the United States, but the degree of enforcement differs substantially. Conventional wisdom holds, in particular, that European countries rely far less on criminal sanctions than the United States, preferring medical or public health approaches.[1] If this is accurate, then the elevated rate of violence in the United States compared to Europe is perhaps due to greater drug prohibition enforcement. Moreover, the fact that drug prohibition is lax in certain countries, implying low rates of violence, potentially explains why the restrictive gun laws in countries like England or Japan have not themselves given rise to violent black markets in guns: the low rate of drug-prohibition-induced violence implies a minimal demand for guns and thus small or non-existent black markets for guns. This reasoning also suggests why comparing violence rates with gun ownership rates might confuse the direction of causation; gun ownership rates might

[1]See, e.g., Gordon 1991; Bull, McDowell, Norberry, Strang and Wardlaw 1992; or Reuter, Falco, and MacCoun 1993.

be high *because* violence is high, which in turn reflects drug prohibition.

To determine the validity of this hypothesis, I examine data on homicide rates, drug prohibition enforcement, and gun control policy for a broad range of countries. The data available for such an examination are unsatisfactory along many dimensions; it is unlikely that cross-country data will ever provide compelling support for, or refutation of, the hypotheses examined here. The results nevertheless suggest a role for drug prohibition enforcement in explaining cross-country differences in violence, and they provide an alternative explanation for some of the apparent effects of gun control/availability on violence rates. Thus, while far from compelling on their own, they offer support for a new, potentially refutable hypothesis that deserves further examination, presumably using the time series behavior of drug policy, gun policy, and violence in specific countries.

The paper proceeds in two steps. Section 2 discusses the theoretical relation between prohibitions and violence, explains the implications of this reasoning for violence, drug prohibition, and gun control, and presents the estimation framework used to examine these issues. Section 3 then examines cross-country data on violence, drug prohibition, and gun control. Section 4 concludes.

2 Prohibitions and Violence: Theoretical Considerations

The theoretical reasoning that underlies this paper consists of two parts: the hypothesis that prohibitions increase violence by creating black markets in which violence is used to resolve disagreements; and the hypothesis that this effect is increasing in the degree to which prohibitions are enforced. This section develops these two hypotheses in detail and then explains how to examine them empirically.

2.1 Prohibitions and the Demand for Violence

The hypothesis that prohibitions can increase violence is based on the following reasoning. Prohibitions of goods for which there is substantial demand and imperfect substitutes generally give rise to black markets, and in such markets participants cannot easily resolve disputes via standard, non-violent mechanisms. For example, black market producers of a good cannot use the legal system to adjudicate commerical disputes such as non-payment of

debts. Black market employers risk legal penalties themselves if they report their employees for misuse of "company" funds or property. Purchasers of black market goods cannot sue for product liability, nor can sellers use the courts to enforce payment. Along a different line, rival firms cannot compete via advertising and thus might wage violent turf battles instead. Thus, in black markets disagreements are more likely to be resolved with violence.

The hypothesis that prohibitions increase violence is consistent with a number of stylized facts. Numerous sources, anecdotal and otherwise, report the use of violence in the alcohol trade during Alcohol Prohibition (1920-1933), but not before or after. Violence committed by pimps or johns against prostitutes is widely regarded as a feature of prostitution markets, in which prostitutes cannot easily report violence without risking legal sanctions themselves. Similarly, violence was an important feature of the gambling industry during its early years in the United States, when entry was prohibited in most places; the incidence of violence has decreased as legal gambling has mushroomed.

Nevertheless, the hypothesis that prohibitions increase the use of violence to resolve disagreements is incomplete, since many prohibitions are associated with minimal levels of violence. For example, compulsory schooling laws are prohibitions against not attending school, yet there is little violence associated with this prohibition.[2] Minimum wage laws are prohibitions against hiring employees at sub-minimum wages, yet at least in the United States there is little violence associated with this prohibition. More generally, a broad range of regulatory polices (environmental, OSHA, labor market) can be characterized as prohibitions yet do not appear to generate violence, nor were the pre-1920, state-level prohibitions of alcohol or the 1940s and 1950s federal prohibitions of drugs associated with nearly the level of homicide experienced in the last several decades. And, of most relevance to this analysis, Western European countries all have drug prohibition laws similar to those in the United States, yet substantially lower rates of violence.

There are several reasons why prohibitions might not generate violence, the analysis above notwithstanding. Some prohibitions, such as compulsory education, do not interfere with a substantial number of transactions. Other

[2]Some might characterize episodes like the Columbine shootings as violent resolution of a disagreement – whether the perpertrators had to be in school – that could not readily be adjudicated by other means. Whether one adopts this interpretation or not, the total number of such incidents is trivial compared to the number of persons affected by compulsory education laws.

prohibitions, such as minimum wage laws, prohibit actions for which there is not sufficient demand to generate large-scale black markets. And still other prohibitions outlaw goods for which there are reasonable substitutes.

Most importantly, however, I suggest here that prohibitions are unlikely to create violence unless there is substantial enforcement, and the amount of violence caused will increase with the degree of enforcement. There are two parts to this argument.

First, prohibitions are unlikely to create substantial black markets unless there is a substantial degree of enforcement, and the size of the black market will increase with the degree of enforcement. The reason is that prohibitions generally contain exceptions that permit legal or quasi-legal production and consumption of the good, thus allowing use of standard, non-violent mechanisms to resolve many disagreements related to the prohibited product. Increased enforcement, however, in the form of new laws that decrease the scope of the exceptions, or increased monitoring of existing exceptions, places some additional transactions outside the realm of legal dispute resolution mechanisms.

For example, the United States did not treat the maintenance of opiate users by physicians as proscribed until several years after prohibition took effect (Musto 1973). Similarly, England allowed doctors relatively free reign in dispensing heroin for the first several decades of its drug prohibition, but since the 1960s it has imposed greater limits on heroin maintenance. And the gun control systems in many countries have gradually become more restrictive (see, e.g., Kopel (1992) or Olson and Kopel (1999)).

Similarly, it was legal during Alcohol Prohibition to produce small quantities of alcohol for personal use, to produce certain kinds of low alcohol wine and beer, to put alcohol in medicines and sacramental wines, and to use alcohol in industrial products. When monitoring and enforcement were lax, these exceptions provided substantial amounts of legal alcohol. In the case of drug prohibition, doctors can prescribe many otherwise prohibited drugs, and several countries operate treatment programs that provide prohibited drugs to certain consumers. Again, under lax enforcement these sources of supply meet much of the market demand legally. In the case of prostitution, various escort services are legal, even though prostitution itself is illegal, so these services meet much of the demand without generating violence so long as enforcement is lax. In the case of prohibitory gun laws, exceptions for collectors or existing owners are common, and government use of prohibited firearms often remains legal. With little enforcement, these exceptions supply much of the market.

The critical aspect of all these examples is that, when exceptions to the prohibition law exist, at least some manufacturing, transportation, and distribution of the good is legal; thus, this activity is unlikely to generate violence. There still might be violence associated with the illegal diversion of the good, but far less than if the good is prohibited entirely.

The second reason that enforcement is critical to the degree of violence observed under a prohibition is that participants in black markets are likely to develop mechanisms for avoiding violence, but enforcement makes this more difficult. For example, rival suppliers might agree to cartelize a market, thus reducing the need for advertising, but enforcement that arrests one of these suppliers generates violence among the remaining suppliers, who attempt to capture new market share. Alternatively, black market suppliers might create private, non-violent mechanisms for resolving disputes, but enforcement that creates turnover among suppliers will destroy reputational capital and make such arrangements difficult to maintain. Still another mechanism is that given higher dispute resolution costs, participants in a black market will choose production and distribution methods that minimize transactions (e.g., home production), but heightened levels of enforcement make this difficult. Likewise, consumers of the prohibited commodity might purchase repeatedly from a reliable supplier, but enforcement that generates turnover among suppliers makes this harder, increasing the scope for disagreements.

Beyond the two effects of increased enforcement discussed above – increasing the black market's share of the prohibited commodity, and increasing the likelihood of violence for a given sized black market – there are several other mechanisms by which increased enforcement might increase the level of violence observed under a prohibition.

First, increased enforcement of a prohibition might be accompanied by a redistibrution of criminal justice resources away from other violence-reducing government policies, such as crime deterrence, the provision of an efficient system for protecting property rights, or suppression of other sources of violence. For example, increased enforcement of drug prohibition for a given sized police budget implies reduced enforcement of laws against homicide, robbery, assault, and the like.[3] This issue arises, for example,

[3]Benson, Rasmussen, and Kim (1998) examine the relation between the Index I crime rate and the rate of drug arrests using panel data for a cross-section of Florida counties during the mid-1980s. They find a marginally significant positive association between drug arrests and the Index I crime rate, controlling for a variety of demographic factors and the levels of police resources. They do not address the breakdown of their results for

when violent prisoners are released early to make room for drug offenders. In places like Russia, the resources devoted to drug prohibition enforcement might "crowd out" general enforcement of property rights, thus encouraging participants in other sectors to employ violence. And in countries like Colombia or Peru, the resources devoted to drug enforcement are unavailable for fighting guerilla groups, who generate substantial violence for independent reasons.

