

The Impact of Drug Policy Shift On Homicide: A Transnational
Study

By

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Chapter One

Introduction

The illicit drug market is one of the largest and most lucrative industries in the world. In 2008 alone, as many as 250 million people used illicit substances of some kind¹ and the value of the global cocaine market alone was approximately 88 billion dollars². In most countries, many of the psychotropic substances sold in the drug trade are strictly prohibited, and quite often a considerable financial and human resources are expended to reduce the size of national drug markets, as well as prosecute drug related offenses. These policies are based on the reasoning that drug trafficking is an inherently violent business and that illicit drug use is a powerful catalyst for violent and criminal behavior; logically, efforts to reduce the size of the illicit drug market should make access to illicit drugs more difficult, reducing violence and other criminal behavior.³ Such enforcement regimes, however morally appealing, are not always successful. The most disastrous case of the negative consequences of drug enforcement is perhaps the case of Mexico, where untold thousands have died as a result of the violence perpetrated by the powerful drug cartels as the government remains unable to contain the problem. Its North American neighbor has also seen mixed results from its enforcement policies; despite a consistent national policy of drug enforcement, and an expenditure of over 25 billion dollars a

¹ World Drug Report. United Nations Office on Drugs And Crime. *World Drug Report*. pp.12

² “World Drug Report” pp. 33

³ David Boyum, and Mark Kleinman. “Breaking the drug-crime link”. *The Public Interest*, Vol 152. (2003) pp. 22.

year for what president Nixon termed ‘the war on drugs,’ the United States is both the largest exporter of amphetamines in the world and the largest consumer of cocaine⁴.

Drug prohibition has long been a subject of intense debate amongst both policy makers and economists. The primary argument against drug prohibition is an economic one, stating that as long as demand for drugs exists, supply will continue, legally or illegally. If it is illegal, a black market economy for drugs can have numerous negative consequences, from detrimentally affecting public health, to an increase violence caused (in part) by extra-judicial retribution for crimes carried out by drug using victims who fear harsh sanctions, and therefore avoid involving law enforcement. If drugs are legalized or decriminalized, economic theory dictates that, while this shift in policy will eliminate many of the black market’s negative externalities, it will exacerbate others, resulting in negative externalities such as increase in drug use, child developmental issues, and so on. The issue at hand is whether an increase in violence is one of those externalities.

The apparent lack of success of prohibitionist policies and enormous financial drain on national economies has led several national governments to consider alternative national drug strategies such as decriminalization, which depenalizes the possession and consumption of illicit substances, but not their sale. The point of decriminalization is to reduce the potential for harm to those individuals who use illicit substances by implementing extensive drug rehabilitation programs and educating the public at large on the dangers of drug use.

Despite growing support for this theory, policy makers are generally skeptical of decriminalization policies, due to a lack of data on the possible effects of such a policy on society: If the logic behind traditional prohibitionist logic holds, then violence should escalate in

⁴ *Ibid*

a country where decriminalization occurs. There is no definite consensus among scholars and policymakers as to whether or not decriminalization policies are effective at reducing the harm caused to society by the illegal drug trade, and data is limited due to the limited number of cases with sufficient data. However, there are now a few cases of either partial or total decriminalization that have been in effect for five years or more that allow for closer study of the effects of drug policy on violence.

The question that this thesis will attempt to answer is: Does decriminalization have an impact on violence? The hypothesis that will be the subject of this thesis is that as drug policy shifts suddenly from a prohibition strategy to a decriminalization strategy, homicide rates tend to increase, both as a result of the policy change and the shift in enforcement strategy: Prosecution for drug related offenses will decrease, and the efforts of law enforcement will use the resources that have been freed up by decriminalization laws to focus on the supply side of the illicit drug market in order to eliminate the problem. As a result, less enforcement capacity is directed towards violent criminal activity that is not directly associated with the illicit drug trade, resulting in an increase in the homicide rate. In the case of a gradual shift to decriminalization, however, the opposite effect occurs: Law enforcement resources are also redistributed to deal with the supply end of the illicit drug market, but because the shift occurs gradually resources are redistributed over time, redistribution occurs more evenly. In this case, when a major event in the transition to decriminalization occurs, law enforcement resources will have already been redistributed to deal with both drug supply related offenses as well as other areas of criminal activity. As a result, the homicide rate decreases even as law enforcement continues to prosecute drug related offenses.