A different reason that prohibitions might generate violence is that prohibitions often raise the price of the prohibited commodity.[4] Elevated prices constitute a negative income shock to consumers of the prohibited good, which can encourage increased income-generating crime to finance purchases of the good. This mechanism does not necessarily imply violence directly, since many income-generating crimes are non-violent (theft, shop-lifting, prostitution). But some income-generating crimes are violent (robbery), and violence can occur incidentally as a result of otherwise non-violent crimes. Assuming that increased enforcement implies higher prices, increased enforcement implies more income-generating crime and related violence.

The higher prices caused by prohibition might also encourage violence by increasing the rents to certain factors. One model of what occurs under prohibition is that suppliers enter the prohibited market until the total return from black market activity equals the total return from legal activity, taking into account the risks of incarceration, injury, or death and any stigma/glamor associated with working in a black market. Assuming homogeneity in the willingness to accept the special features of black market activity, prohibition does not imply any excess profits in the prohibited as opposed to the legal sector. If there is heterogeneity in the willingness to work in the black market, however, then those more willing to do so select into this sector, earn rents to this characteristic, and are better off under prohibition. Such persons have more to protect under prohibition and might therefore have an additional reason to engage in violence, namely, protecting these rents. And the magnitude of this effect is likely increasing in enforcement, assuming prices increase with enforcement.

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different kinds of Index I crimes, so the results shed no direct light on the effect of drug prohibition on homicide. Benson et al. (1992) and Sollars et al. (1994) provide evidence that increased drug enforcement diverts police resources from deterring property crime.

[4] As I argue elsewhere (Miron 1999), the effect of prohibitions on the price of the prohibited commodity is less clear cut than generally believed. Nevertheless, it appears that many, perhaps most prohibitions are associated with higher prices than would otherwise exist, so I accept this presumption here.

Still another mechanism whereby prohibition might encourage violence is by making consumers or producers of the prohibited commodity less likely to use the official dispute resolution system for disputes not related to the prohibited commodity.[5] For example, a drug user or seller who has been robbed of non-drug items might not report this to the police – since this could risk sanctions related to possession or sale of drugs – and instead attempt to sanction the perpertrator of the robbery himself, possibly using violence. And higher enforcement is likely to increase this effect; if police routinely overlook small quantities of prohibited substances, the effect is likely to be small; if police routinely hassle anyone thought to be associated with the prohibited good, the effect is likely to be large.

The reasoning outlined above suggests the following hypotheses for empirical examination. First, differences in the degree of drug prohibition enforcement across countries might explain differences in violence. In addition, gun control might itself increase violence by driving gun markets underground, so differences in gun control across countries might also explain differences in violence.

2.2 Estimation Framework

The discussion above suggests the following framework for examining the relation between drug prohibition enforcement, gun control/availability, and violence. Assume

$$v_i = \alpha e_i^d + \beta e_i^g + \gamma g_i + \epsilon_i \tag{1}$$

$$g_i = \lambda v_i + \delta e_i^g + \eta_i \tag{2}$$

where v_i is violence in country i, e_i^d is the degree of drug prohibition enforcement, e_i^g is the degree of gun control, g_i is the number of guns, and ϵ_i and η_i are other determinants of violence and gun ownership. This system of equations incorporates the two hypotheses developed above and nests the conventional hypotheses that gun control affects gun ownership and that gun ownership affects violence.

Equation (1) says, first, that violence in country i depends on the degree to which drug prohibition is enforced. If prohibition reduces consumption of drugs, and if such consumption causes violence, then α should be negative; if prohibition causes drug market participants to substitute violent for non-violent methods of dispute resolution, then α should be positive.

[5] I am indebted to Bjorn Frank for suggesting this hypothesis.

This framework does not separately identify these two effects, it merely determines which effect is more important. The second term in equation (1) allows for the possibility that gun control laws might increase violence if they are restrictive enough to create black markets. This implies that β is positive or zero.

The third term in equation (1), γg_i, captures two conventional hypotheses concerning the effect of gun availability on violence. If gun availability incites or facilitates violence (e.g., Cook 1983, Zimring 1991, Kellerman 1993, Blumstein and Cork 1996), then γ is positive; if gun availability (e.g., concealed weapons) discourages violence by raising the costs of violence to potential criminals, then γ is negative (Lott and Mustard 1997).

Equation (2) indicates that the number of guns might itself depend on the level of violence, presumably in a positive direction, assuming violence creates a demand for guns in self-defense. It also incorporates the conventional hypothesis that gun controls reduce the quantity of guns, in which case δ is negative.

Consistent estimation of these two equations – and recovery of the "structural" coefficients $\alpha, \beta, \gamma, \lambda, \delta$ – is infeasible because of the simultaneity problem that violence potentially depends on guns while guns potentially depends on violence. Assuming one wishes to allow for both effects, these equations can be estimated consistently only if some factor shifts gun ownership independent of violence and a different factor shifts violence independent of gun ownership. Moreover, these factors must not directly influence the "other" variable. It is not obvious what such factors might be.

Rather than attempt to estimate the "structural" parameters of the model, therefore, I attempt the more modest goal of examining the reduced form relating violence to drug prohibition and gun control. Thus, substituting (2) into (1) yields

$$v_i = \alpha' e_i^d + \theta e_i^g + \mu_i \tag{3}$$

where $\alpha' = \alpha/(1-\gamma\lambda)$, $\theta = (\beta+\gamma\delta)/(1-\gamma\lambda)$, and $\mu_i = (1/(1-\gamma\lambda))(\gamma\eta_i+\epsilon_i)$. Estimation of this equation does not allow one to separately estimate the effects of gun availability versus gun control, but it nevertheless provides interesting information. Governments do not have direct control over gun availability; they can merely pass laws or regulations that attempt to limit the sale or ownership of guns. Thus, focus on the policy instrument, e_i^g, is more relevant to policy analysis in any event.

This specification does not incorporate the possibility that gun control regimes might differentially affect violence rates at different initial levels of

violence. For example, gun control is more likely to generate black markets in countries that have substantial violence and thus substantial demands for guns. This specification also fails to incorporate the possiblity that mild controls (such as those that restrict ownership by age or mental condition) might reduce violence whereas more extreme controls (such as outright prohibition) might increase violence. Unfortunately, the available data are too crude to investigate these more subtle hypotheses.

As will be seen below, equation (3) is difficult to estimate because measures of e_i^g are problematic. In addition to examining (3), therefore, I also estimate

$$v_i = \alpha' e_i^d + \mu_i \tag{4}$$

and determine whether enforcement of drug prohibition is associated with higher levels of violence, gun control aside. This exercise is potentially biased if gun control has a significant effect on violence rates and is correlated with drug prohibition enforcement, but evidence that drug prohibition enforcement has a significant effect is nevertheless informative. If differences in drug prohibition enforcement correlate with differences in violence, this at least provides evidence for an alternative hypothesis.

I emphasize that, in estimating either (3) or (4), I treat differences in drug prohibition enforcement and gun control as exogenous with respect to the level of violence. This assumption is problematic, since countries might choose greater enforcement of drug prohibition or impose stricter gun control laws in response to higher levels of violence. Thus, a positive relation between drug prohibition enforcement and violence does not necessarily indicate a causal effect of enforcement on violence, and the estimated relation between gun control and violence might understate the true causal effect of gun control in reducing violence. Despite this caveat, it is interesting to establish the correlations in the data and attempt to determine, using auxilliary information, to what degree the correlations might be causal.

3 Results

This section presents evidence on the relation between violence, drug prohibition enforcement, and gun control across countries. The results should be taken with a large dose of caution; as detailed below, there are myriad data problems that make inference problematic. I attempt to alert the reader to the most obvious such problems, but more subtle ones undoubtedly remain.

3.1 Violence Rates Across Countries

Table 1 presents vital statistics data on homicide rates in sixty-six countries.[6] The set of countries consists of all those for which data are available in at least one of the years 1993-1996 (United Nations 1998).[7] This period is used to estimate the average homicide rate for each country because it corresponds roughly to the period for which data on drug prohibition enforcement and gun control laws are available. The table presents rates for the 1990-1996 period along with the average for this period and the 1993-1996 period; data from the 1990-1992 period help validate the estimation strategy employed below. Before comparing these homicide rates to measures of drug prohibition enforcement or gun control, it is useful to examine several aspects of the cross-country and time-series variation.[8]

[6]The homicide rate data employed here are from the 9th revision of the International Classification of Diseases, as reported in the United Nations *Demographic Yearbooks 1995, 1996*. I supplement these data with homicide rate data for Denmark, Switzerland, and Hong Kong reported in Krug, Powell, and Dahlberg (1998). These data are comparable to those reported by the UN but for some reason not included in that source.

[7]In this paper, I consider only homicide rates as the measure of violence. Some of the research on guns and violence examines the relation between guns and suicide as well (e.g., Killias 1993a,1993b). The hypotheses developed above are more naturally applied to homicide rates, absent spurious reporting of homicides as suicides.

[8]I restrict the analysis to vital statistics measures of homicide rates because these are more reliably reported than are crime statistics measures of homicide rates. I have examined the homicide rate data in the *Fifth United Nations Survey of Crime Trends and Operations of Criminal Justice Systems* and decided against using them for several reasons. First, the survey provides several different homicide rate series (Total Recorded Homicides (HOMPOL), Total Recorded Committed Intentional Homicides (CIHPOL), Total Recorded Attempted Intentional Homicides (AIHPOL), Total Recorded Intentional Homicides (IHMPOL), and Total Recorded Non-Intentional Homicides (NIHPOL)), but little explanation of the differences between the series, which are not transparent. Most countries report only a subset of these series, and there is no obvious pattern as to why some countries report some concepts and others different concepts. The differences between the measures (in particular, between the three likely to be the "best" measures) are substantial in a number of cases, e.g., 3 or more homicides per 100,000 (and in a few cases, even more). The three "best" measures do correlate positively with each other and with the vital statistics homicide rates for those countries for which both exist. But taking out Colombia reduces these correlations substantially; in many cases it is less than 0.5. Finally, addition of these countries would add only a few "useful" observations, meaning countries with substantial population and significant potential for drug trafficking (e.g., India, Indonesia, Jamaica). This source does not add any of the Southeast Asian or Middle-Eastern countries that are key opium producers (e.g., Burma, Laos, Iran, Afghanistan).

Similarly, I do not consider data on assault or robbery, since crime statistics on these series are even more problematic than crime statistics on homicide.

The data show first that homicide rates differ substantially across countries. The United States homicide rate averages approximately 9 per 100,000 during the sample period, which is 5-9 times the average rate in most Western-style democracies. At the same time, the homicide rate in the United States is similar to or less than the rate in many countries. Seven Central or South American countries have homicide rates in excess of the U.S. rate, and several others have rates that are close. Every country in this group has a homicide rate in excess of the average for the rich countries other than the United States. Similarly, ten of the twenty former Soviet Bloc countries have rates that exceed the U.S. rate, with practically every country in this group having a homicide rate in excess of the non-US, rich country average. Thus, the level of homicide in the United States stands out in comparison to other rich, democratic countries, but not in comparison to the world as a whole.

The data in the table also indicate that homicide rates are relatively stable within countries, at least over the time period considered here. The standard deviation of the rate is well below the mean level for most countries, and the differences over time are small compared to the differences across countries. There are a few notable exceptions to this statement; for example, the rate roughly doubles between 1990 and 1996 in Russia. In several cases, the change in the homicide rate probably reflects external events, such as the ethnic violence that occurred after the dissolution of the Soviet Union. The stability of the rates suggests that treating each country's average homicide rate as an observation from a particular policy regime is reasonable, even when there is only one year of data.

This overview of the data on homicide rates is partially, but not entirely, suggestive of the main hypothesis of this paper. On the one hand, violence rates are high in the countries of the Carribean and Latin America, most of which are key producers of, or transit points for, illegal drugs. Colombia's homicide rate, in particular, is roughly ten times the U.S. rate. The fact that these countries produce and ship illegal drugs does not necessarily mean they should be violent, given the framework of the paper; the hypothesis here is that the degree of enforcement plays the crucial role. But the existence of a substantial amount of black market activity is a necessary condition for enforcement to encourage violence.

On the other hand, violence rates are also high in the countries of the former Soviet Bloc, which are less obviously important producers or transhippers of illegal drugs. This does not mean enforcement of drug prohibition is not playing a role in these elevated violence rates; these countries

consume illegal drugs to some degree, and they have illegal drug markets that are potentially violent. But much of this violence might reflect ethnic conflict or the lack of an effective criminal justice system; either possibility implies that the high violence rates are unrelated to drug prohibition or gun control. If the violence is due to either of these two mechanisms, however, it is still consistent with the broader perspective of this paper, which is that violence is high when alternative dispute resolution mechanisms are not readily available.

These suggestions are based on stylized views of the degree of drug prohibition enforcement across countries. I now examine this enforcement in more detail.

3.2 Drug Prohibition Enforcement

Constructing a measure of drug prohibition enforcement is difficult for two reasons. First, none of the standard measures of enforcement (e.g., drug arrests, drug prisoners, drug sentence lengths) is necessarily well correlated with the conceptually correct measure, the degree to which enforcement raises the cost of using non-violent dispute resolution mechanisms. Second, there are few reliable data on the standard measures in any event.[9,10]

The one variable for which reasonably consistent data are available for the countries in Table 1 is seizures of illegal drugs. This is not a perfect measure of drug prohibition enforcement, but it plausibly captures the main effect of enforcement in disrupting dispute resolution within the black market for drugs. Further, a high seizure rate is likely to correlate positively with

[9]Limited data on drug arrests, drug prisoners, drug sentences, and the like are available from the *United Nations Surveys of Crime Trends and Operations of Criminal Justice Systems*. These surveys request information from a broad range of countries about various aspects of their criminal justice systems, crime rates, and related information. Unfortunately, the data appear seriously deficient along many dimensions. Data are missing for many countries, including ones that appear to keep such records, and the data display substantial internal inconsistencies in several cases. I report a limited set of results using these data below; they are generally consistent with the results that use seizures as the measure of enforcement.

[10]An alternative measure of enforcement is black market drug prices, which under plausible assumptions vary across countries according to the degree of enforcement. This is an interesting approach, but I hesitate to employ it for two reasons. First, the existing data are problematic (UN surveys, which suffer from the problems discussed above, plus others specific to price observations; and data from an internet site that serves as a clearing house for data on black market drug prices). Second, some existing evidence is inconsistent with the view that increased enforcement raises black market drug prices (Miron 1999).

other aspects of enforcement, such as a high rate of drug arrest or imprisonment. More generally, a high drug seizure rate is likely to reflect a stricter attitude toward enforcement. The main negative of the drug seizure rate is that differences across countries in this measure might reflect differences in the use of drugs, holding the degree of enforcement constant. In this case, a positive correlation between the seizure rate and homicide might indicate that drug use, rather than drug enforcement, causes violence. The existing data on drug use across countries are limited and difficult to employ because of differences in data quality and content. The existing data (UNODCCP 1999), however, show if anything a negative correlation between drug abuse and homicide rates.

In this paper I employ drug seizures as the main measure of drug prohibition enforcement. The data are from United Nations International Drug Control Programme (UNDCP) (1998). This document tabulates the quantities of drugs seized in each of twenty-two different categories for most countries in the world over the period 1994-1996. The data for most countries come from Annual Report Questionaires submitted to UNDCP, which supplements these reports with data from the International Criminal Police Organization, individual countries, the UN's International Narcotics Control Board, the World Customs Organization, and the UNDCP field offices. The use of multiple sources makes the reporting of seizures more complete, but it also raises issues of consistency across countries.

Although the seizure data reported by UNDCP are, in my opinion, the best available measure of drug prohibition enforcement, there are numerous reasons to treat these data with caution. The number of countries for which data are reported differs substantially across the twenty-two different drug categories. In particular, the table for each category has one line for each country for which it reports positive amounts of seizures in at least one of the three years 1994-1996; it does not include a line for countries for which, apparently, there were no seizures of that drug reported in any of these years. Thus, in the cases of the more widely used and trafficked drugs, the number of lines/countries in the relevant table is approximately 150, while for the less commonly used and trafficked drugs the number of lines/countries is only 50-100. Many of the differences in the number of reporting countries are readily explained by the production location of particular drugs; for example, it makes sense that most coca leaf seizures occur mainly in Colombia. Nevertheless, it is not clear whether the absence of an entry for a particular country for a particular drug should be interpreted as zero seizures or as missing data. Similarly, the report contains no data but

instead the symbol "-" for one or two of the three years in question for many country/drug combinations for which at least one year of data is available. It is again not clear whether this indicates zero seizures or missing data.

To address these issues in a way that maximizes the number of observations, I treat all "non-observations" as zeros with respect to both data for missing countries and data for missing years for a given country. This assumption is unlikely to be literally correct, but for the purposes here it is a reasonable approximation. Countries that are more concerned about enforcing drug prohibition are also likely to track their seizures more carefully and to attempt seizures of more kinds of illegal drugs.[11] Also, many of the missing countries are almost certainly cases where the drug in question was not trafficked or consumed in that country (e.g., coca leaf, opium seeds), so seizures were in fact zero.

Table 2 presents an overview of these data by listing the total amounts of drug seizures for the countries listed in Table 1 over the period 1994-1996. There are three columns for each category of drug because in many cases there are seizures reported in kilograms and/or liters and/or "units." I interpret these multiple reports as separate seizure amounts, not equivalent quantities of the same seizures. For some categories, the more natural unit of measurement is kilograms (e.g., herbal cannabis), while for other it is liters (e.g., opium liquid), and for still others it is units (e.g., stimulants, where the unit is presumably pills).

The obvious difficulty that arises in using these data is that no one category of seizures is likely to capture a country's enforcement practices fully, since countries differ markedly in the set of drugs they produce, manufacture, or consume. Yet adding together the amounts of seizures in different categories is problematic, since the different categories are measured in different units in many cases. Moreover, even in cases where the units are the same, the seizure of a given quantity of one drug is not necessarily equivalent to that of another drug. For example, seizing a certain number of kilograms of coca leaf might disrupt the dispute resolution process differently from seizing the same number of kilograms of cocaine base. I address this problem by employing several measures of the amount of seizures and determining whether the results are robust across alternative specifications.

Examination of Table 2 suggests certain regularities that can be exploited

[11] In the case of six "countries" (Isle of Man, Taiwan, Martinique, Puerto Rico, Albania, and Sao Tome & Principe), no seizure data are reported for any drug category; I therefore treat the seizure data for these countries as missing.

in aggregating the different drug seizure series. First, seizures reported in liters are exactly or virtually zero in most cases, and even in the case with the greatest number of liters seized (cocaine base), the quantity is much smaller than for kilograms or units. Second, seizures of cannabis, cocaine, and opiate products are mainly reported in kilograms for most of the categories with substantial amounts of seizures; major exceptions are cannabis plants, opium plants and capsules, and synthetic narcotics. Third, "manufactured" drugs are mainly reported in units rather than in kilograms. I rely on these three characterizations in choosing which summary measures to consider.