In order to assess the value of this hypothesis, I will evaluate the effect of decriminalization on violence by examining two actual cases of decriminalization. The first is Portugal, a country that made a sudden and radical shift from prohibition to widespread decriminalization. The second is Spain, a nation where the courts have established historic jurisprudence through a series of landmark decisions over the last several decades.

In the literature review section, this paper examines the economic theory associated with both drug prohibition and drug decriminalization strategies, focusing specifically on the possible negative externalities associated with both strategies. In addition to the theoretical implications of prohibition and decriminalization, empirical analyses of the effects of drug enforcement are examined in this section. Following the literature review, this paper presents a quantitative analysis of the effects of Portuguese and Spanish decriminalization on homicide rates, incorporating drug law offense rates into the analysis. Using a difference in differences model, this paper finds a positive correlation between Portugal decriminalization and an increase in homicide rates, as well a correlation between Spain's decriminalization and a decrease in homicide rates relative to four other European nations. These results suggest that, while the literature focuses extensively on the debate of prohibition vs. decriminalization, it is not solely the change to decriminalization that produces specific outcomes, but rather the way in which the change itself is implemented.

Literature Review

Any discussion of the connection between drugs and crime should begin with an overview of factors determining criminal behavior and strategies of deterrence. In the seminal 1968 study entitled "Crime and Punishment An Economic Approach," Gary Becker presents a theory explaining the nature of crime and criminal activity as economic variables. Becker argues

that the while many members of the public might view criminal sanctions as society's tool for ensuring justice and equality, the primary function of criminal punishment is in fact to discourage would-be offenders from committing criminal acts. These potential offenders must weigh the benefit of committing a crime against the possible cost of imprisonment or other penalties. The best way to reduce the overall incidence of criminal behavior is to increase the probability of arrest and prosecution; would-be offenders are therefore more likely to be deterred from committing a crime. According the Becker, this is the only direct way for public policy to influence crime rates given a set of economic and social conditions. In the case of the illicit psychoactive substance market, this means that lower user penalties would shift up the demand curve for drugs, causing would-be offenders to perceive the risk of getting caught by the authorities smaller, therefore making it more likely that drug-related offenses will occur.

Becker's theory has indirectly been called into question recently by Glen Greenwald from the Cato institute: In "Drug Decriminalization in Portugal: Lessons for Creating Fair and Successful Drug Policies" Greenwald hails the Portuguese decriminalization experiment as a resounding success, pointing to the steep decline in drug possession convictions, a decrease in the use of decriminalized psychotropic substances, and a decrease in HIV infections from Portugal's previously extremely high levels as proof of the policy's effectiveness in dramatically reducing the negative externalities associated with an illegal drug market⁵. However, there is one major aspect that Greenwald does not measure by any metric in his paper: violence, which is arguably a very important negative externality of the illicit drug trade.

Accepting Becker's framework, it is expected that decriminalization will lead to a positive effect on drug use, leading to a larger black market of illicit drugs and a subsequent

⁵ Glen Greenwald. *Drug Decriminalization in Portugal: Lessons for Creating Fair and Successful Drug Policies*. Cato Institute. 2009. pp 16.

increase in violence. In “The War We Are Losing” Milton Friedman adopts the opposite position. According to Friedman, the enforcement and deterrence model does not work to reduce violence associated with the illicit drug trade for the simple reason that the reach of law enforcement is not infinite; if more resources are put towards enforcing drug prohibition, fewer resources are dedicated to dealing with other types of crime. As a result, enforcement strategies actually correlate with an increase, rather than a decrease, in violent crimes such as homicide.⁶

Jeffrey Miron’s 2001 paper “Violence, Guns, and Drugs: A Cross-Country Analysis”, supports Friedman’s study. Miron studies the relationship between homicide rates and drug seizures, providing insight into the ways in which the prosecution of drug use has the potential to impact crime rates. One of the mechanisms he presents in his paper that in certain cases where there is an increase in the enforcement of drug prohibition, criminal justice resources are shifted away from other government policies that generally contribute to a reduction in violence.⁷ This might mean that police force is instructed to focus specifically on drug related criminal activity, and as a result, other forms of criminal activity are neglected. Miron provides the Peru and Columbia as examples of countries where significant law enforcement resources are allocated to dealing with the drug trade; resulting in a shortage of law enforcement resources to deal with violence caused by guerilla groups for reasons unrelated to the drug trade.⁸

In countries where drug users face harsh sentencing, drug prohibition and the possibility of facing user penalties can also increase violence by driving individuals who fear repercussions for drug use to resolve conflicts through extra-judicial means, rather than to seek justice from the

⁶ Milton Friedman. *The War We Are Losing. Searching for Alternatives: Drug Control Policy in the United States*. Melvyn B. Kraus and Edward P. Lazear eds. Stanford, CA: Hoover Institution Press. 1991. pp. 53-67.