Table 3 presents per capita seizures by country over the period 1994-1996 for a number of different categories.[12] *Cocaine Base*, *Cannabis Herb*, and *Heroin* are the kilogram data for these three drugs. *Cannabis* is the sum over all kilogram seizures of cannabis products (cannabis liquid, cannabis herb, cannabis plants, cannabis resin, cannabis seeds); *Coca* is the sum over all kilogram seizures of coca products (coca bush, coca leaf, and cocaine base and salts); *Opiates* is the sum over all kilogram seizures of opium products (heroin, morphine, other opiates, opium liquid, raw and prepared opium, opium plants and capsules, opium poppy seeds, and synthetic narcotics); *Pills* is the sum over all units seizures of depressants, hallucinogens, LSD, methaqualone, and stimulants; and *Cannabis Plants* and *Opium Plants* are the units seizures of cannabis plants and opium plants, respectively.

The data in Table 3 show that per capita seizures of drugs differ substantially across countries. Some of the variation is consistent with the main hypothesis of this paper; for example, the cocaine seizure rate is high in the United States and Colombia. Yet there are also many anomalies; the cocaine seizure rate is the same in the United States as in the Netherlands, and the Cannabis Herb seizure rate in Canada is roughly four times the rate in the United States. More generally, seizure rates for several categories are high in the countries of Central and Latin America, which is consistent with this paper's thesis given the high observed homicide rates. But the seizure rates in the former Soviet Bloc countries tend to be low, which is not consistent with the paper's thesis given the high observed homicide rates.

3.3 Gun Control Across Countries

Constructing a measure of gun control is even more problematic than constructing a measure of drug prohibition enforcement. In this section I de-

[12] I calculate the per capita amounts as equal to the sum of seizures over 1994-1996 divided by 1995 population.

scribe and summarize what appears to be the only data set that contains consistent documentation of gun control laws across countries. The data set in question is the *United Nations International Study on Firearms Regulation* (UN Crime Prevention and Criminal Justice Division 1999). This survey asked UN member countries to provide detailed information on multiple aspects of their gun control laws and their outcomes related to guns. The information was requested from participating countries in 1996, so the information probably corresponds to the situation in these countries around 1995. The information is problematic in several respects, but it seems to be the best there is.

Table 4 provides examples of the questions posed by this survey. In addition to the questions listed in the table, the survey also requested a substantial amount of descriptive or qualitative information. I restrict attention to questions with quantitative answers, partly because these questions turn out to be more relevant and partly because the set of responses is more complete.

The questions that are most relevant to this paper are 1a and 1b, which ask whether there are regulations that *prohibit* the ownership of long guns or hand guns. Questions 3a2-3 and 3b2-3 are also potentially relevant; they ask about *prohibitions* on importation and exportation of long guns and hand guns; these prohibitions could also generate black markets. Most of the remaining questions listed in Table 4 are less relevent to this paper because they ask about restrictions, rather than prohibitions. These seem unlikely to contain useful information, since most countries have at least some kind of regulation or restriction on virtually anything related to guns. Consistent with this suggestion, a high fraction of the responses to these questions are "yes," so there is little variation in the responses in many cases. Questions 17a-17e are potentially useful; a country that permits few legal uses of handguns might be more likely to develop black markets.

A potential problem with this survey information is that the questions are broad, allowing countries with substantially different gun control laws to provide the same responses to key questions. For each of Questions 1a, 1b, 3a2-3, and 3b2-3, the possible answers are "None," "Certain," or "All," with these responses coded as 0, 1, or 2, respectively. Thus, many countries ban certain handguns but permit others, so many countries belong in the middle category on Question 1b, even though there are probably major differences in this middle group with respect to the kinds of handguns prohibited. An additional difficulty is that this data set measures differences in laws, not the degree to which they are enforced. It is plausible that a high score on

a number of different laws correlates with a greater degree of enforcement, but this is not guaranteed.

Table 5 presents the responses to Questions 1a, 1b, 3a, and 3b, along with two summary measures, the sum of Questions 1a and 1b, and the sum of all six questions. As suggested, there are instances in which these measures do not appear to reflect the differences in gun control regimes across countries; for example, the overall United States score on both summary measures is identical to that of the United Kingdom, despite the fact that these two countries are generally viewed as having polar opposite gun control laws. There is nevertheless substantial variation in the summary measures.

3.4 Regression Results

Table 6 contains regressions of the homicide rate on the drug seizure rate for the sample of countries for which the homicide rate is available. Table 7 adds a meausure of all-gun prohibition to the specifications in Table 6, while Table 8 adds a measure of hand-gun prohibition. Tables 9-11 add a set of standard control variables to the specifications in Tables 6-8, respectively. The dependent variable in all regressions is the average homicide rate during the 1993-1996 period (i.e., the last column of Table 1). The drug seizure rate is the average quantity of drugs seized per capita in each of nine different categories over the 1994-1996 period (i.e., the nine columns of Table 3). The all-gun prohibition variable in Tables 7 and 10 is the sum of Questions 1a and 1b from the UN Firearm Study (i.e., the second to last column of Table 5). The hand-gun prohibition variable in Tables 8 and 11 is Question 1b from the UN Firearm Study (i.e., the second column in Table 5). The sample size is smaller for the regressions that include a measure of gun prohibition because this variable is missing for several countries.

The results in Table 6 show that drug seizure rates and homicide rates are positively related in all cases except Heroin, often at a statistically significant level. The results are virtually identical if one excludes the United States from the sample; they are similar, although substantially weaker for the cocaine variables, if one excludes Colombia from the sample. The use of the homicide rate for the 1990-1996 period, which increases the sample size by nine countries, has little effect on the results.

The results in Tables 7-8 show that greater prohibition of guns is associated with a higher level of homicide, and the relation is statistically significant in most cases. These results also show that drug seizure rates are positively and often significantly associated with higher homicide rates,

controlling for the degree of gun prohibition. The results using all-gun prohibition are extremely similar to those using hand-gun prohibition.[13]

The results in these three tables make no attempt to control for determinants of homicide rates other than drug prohibition or gun control. Because the sample size is small and additional variables are often missing for countries in the basic sample, specifications with a complete set of control variables (such as those employed in Fajnzylber, Lederman, and Loazya (1998, 1999), for example) are problematic. The results in Tables 9-11 focus on control variables that exist for relatively broad samples of countries: GNP per capita, the percentage of the population that is male aged 15-24, the percentage of the population living in urban areas, population density, educational attainment, and use of the death penalty.[14]

Comparing the estimated coefficients on the seizure variables, the results in Tables 9-11 are similar to those in Tables 6-8. In several cases the coefficients on the seizure variables are larger or more significant in the regressions that include controls, while in a few cases they are less significant or change sign from positive to negative.

The coefficients on the gun prohibition variables consistently become smaller and insignificant in the regressions that include controls. The coefficient is still positive in almost all cases, however.

Considering the control variables themselves, the estimated coefficients on GNP per capita are consistently negative and in some cases close to significant, implying that higher income is associated with lower violence. This is consistent with results in (Fajnzylber, Lederman, and Loayza (1998)) and makes sense given the generally low rates of violence in the developed countries, with the U.S. being the obvious exception. In the framework here, the high rate of drug enforcement in the U.S. explains why it is the exception to the general pattern.

The results for percent male ages 15-24 are weak and somewhat inconsistent. In the regressions that exclude gun prohibition the coefficient is usually positive, consistent with the view that young males commit a dis-

[13] As with the results in Table 6, omitting the United States or Colombia from the sample has modest effects on the results. The use of alternative measures of gun prohibition, such as the sum of Questions 1a, 1b, 3a2-3, and 3b2-3, or the sum of Questions 17a-17e, yields similar but slightly weaker results. The use of the 1990-1996 average homicide rate has little effect.

[14] The sources of these data are identical to the sources employed by Fajnzylber, Lederman, and Loayza (1998). The precise data that I employ differ slightly due to differences in samples.

proporionate share of violence. But in the regressions that include the gun prohibition variables, the coefficients are always weakly negative.

The percent urban always enters positively although never at standard significance levels (again consistent with Fajnzylber, Lederman, and Loayza (1998)). This result is consistent with the view that urbanization breeds violence, perhaps by increasing the number of interactions between persons, perhaps because those interactions are in relatively close quarters. Population density always enters negatively, however, which seems inconsistent with the latter explanation. Schooling enters negatively, meaning a higher level of educational attainment is associated with a lower level of violence. This last result differs slightly from Fajnzylber, Lederman, and Loayza (1998), although in both that paper and this one the estimated coefficients are not significant. The death penalty variable enters weakly and with an inconsistent sign, which is at odds with the significant, negative effect found in Fajnzylber, Lederman, and Loayza (1998).

The results in Tables 6-11 rely on the seizure measure of drug prohibition enforcement. As noted above, existing data on alternative measures are problematic. I have, however, estimated the specifications in Tables 6-11 for two alternative measures of drug prohibition enforcement, the drug trafficking arrest rate and the total drug offense arrest rate.[15] The coefficient on the gun prohibition variables are always positive although usually not significant. The coefficients on the total drug arrest rate is usually negative although never significant. The coefficient on the trafficking arrest rate is negative in the uncontrolled regressions but positive (insignificantly) in the controlled regressions. The trafficking arrest rate is likely the better measure of the degree to which enforcement causes violence in drug markets. Given this, along with the data problems and the relatively small samples involved, these results suggest only a mild weakening of the conclusions suggested by

[15]There are three drug arrest variables available in the World Crime Survey data set: total recorded illicit drug traffic crimes (TRFPOL), total recorded drug possession crimes (POSPOL), and total recorded drug offenses (DRGPOL). I focus on the first and third because they are more likely to reflect government efforts to disrupt drug markets than arrests for possession. The number of observations for which these data are available is smaller than the number for which seizure data are available: for trafficking 34, for possession 31, and for all offenses 44. All three measures are missing for the United States, and the trafficking and possession measures are missing for Colombia. It is not possible to determine whether the data are for all levels of government, for just the central government, or for just the non-central government. In 14 cases, the sum of possession plus trafficking does not equal the figure given for total drug offenses.

those based on the seizure measure of enforcement.[16]

The empirical results are therefore consistent with the overall hypotheses of the paper. The measure of drug prohibition enforcement highlighted here, per capita seizures of drugs, enters positively and statistically significantly in a substantial fraction of the regressions. Likewise, the measure of gun prohibition enters positively and usually significantly in the regressiosn without controls. The fact that the results are substantially weakened, although certainly not overturned, by omission of Colombia is noteworthy but not a reason to dismiss the results. Given the extreme murder rate in Colombia, an explanation for the differences in violence across countries should account for this observation. And the fact that Colombia seizes large quantities of several different drugs, while appearing to have relatively strict gun control laws, illustrates precisely the key hypotheses of the paper.

Although the results are subject to several caveats, discussed further below, they are consistent with other evidence that suggests an important role for drug prohibition in increasing violence. Goldstein et al. (1989), using police reports and police evaluations, examine the causes of all homicides in a sample of New York City precincts during part of the year 1988. They determine that more than half of the homicides were due to drug-related factors, but of these almost three quarters were due to "systemic" factors, meaning disputes over drug territory, drug debts, and other drug-trade related issues. Thus, approximately 39 percent of the homicides resulted from the inability of drug market participants to settle disputes using the official dispute resolution system; only 7.5 percent resulted from the psychopharmacological effects of drugs or alcohol.

Brumm and Cloninger (1995) compare homicide offense rates, homicide arrest rates, and drug prohibition arrest rates across cities. They find that drug prohibition arrest rates are negatively associated with homicide arrest rates, and that homicide arrest rates are negatively associated with homicide offense rates, implying that higher drug prohibition arrest rates are associated with higher homicide offense rates. They interpret these results as suggesting that increased enforcement of drug prohibition takes resources away from deterrence of other criminal activity, such as homicide.

Rasmussen, Benson, and Sollars (1993) find that a higher drug arrest rate is positively associated with the violent crime rate in a cross-section of

[16] As a final robustness check, I dropped the former Soviet bloc countries from the sample and re-estimated both the basic results in Tables 6 and 7 and regressions that add GNP per capita. These results are consistent with those reported above.

Florida jurisdictions in 1989. They also find that a higher drug arrest rate implies a higher violent crime rate in neighboring jurisdictions, presumably because increased drug enforcement in one jurisdiction disrupts the market equilibrium in neighboring jurisdictions.

Miron (1999) documents that increases in enforcement of drug and alcohol prohibition over the past 100 years have been associated with increases in the homicide rate, and auxilliary evidence suggests that this positive correlation reflects a causal effect of prohibition enforcement on homicide. Controlling for other potential determinants of the homicide rate – the age composition of the population, the incarceration rate, economic conditions, gun availability, and the death penalty – does not alter the conclusion that drug and alcohol prohibition have substantially raised the homicide rate in the United States over much of the past century.

Finally, Fajnzylber, Lederman, and Loayza (1998) regress crime statistics measures of homicide rates for the period 1970-1994 on a broad range of variables, including GNP per capita, Gini indices, average years of schooling, urbanization rates, deterence measures (e.g., the death penalty), religious composition, and region dummies, plus a dummy for whether a country produces drugs and the drug possession arrest rate. Across a broad range of specifications, they find that being a drug producing country or having a high drug possession arrest rate is positively associated with a higher homicide rate. They also consider panel regressions of five-year average homicide rates and again obtain a consistently positive relation between the drug production or arrest variables and homicide rates. Fajnzylber, Lederman, and Loayza (1999) obtain a similar result for the drug producer dummy using vital statistics data on homicide rates.

4 Discussion

The empirical results presented above provide a possible explanation for the large differences in violence rates across countries, and they suggest that previous analyses might have spuriously attributed these differences to gun control or availability. According to the analysis here, differences in drug prohibition enforcement explain differences in violence, which in turn explain differences in gun ownership that correlate positively with violence but do not cause that violence. Further, the results provide a hint that restrictive gun control regimes can themselves increase violence.

These results must be interpreted with caution. Beyond the data weak-

nesses highlighted above, there are several issues that arise in evaluating the results.

The empirical approach employed here can be interpreted as indicating the *effect* of drug prohibition or gun control on homicide rates only if these two variables are exogenous. In both cases there are reasons to question this assumption, although there are likely several factors contributing to differences in drug prohibition enforcement and gun control regimes other than the homicide rates themselves. For example, the strong degree of drug prohibition enforcement in Latin America results in part from U.S. attempts to address its own drug or crime problems, not just from events in Latin America. Thus, although not strictly exogenous, the differences in drug prohibition enforcement and gun control are plausibly predetermined relative to homicide rates over the time horizons considered here, in which case a causal interpretation of the results might be approximately correct.

Another maintained assumption is that differences in drug use rates across countries are not an important factor explaining these results. If drug use rates differ substantially, then the amount of seizures is likely to differ even if enforcement does not. And if drug use independently causes violence, there will be a positive correlation between violence and drug seizure rates even without an effect of enforcement on violence. There is no convincing evidence that drug use has an independent effect in precipitating violence (Duke and Gross 1993), and the limited evidence discussed above fails to suggest that drug use causes violence. But existing data on drug consumption across countries are too crude to test this hypothesis convincingly, so this issue deserves consideration in future work.[17]

A significant factor that is omitted from the empirical work above is differences across countries in the amount of drug treatment and drug maintenance. The provision of treatment for drug abuse potentially reduces the demand for drugs and therefore the magnitude of black markets, and government provision of heroin or other opiates (e.g., methadone) also implies a smaller black market. Thus, omission of this factor means the seizure rate might be a noisy or biased measure of the enforcement regime. In practice, inclusion of information on treatment or maintenance might strengthen the results, since several European countries with high seizure rates (e.g., the Netherlands) also have generous treatment or maintenance provisions,

[17] Differences in drug use rates also imply different size black markets and therefore differences in the amount of violence because of a greater number of black market transactions. This factor by itself implies a negative correlation between the degree of enforcement and the level of violence.

suggesting their drug seizure rates overstate the degree of prohibition enforcement.

Future research on the issues raised in this paper will almost certainly need to exploit time-series rather than cross-sectional data. For a number of countries, long time-series on vital statistics homicide rates are available, and examination of historical records can probably identify differences in drug prohibition and gun prohibition enforcement more accurately than appears possible in the cross-section. This approach can also address several of the caveats discussed above.

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Table 1: Homicide Rates by Country

	1990	1991	1992	1993	1994	1995	1996	90-96	93-96
United States	9.80	10.40	9.80	9.90	9.40	8.60		9.65	9.30
Austria	1.60	1.30	1.50	1.30	1.20	1.00		1.32	1.17
Canada	2.00	2.20	2.10	1.80	1.70	1.70		1.92	1.73
Denmark				1.21				1.21	1.21
Finland	3.20	3.10	3.40	3.30	3.20	2.90		3.18	3.13
France	1.10	1.10	1.00	1.10	1.10			1.08	1.10
Germany	1.00	1.10	1.20	1.20	1.20	1.10	1.10	1.13	1.15
Greece	1.10	1.40	1.20	1.30	1.10	1.30	1.60	1.29	1.33
Iceland	0.40	1.90	1.10	0.40	0.00	0.00		0.63	0.13
Ireland	0.60	0.60	0.80	0.60		0.70		0.66	0.65
Italy	2.60	2.90	2.20	1.70				2.35	1.70
Luxembourg	2.90	2.30	2.10	0.30	1.20	0.70	1.00	1.50	0.80
Malta	1.10	0.30	1.70	1.60	0.80			1.10	1.20
Netherlands	0.90	1.20	1.30	1.30	1.10	1.20		1.17	1.20
Norway	1.20	1.50	1.10	1.00	0.80	1.00		1.10	0.93
Portugal	1.70	1.60	1.50	1.50	1.50	1.70	1.30	1.54	1.50
Spain	1.00	0.90	0.90	1.00	0.90	0.90		0.93	0.93
Sweden	1.30	1.40	1.30	1.30	1.20	1.00	1.20	1.24	1.18
Switzerland					1.32			1.32	1.32
United Kingdom	0.70	0.70	0.90		1.00			0.83	1.00
Australia	2.20	2.00	1.70	1.80	1.80	1.60		1.85	1.73
New Zealand	2.30	1.90	2.40	1.50	2.00			2.02	1.75
Hong Kong				1.23				1.23	1.23
Japan	0.60	0.60	0.60	0.60	0.60			0.60	0.60
Korea	1.50	1.40	1.30	1.60	1.60			1.48	1.60
Singapore	1.50	1.80	1.50	1.90	1.50	1.80	1.00	1.57	1.55
Bahamas				13.00	20.40	15.10		16.17	16.17
Barbados	13.20	8.10	8.40	8.00	7.60	6.40		8.62	7.33
Costa Rica	4.80	4.50	5.50	5.50	5.60			5.18	5.55
Cuba			6.20	7.40	8.30	7.80		7.43	7.83
Mexico	17.50	17.20	18.50	17.60	17.00	17.20		17.50	17.27
Nicaragua	4.60	5.70	5.60	5.10	5.50			5.30	5.30
Trinidad and Tobago	6.30	7.80	10.00	9.80	11.70			9.12	10.75