⁷ Jeffrey A. Miron. “Violence, Guns, and Drugs: A Cross-Country Analysis.” *Journal of Law and Economics*, 44:2 (2001). pp 621.

⁸ *Ibid*

police and the courts. Miron cites one particular example of a drug user who is the victim of a robbery but is afraid to go to the police to report property crime: As a result, the victim decides to resolve the situation himself, possibly through violent means. Miron's empirical analysis supports this explanation, as he finds a strong positive correlation between an increase in drug seizures and an increase in homicide rates. However, Miron's empirical analysis focuses mostly on variables related to the supply of illicit substances SUCH AS, on which harsh sanctions for drug users would logically have little or no effect.

While a considerable portion of economic literature has addressed the negative effects of prohibition policies, decriminalization strategies are not free of their own problems with respect to negative externalities. "In Externalities and Decriminalization of Drugs", Paul Taubman addresses the potential negative externalities that could arise from drug decriminalization. A negative externality is defined as "any indirect effect that a production or consumption activity has on a utility function, a consumption set or a production set".⁹ In the case of decriminalization, an immediate effect would be that the price of illicit substances would drop, leading to a possible increase in demand, though the price elasticity of demand for illicit substances such as cocaine, crack-cocaine and heroine are difficult to project reliably due to the relatively limited number of users and the difficulty associated with obtaining reliable data. Making a general prediction as to whether a drop in price would lead to more drugs per users or more users is therefore not possible.¹⁰ However, it is possible that such a drop in price could lead to a drop in criminal activity, as some users would be able to pay for illicit substances through legal earnings, rather than engaging in criminal acts such as property crime to finance their drug use. Decriminalization may therefore reduce or eliminate crime committed for economic reasons,

⁹ Paul Taubman. "Externalities and Decriminalization of Drugs." Kraus and Lazear pp 94

¹⁰ Taubman 97

but could possibly increase it for psychopharmacological reasons, though the accuracy of such a prediction remains in question.¹¹

Decriminalization could also have dramatic effects on the health and safety of individuals: pregnant women who use illicit substances have an increased probability of giving birth prematurely, having infants with low birth weights, lower IQs and an increased risk for mental or physical abnormalities.¹² Such infants require special developmental care, which represents an enormous investment in capital, either for the parents or the state. In order to mitigate these effects in the event of a policy shift from prohibition to decriminalization, Taubman proposes a strategy whereby the government would decriminalize drug use, while simultaneously expanding educational programs on illicit drugs and their use. Interestingly, this is part of the approach that Portugal adopted when decriminalization entered into effect in 2001.

Though Taubman's analysis of the potential social and economic costs of decriminalization paints a dark picture of the possible ramifications of drug decriminalization, it is important to note that they are largely contingent upon two assumptions: The first is that the price of drugs will decrease, and the second is that this decrease will lead to an increase in use. It is quite possible that the price of drugs would increase under a decriminalization regime: User penalties are eliminated, but the seller remains at risk of prosecution. Since law enforcement resources are no longer aimed at prosecuting drug-use, they can be fully redirected towards supply related offenses, increasing the risk for the supplier further. Taubman's second assumption is also far from universally accepted, as it has already been established with Greenwald, and is treated with skepticism in Robert MacCoun's and Peter Reuter's examination

¹¹ Taubman 101

¹² Taubman 97

of the Italian decriminalization experience in *Drug War Heresies : Learning from Other Vices, Times, and Places*.

A number of countries have elected to implement some form of decriminalization, such as Spain and Italy. Portugal, however, is unique in the manner of implementation: Until 2001, Portugal enforced a strict policy of enforcement, with convicted drug users potentially facing a year of incarceration. However, a tremendous increase in intravenous drug use during the 1990s and a subsequent rise in the rate of HIV infections led the government to attempt a complete reversal in drug policy in 2001. The production and sale of illicit substances remains illegal, and is punishable by harsh prison sentences. In “What Can We Learn from the Portuguese Decriminalization of Illicit Drugs” Hughes and Stevens find that levels of drug use increased in the wake of decriminalization, however they estimate that revenue producing criminal activity related to the drug trade did not increase¹³. Unfortunately, like Greenwald they do not study whether the policy change had an effect on violence.