Table 1: Homicide Rates by Country, continued

	1990	1991	1992	1993	1994	1995	1996	90-96	93-96
Argentina	5.00	4.30	4.60	4.40				4.58	4.40
Chile	3.10	3.40	3.00	2.60	2.90			3.00	2.75
Colombia	74.40	89.60	89.90	87.00	80.00			84.18	83.50
Ecuador	10.30	11.40	12.20	13.10	11.40	13.40		11.97	12.63
Guyana				4.10	5.10			4.60	4.60
Paraguay					9.80			9.80	9.80
Venezuala			13.20	14.80	15.80			14.60	15.30
Azerbaijan	5.90	4.90	51.60	41.20	62.20	8.90	7.10	25.97	29.85
Belarus	6.90		8.70	10.40				8.67	10.40
Bulgaria	3.20	4.00	4.70	4.90	5.10			4.38	5.00
Croatia	2.80	3.80	5.10	4.80	3.30			3.96	4.05
Czech Republic			1.90	2.10				2.00	2.10
Estonia	11.00	10.80	19.60	25.80	28.20	22.20	19.90	19.64	24.03
Hungary	3.10	4.00	4.00	4.10	3.50	3.50		3.70	3.70
Kazakhstan	11.80	12.20	14.50	17.70	17.80	19.40	18.80	16.03	18.43
Kyrgistan	13.90	8.90	11.40	12.70	13.70	12.10	10.90	11.94	12.35
Latvia	9.20	11.50	16.00	24.70	23.00	18.20		17.10	21.97
Lithuania	7.50	9.10	10.50	12.50	13.40	11.70	9.30	10.57	11.73
Moldova	9.10	8.90	13.80	12.60	14.40	16.50		12.55	14.50
Poland	2.90	2.90	2.90	2.70	3.00	2.80	2.60	2.83	2.78
Romania	5.30	4.50	4.90	4.30	4.40	4.10	3.80	4.47	4.15
Russia	14.30	15.30	22.90	30.40	32.40	30.60	26.50	24.63	29.98
Slovakia				2.40				2.40	2.40
Slovenia	2.10	2.50	2.40	1.40	2.00	2.40	2.10	2.13	1.98
Turkmenistan	6.70	5.20	4.90	5.00	4.00			5.16	4.50
Ukraine	8.00	8.70	11.30				15.00	10.75	15.00
Uzbekistan	6.10	5.50	5.20	4.30				5.28	4.30
China	2.00	1.80	1.30	1.20	1.10	1.20	1.00	1.37	1.13
Israel	1.70	1.20	1.10	2.30	2.20	1.40	1.00	1.56	1.73
Kuwait				1.50	1.70			1.60	1.60
Macau	3.00	4.80	1.90	2.60	3.80			3.22	3.20
Mauritius	2.20	3.20	3.00	2.40	1.90	1.40	2.70	2.40	2.10
Philippines			0.80	11.50				6.15	11.50

Table 2: Drug Seizures in 66 Countries, 1994-1996

	kilos	liters	units
Cannabis Liquid	3,894.9	402.5	1,021.0
Cannabis Herb	5,489,211.4	0.0	30,033.0
Cannabis Plants	3,374,319.3	0.0	52,839,949.8
Cannabis Resin	1,515,705.2	0.0	4,113.0
Cannabis Seeds	371,386.0	0.0	240,092.0
Coca Bush	0.0	0.0	8,002.0
Coca Leaf	1,742,433.7	0.0	973.0
Cocaine Base and Salts	770,668.8	2,652.0	35,324.0
Heroin	40,304.6	0.1	15,700.0
Morphine	961.0	3.5	8,030.0
Other Opiates	4,198.3	73.5	132,667.0
Opium Liquid	207.6	292.5	22,001.0
Opium, Raw and Prepared	16,726.5	0.0	702.0
Opium, Plants and Capsules	377,004.3	0.0	77,219,208.0
Opium, Poppy Seeds	39,720.0	0.0	60,736.0
Synthetic Narcotics	1,034.6	3.3	723,336.2
Depressants	204.3	0.0	29,437,815.0
Hallucinogens	10,307.0	0.0	7,688,359.8
LSD	1.6	0.0	7,768,747.8
Methaqualone	7,000.2	0.0	381,729.0
Simulants	22,007.2	2.1	193,225,230.0
Khat	17,068.9	0.0	1,973.0

Table 3: Drug Seizures Per Capita, 1994-1996

	kilos	kilos	kilos	kilos	kilos	kilos	units	units	units
Country	Cannabis Herb	Cocaine Base	Heroin	Cannabis	Coca	Opiates	Pills	Cannabis Plants	Opium Plants
United States	3.58	1.37	0.02	4.99	1.37	0.02	836.75	0.00	0.00
Austria	0.12	0.02	0.03	0.20	0.02	0.18	8.81	0.00	0.00
Canada	14.23	0.51	0.01	17.72	0.51	0.01	4.29	9.26	0.00
Denmark	2.04	0.03	0.02	5.64	0.03	0.03	5.41	0.00	0.00
Finland	0.00	0.00	0.00	0.06	0.00	0.00	25.19	0.86	0.00
France	0.63	0.13	0.03	2.87	0.13	0.03	18.86	1.04	0.00
Germany	0.47	0.05	0.04	0.60	0.05	0.04	18.40	1.23	0.00
Greece	0.38	0.03	0.06	1.03	0.03	0.06	6.29	23.77	0.28
Iceland	0.30	0.00	0.00	0.30	0.00	0.00	8.32	1.24	0.00
Ireland	0.04	0.18	0.01	5.30	0.18	0.01	54.24	0.15	0.00
Italy	0.12	0.20	0.06	0.80	0.20	0.06	9.58	28.12	0.57
Luxembourg	0.76	0.07	0.04	0.88	0.07	0.04	4.42	0.00	0.00
Malta	19.47	0.00	0.01	19.49	0.00	0.01	8.13	1.93	0.00
Netherlands	35.43	1.37	0.06	44.14	1.37	0.06	20.49	0.00	0.00
Norway	4.48	0.01	0.03	4.85	0.01	0.10	36.00	0.00	0.00
Portugal	0.02	0.47	0.02	5.27	0.47	0.02	0.85	0.19	0.02
Spain	0.34	0.63	0.05	17.72	0.63	2.40	42.98	0.00	0.00
Sweden	0.03	0.01	0.01	0.16	0.01	0.02	0.50	0.00	0.00
Switzerland	0.55	0.12	0.12	0.79	0.12	0.12	24.42	6.29	0.00
United Kingdom	1.09	0.08	0.06	3.94	0.08	0.06	51.79	4.57	0.00
Australia	0.17	0.05	0.02	0.72	0.05	0.02	5.63	31.61	0.07
New Zealand	0.58	0.00	0.00	1.30	0.00	0.00	7.68	82.16	2.15
Hong Kong	2.13	0.00	0.19	2.15	0.00	0.23	54.03	0.00	0.00
Japan	0.01	0.00	0.00	0.01	0.00	0.00	50.22	0.04	0.16
Korea	0.01	0.00	0.00	0.01	0.00	0.00	2.88	1.34	7.86
Singapore	0.05	0.00	0.08	0.06	0.00	0.12	20.35	0.00	0.00
Bahamas	5.11	1.77	0.00	5.22	1.77	0.00	489.22	0.00	0.00
Barbados	12.93	2.02	0.00	16.69	2.02	0.00	0.00	0.00	0.00
Costa Rica	0.17	1.34	0.01	0.17	1.34	0.01	0.00	218.60	0.00
Cuba	9.97	8.85	0.00	10.05	8.85	0.00	0.00	3.65	0.00
Mexico	25.69	0.76	0.01	26.02	0.76	0.07	12.25	1.63	1.43
Nicaragua	0.38	0.71	0.00	12.17	0.71	0.00	0.00	21.87	0.00
Trinidad and Tobago	14.81	0.45	0.00	14.81	0.45	0.00	0.00	1,462.30	0.00

Table 3: Drug Seizures Per Capita, 1994-1996, continued

	kilos	kilos	kilos	kilos	kilos	kilos	units	units	units
Country	Cannabis Herb	Cocaine Base	Heroin	Cannabis	Coca	Opiates	Pills	Cannabis Plants	Opium Plants
Argentina	0.48	0.23	0.00	0.48	5.14	0.00	2.32	0.07	0.01
Chile	0.45	0.50	0.00	0.45	0.51	0.00	16.07	14.71	0.00
Colombia	18.60	4.97	0.01	18.97	49.74	0.07	0.00	8.21	2,170.99
Ecuador	1.25	1.36	0.01	1.25	1.36	0.01	0.00	0.03	0.00
Guyuana	1.45	0.17	0.00	76.36	0.17	0.00	0.00	0.00	0.00
Paraguay	31.82	0.08	0.00	623.51	0.08	0.00	0.00	0.00	0.00
Venezuala	1.23	0.86	0.01	1.23	0.86	0.01	0.00	0.00	0.00
Azerbaijan	0.04	0.00	0.00	34.10	0.00	22.78	0.00	0.00	0.00
Belarus	0.02	0.00	0.00	0.02	0.00	0.43	0.00	0.00	0.00
Bulgaria	0.72	0.00	0.10	7.74	0.00	0.11	0.00	0.34	0.00
Croatia	0.03	0.00	0.01	0.03	0.00	0.02	1.83	3.23	0.31
Czech Rep	0.00	0.01	0.01	1.20	0.01	0.01	0.10	0.00	0.00
Estonia	0.00	0.00	0.00	0.00	0.00	0.09	1.47	0.00	0.00
Hungary	0.02	0.00	0.17	0.15	0.00	0.17	1.22	0.08	0.00
Kazaskhstan	0.64	0.00	0.00	8.58	0.00	0.23	0.00	0.00	0.00
Kyrgystan	0.12	0.00	0.00	0.26	0.00	0.50	0.53	0.00	0.00
Latvia	0.32	0.00	0.00	0.32	0.00	0.10	1.76	0.00	171.70
Lithuania	0.01	0.00	0.00	0.01	0.00	0.98	0.02	0.00	0.00
Moldova	0.27	0.00	0.13	0.27	0.00	1.72	0.00	0.00	0.00
Poland	0.13	0.02	0.00	0.62	0.02	0.35	0.00	0.41	0.00
Romania	0.13	0.03	0.02	0.36	0.03	0.02	0.50	0.00	0.00
Russia	0.40	0.00	0.00	0.41	0.00	0.47	0.00	0.00	0.00
Slovakia	0.01	0.00	0.03	0.02	0.00	0.03	0.00	0.00	0.00
Slovenia	0.06	0.00	0.03	0.07	0.00	0.03	14.84	7.01	0.01
Turkmenistan	0.00	0.00	0.00	0.22	0.00	0.15	0.00	0.00	0.00
Ukraine	0.09	0.00	0.00	0.13	0.00	0.02	0.00	0.03	0.72
Uzebekistan	0.11	0.00	0.00	0.15	0.00	0.22	0.01	0.00	0.00
China	0.00	0.00	0.01	0.00	0.00	0.05	0.31	0.00	0.00
Israel	0.83	0.02	0.05	1.43	0.02	0.05	19.94	0.00	0.00
Kuwait	0.07	0.00	0.03	0.52	0.00	0.11	22.61	0.00	0.50
Macau	0.06	0.00	0.00	0.07	0.00	0.00	113.79	0.00	0.00
Mauritius	0.01	0.00	0.01	0.01	0.00	0.01	6.71	68.17	0.00
Philippines	0.21	0.00	0.00	0.23	0.00	0.00	0.02	652.53	0.00

Table 4: Sample of Questions From UN International Study on Firearm Regulation

1a	Are there regulations which prohibit the ownership of long guns?	0, 1, 2
1b	Are there regulations which prohibit the ownership of handguns?	0, 1, 2
2a2	Are there regulations which restrict the ownership of long guns?	0, 1, 2
2b2	Are there regulations which restrict the ownership of handguns?	0, 1, 2
3a2	Are there regulations which prohibit the importing of long guns?	0, 1, 2
3a3	Are there regulations which prohibit the importing of handguns?	0, 1, 2
3b2	Are there regulations which prohibit the exporting of long guns?	0, 1, 2
3b3	Are there regulations which prohibit the exporting of handguns?	0, 1, 2
3c2	Are there regulations which restrict the movement of long guns?	0, 1, 2
3c3	Are there regulations which restrict the movement of handguns?	0, 1, 2
4a2	Are there regulations which restrict the importing of long guns?	0, 1, 2
4a3	Are there regulations which restrict the importing of handguns?	0, 1, 2
4b2	Are there regulations which restrict the exporting of long guns?	0, 1, 2
4b3	Are there regulations which restrict the exporting of handguns?	0, 1, 2
5a2	Are there regulations which prohibit or restrict the manufacture or assembly of long guns, long gun components, or long gun ammunition?	0, 1, 2
5b2	Are there regulations which prohibit or restrict the manufacture or assembly of handguns, handgun components, or handgun ammunition?	0, 1, 2
17a	Are any civilians permitted to own a handgun for hunting of game for sport or food?	0, 1
17b	Are any civilians permitted to own a handgun for target shooting?	0, 1
17c	Are any civilians permitted to own a handgun for collection?	0, 1
17d	Are any civilians permitted to own a handgun for protection of person or property?	0, 1
17e	Are any civilians permitted to own a handgun for private security?	0, 1
18	To become a firearm owner, are there requirements that a license or permit, or some other form of certification such as proof of handling or safety training be obtained?	0, 1, 2
20a1	Are there prohibitions or restrictions on firearm ownership based on citizenship	0, 1
20b1	Are there prohibitions or restrictions on firearm ownership based on age	0, 1
20c1	Are there prohibitions or restrictions on firearm ownership based on criminal record	0, 1
20d1	Are there prohibitions or restrictions on firearm ownership based on mental illness	0, 1
20e1	Are there prohibitions or restrictions on firearm ownership based on domestic violence	0, 1
20f1	Are there prohibitions or restrictions on firearm ownership based on other factors	0, 1
21	Are records maintained that permit identification of civilian firearms owners?	0, 1
26a	Is usage of firearms for hunting of game for sport or food is permitted?	0, 1
26b	Is usage of firearms for target shooting permitted?	0, 1
26c	Is usage of firearms for collection permitted?	0, 1
26d	Is usage of firearms for protection of person or property permitted?	0, 1
26e	Is usage of firearms for private security permitted?	0, 1
27	Are there circumstances whereby a firearm owner can allow others to possess/use their firearm?	0, 1
29	Are there any regulations as to where and how legally owned firearms must be stored?	0, 1
31	Do regulations exist concerning the circumstances under which firearms must be unloaded or regarding storage of ammunition?	0, 1
33	Do regulations exist regarding the transport or movement of legally owned firearms?	0, 1
35	Are there any regulations regarding circumstances that permit a firearm to be legally carried by its owner for the purposes of self-protection?	0, 1
37	Are records maintained which permit the identification of firearms owned?	0, 1

Table 5: Gun Prohibitions Across Countries

Country	own long	own hand	import long	import hand	export long	export hand	1-2	1-6
United States	1	1	1	1	1	1	2	6
Austria	1	1	1	1	0	0	2	4
Canada	1	1	1	1	1	1	2	6
Denmark	0	0	0	0	0	0	0	0
Finland	0	0	0	0	0	0	0	0
France	0	0	1	1	1	1	0	4
Germany	0	0	0	0	0	0	0	0
Greece					2			
Iceland								
Ireland								
Italy								
Luxembourg	2	2	2	2	2	2	4	12
Malta	1	1	1	1	0	0	2	4
Netherlands								
Norway	1	0	1	0	0	0	1	2
Portugal								
Spain	1	1	0	0	1	1	2	4
Sweden	0	0	0	0			0	
Switzerland	0	0	1	1	0	0	0	2
United Kingdom	1	1	1	1	1	1	2	6
Australia	1	1	1	1	1	1	2	6
New Zealand	0	0	0	0	0	0	0	0
Hong Kong								
Japan	1	2	1	2	1	2	3	9
Korea	0	0	0	0	0	0	0	0
Singapore	1	1	1	1	1	1	2	6
Bahamas								
Barbados								
Costa Rica	1	1	1	1	1	1	2	6
Cuba	2	0	1	1	2	2	2	8
Mexico	1	1	1	1	1	1	2	6
Nicaragua								
Trinidad and Tobago	1	1	2	2	2	2	2	10

Table 5: Gun Prohibitions Across Countries

	own long	own hand	import long	import hand	export long	export hand	1-2	1-6
Argentina	2	1	2	0	0	0	3	5
Chile	1	1	1	1		1	2	
Colombia	1	1	2	2	2	2	2	10
Ecuador	2	1	2	1	2	2	3	10
Guyuana	1	1	2	2	0	0	2	6
Paraguay								
Venezuala	0	0	1	1	2	2	0	6
Azerbaijan	2	2	0	0	0	0	4	4
Belarus	1	2	1	1	1	1	3	7
Bulgaria								
Croatia	1	1	0	0	0	0	2	2
Czech Rep	1	1	0	0	0	0	2	2
Estonia	1	1	1	1	1	1	2	6
Hungary	1	1	1	1	1	1	2	6
Kazaskhstan								
Kyrgystan								
Latvia								
Lithuania								
Moldova	1	1	1	1	1	1	2	6
Poland	1	0	0	0	0	0	1	1
Romania	0	0	0	0	0	0	0	0
Russia	1	2	1	2	0	0	3	6
Slovakia	1	1	1	1	1	1	2	6
Slovenia	1	1	1	1	1	1	2	6
Turkmenistan								
Ukraine	0	2	0	2	0	2	2	6
Uzebekistan								
China	0	2	1	1	1	1	2	6
Israel								
Kuwait								
Macau								
Mauritius								
Philippines	1	1	1	1	1	1	2	6

Table 6: Cross-Country Regressions of Homicide Rate on Drug Seizures

Cannabis Herb	0.36								
	(1.05)								
Cocaine		3.62							
		(1.04)							
Heroin			-59.14						
			(2.52)						
Cannabis				0.01					
				(1.72)					
Coc					1.51				
					(21.6)				
Opiates						1.02			
						(12.1)			
Pills							0.00		
							(0.44)		
Cannabis Plants								0.00	
								(1.63)	
Opium Plants									0.04
									(57.8)
$\overline{R}^2$	0.04	0.14	0.02	-0.01	0.62	0.04	-0.02	-0.01	0.65

White (1980) t-statistics in parentheses; N=66.

Table 7: Cross-Country Regressions of Homicide Rate on Drug Seizures and All-Gun Prohibition

Cannabis Herb		0.83								
		(1.17)								
Cocaine			3.61							
			(0.94)							
Heroin				-52.65						
				(1.56)						
Cannabis					0.17					
					(0.83)					
Coc						1.49				
						(17.8)				
Opiates							0.74			
							(3.42)			
Pills								-0.00		
								(0.56)		
Cannabis Plants									0.00	
									(0.66)	
Opium Plants										0.04
										(56.1)
All-Gun Prohib.	3.07	2.66	2.65	2.90	2.66	2.32	2.28	3.08	3.05	2.64
	(2.37)	(2.05)	(2.09)	(2.34)	(2.28)	(1.77)	(1.81)	(2.34)	(2.30)	(2.09)
$\overline{R}^2$	0.04	0.15	0.18	0.03	0.04	0.70	0.04	0.01	0.01	0.73

White (1980) t-statistics in parentheses; N=44.

Table 8: Cross-Country Regressions of Homicide Rate on Drug Seizures and Hand-Gun Prohibition

Cannabis Herb		0.87								
		(1.24)								
Cocaine			4.22							
			(1.14)							
Heroin				-52.2						
				(1.56)						
Cannabis					0.19					
					(0.89)					
Coc						1.51				
						(27.3)				
Opiates							0.78			
							(4.14)			
Pills								-0.00		
								(0.52)		
Cannabis Plants									0.00	
									(0.78)	
Opium Plants										0.04
										(58.4)
Hand-Gun Prohib.	4.84	4.93	6.37	4.54	4.41	4.85	3.73	4.85	4.82	4.31
	(2.26)	(2.27)	(2.52)	(2.18)	(2.24)	(2.30)	(1.80)	(2.23)	(2.21)	(2.05)
$\overline{R}^2$	0.03	0.16	0.23	0.03	0.04	0.72	0.04	0.01	0.01	0.73

1. White (1980) t-statistics in parentheses; number of observations is 44.

Table 9: Cross-Country Regressions of Homicide Rate on Drug Seizures and Control Variables

Cannabis Herb	0.41								
	(1.18)								
Cocaine		13.6							
		(4.69)							
Heroin			-25.7						
			(0.91)						
Cannabis				-0.00					
				(0.25)					
Coc					1.55				
					(27.4)				
Opiates						-1.42			
						(0.49)			
Pills							0.03		
							(2.03)		
Cannabis Plants								-0.00	
								(0.26)	
Opium Plants									0.04
									(30.0)
GNP per capita	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
	(1.66)	(2.02)	(1.55)	(1.51)	(1.55)	(1.54)	(1.95)	(1.53)	(1.60)
% male 15-24	0.03	-0.12	0.08	0.10	-0.02	0.10	0.05	0.11	0.00
	(0.16)	(0.71)	(0.38)	(0.53)	(0.13)	(0.51)	(0.27)	(0.55)	(0.03)
Percent Urban	0.22	0.08	0.26	0.26	0.07	0.26	0.30	0.26	0.11
	(1.49)	(1.04)	(1.45)	(1.47)	(0.90)	(1.45)	(1.60)	(1.45)	(1.43)
Pop Density	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
	(1.34)	(0.06)	(1.12)	(1.29)	(1.15)	(1.29)	(1.21)	(1.23)	(1.34)
Schooling	-1.17	0.38	-1.30	-1.33	0.08	-1.34	-1.70	-1.32	0.01
	(0.91)	(0.69)	(0.88)	(0.86)	(0.18)	(0.89)	(1.06)	(0.88)	(0.03)
Death Penalty	1.89	4.13	-0.16	0.25	3.60	0.28	-1.89	0.52	3.04
	(0.44)	(1.20)	(0.03)	(0.05)	(1.09)	(0.06)	(0.35)	(0.10)	(0.91)
$\overline{R}^2$	0.12	0.73	0.05	0.04	0.85	0.04	0.09	0.04	0.85

White (1980) t-statistics in parentheses; number of observations is 43.

Table 10: Cross-Country Regressions of Homicide Rate on Drug Seizures, All-Gun Control and Control Variables

Cannabis Herb		1.33								
		(1.54)								
Cocaine			15.29							
			(7.39)							
Heroin				-26.3						
				(0.66)						
Cannabis					0.94					
					(1.34)					
Coc						1.53				
						(20.0)				
Opiates							-3.63			
							(0.96)			
Pills								0.03		
								(1.87)		
Cannabis Plants									-0.00	
									(0.53)	
Opium Plants										0.03
										(21.0)
All-Gun Prohib.	1.57	0.81	-0.26	1.65	0.62	0.51	1.85	1.01	1.52	1.05
	(0.96)	(0.63)	(0.26)	(0.95)	(0.51)	(0.36)	(1.01)	(0.57)	(0.92)	(0.82)
GNP per capita	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
	(1.14)	(1.85)	(2.27)	(1.12)	(1.68)	(1.14)	(1.12)	(1.78)	(1.15)	(1.16)
% male 15-24	-0.04	-0.48	-0.33	-0.07	-0.36	-0.07	-0.07	-0.16	-0.03	-0.05
	(0.16)	(1.33)	(1.37)	(0.25)	(1.07)	(0.29)	(0.25)	(0.64)	(0.14)	(0.19)
Percent Urban	0.29	0.19	0.15	0.27	0.20	0.10	0.29	0.33	0.29	0.13
	(1.28)	(1.38)	(1.15)	(1.21)	(1.32)	(0.78)	(1.24)	(1.36)	(1.22)	(1.13)
Pop Density	-0.00	-0.00	0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
	(1.28)	(1.13)	(0.15)	(1.10)	(1.14)	(0.96)	(1.25)	(1.10)	(1.17)	(1.15)
Schooling	-2.61	-2.46	0.38	-2.61	-2.38	-0.08	-2.75	-3.22	-2.69	-0.14
	(1.01)	(1.22)	(0.44)	(1.00)	(1.11)	(0.11)	(1.01)	(1.14)	(0.98)	(0.17)
Death Penalty	0.45	3.43	4.47	-0.30	3.76	3.85	0.19	-2.49	1.28	3.04
	(0.08)	(0.62)	(1.08)	(0.05)	(0.74)	(0.99)	(0.03)	(0.38)	(0.19)	(0.80)
$\overline{R}^2$	0.03	0.28	0.80	-0.01	0.16	0.84	0.00	0.06	-0.01	0.85

White (1980) t-statistics in parentheses; N=32.

Table 11: Cross-Country Regressions of Homicide Rate on Drug Seizures, Hand-Gun Prohibition and Control Variables

Cannabis Herb		1.32								
		(1.53)								
Cocaine			15.1							
			(7.22)							
Heroin				-28.3						
				(0.67)						
Cannabis					0.92					
					(1.33)					
Coc						1.53				
						(19.5)				
Opiates							-3.93			
							(1.03)			
Pills								0.03		
								(1.92)		
Cannabis Plants									-0.00	
									(0.42)	
Opium Plants										0.03
										(21.2)
Hand-Gun Pro.	3.90	2.19	1.18	4.06	1.80	1.52	4.46	3.62	3.72	2.05
	(1.18)	(0.86)	(0.56)	(1.17)	(0.72)	(0.58)	(1.22)	(1.06)	(1.17)	(0.81)
GNP per capita	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
	(1.19)	(1.90)	(2.42)	(1.17)	(1.72)	(1.18)	(1.17)	(1.87)	(1.19)	(1.20)
% male 15-24	-0.03	-0.47	-0.34	-0.06	-0.35	-0.07	-0.06	-0.17	-0.03	-0.04
	(0.13)	(1.34)	(1.54)	(0.23)	(1.08)	(0.30)	(0.22)	(0.70)	(0.11)	(0.16)
Percent Urban	0.31	0.20	0.15	0.29	0.21	0.11	0.32	0.35	0.31	0.15
	(1.31)	(1.44)	(1.17)	(1.24)	(1.35)	(0.81)	(1.27)	(1.39)	(1.26)	(1.20)
Pop Density	-0.00	-0.00	0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
	(1.27)	(1.12)	(0.16)	(1.07)	(1.14)	(0.94)	(1.24)	(1.09)	(1.16)	(1.14)
Schooling	-2.55	-2.42	0.40	-2.55	-2.35	-0.06	-2.69	-3.15	-2.61	-0.12
	(1.01)	(1.21)	(0.47)	(0.99)	(1.10)	(0.08)	(1.01)	(1.15)	(0.97)	(0.16)
Death Penalty	-0.97	2.55	3.54	-1.83	2.99	3.21	-1.41	-4.16	-0.27	2.42
	(0.16)	(0.44)	(0.87)	(0.27)	(0.57)	(0.89)	(0.21)	(0.60)	(0.04)	(0.67)
$\overline{R}^2$	0.04	0.28	0.80	0.01	0.16	0.84	0.02	0.07	0.00	0.85

White (1980) t-statistics in parentheses; N=32.