In 1975 Italy decriminalized all illicit substances in attempt to damage the mafia’s principle source of revenue, as it was one of the country’s primary distributors of heroin. All illicit substances were subsequently recriminalized in 1990, then depenalized in 1993. Italy’s strategy is similar to Portugal, focusing on education and harm reduction practices and increasing the availability of medical treatment. MacCoun and Reuter find that drug mortality rates increased during the first period of decriminalization, then decreased during the three year interval of recriminalization, and finally rose once again after 1993. These results could of course signify that drug related deaths were cause by an increase in drug use which was facilitated by

¹³ Caitlin Elizabeth Hughes, and Alex Stevens. “What Can We Learn From the Portuguese Decriminalization of Illicit Drugs.” *British Journal of Criminology*, Vol. 50, no. 6. 2010. pp 1006.

decriminalization, in spite of the increased availability of medical treatment and educational programs, however, the authors point out these results are far from conclusive : Drug mortality can be understood as a lagged indicator of drug prevalence, rendering the results questionable.¹⁴ Furthermore, rates of public treatment increased steadily between 1985 and 1995, with th largest increase occurring right after the 1990 recriminalization, which could be the result of an increase in drug use, but could also be a by-product of increased in enforcement, or possibly some combination of the two.¹⁵ The ambiguous nature of the results in this type of rare empirical study exemplifies the difficulty associated with making statements about prohibition or decriminalization that are grounded in fact, rather than theory.

A Brief Overview Of National Drug Strategies

In forming national drug policies, legislators generally adopt strategies guided either by legalization, or prohibition. These two approaches allow for different strategies focused on producing a range of different outcomes. In *Drug Wars and Coffeeshouses*, David Mares presents five analytic perspectives that are consistent with either legalization or prohibition. These five perspectives focus on different aspects of issues associated with the illicit drug markets. Civil rights, harm reduction, crime reduction, demand reduction, and supply reduction¹⁶.

The Civil rights approach prioritizes individual rights and freedom above all else. Harm reduction focuses on minimizing the damage done by drug use, and therefore tends to emphasize prevention and medical treatment over the use of sanctions. Crime reduction on the other hand aims at reducing criminal activity linked to drug use directly, such as drug trafficking, or

¹⁴ MacCoun and Reuter 234.

¹⁵ *Ibid.*

¹⁶ David Mares. *Drug Wars and Coffeeshouses : The Political Economy of International Drug Trade*. CQ Press: 2009. pp 29-31.

indirectly, such as money-laundering. Demand reduction aims to reduce drug and addiction use through national programs or legislation that emphasize education and prevention. Supply reduction focuses on reducing the availability of illicit substance by increasing the pressure that law enforcement agencies exert on the producers and traffickers of illicit substances. Supply reduction is based in economic theory: As the supply of a particular drug decreases, price increases and demand decreases.

These five strategies are not specific to either prohibition or legalization, however they tend to occur more frequently in one or the other: For instance, harm reduction is more commonly associated with decriminalization strategies because the approach emphasizes treatment over criminal sanctions. The combination of these approaches provides insight into the ways in which societies view and approach the problems of illicit drug use and production.

Chapter Two

Cases

Portugal and Spain

I elected to study Portugal and Spain for several reasons: They are two nations that implemented decriminalization in different forms and at different speeds, yet in both cases events occurred that significantly changed the nature of their respective policies in 2001. They represent two similar policies with very different modes of implementation: As such, observing these two cases should enable me to make a determination about the effect of the mode of implementation of decriminalization as opposed to the effect of the measure itself.

The Control Group

The control group is composed of the United Kingdom, Germany, Finland and Austria. These nations were selected because they are all prohibition drug control regimes, unlike Portugal. Furthermore, they represent different levels of homicide and different rates of drug law offenses, and due to availability of data relevant to the analysis. Most importantly, the National Drug policies of these four nations did not change during the period to be studied, allowing for a clearer comparison of the results for the two test countries.

Background Guides

Portugal

Portugal's current National Drug Strategy leans strongly towards legalization, as opposed to prohibition, due to its broad decriminalization policies and clear tendency towards harm reduction strategies. This approach focuses on providing needle and syringe exchange and shooting rooms, as well as substitution centers (such as methadone substitution treatment for

heroin addiction) on a national level. Closely linked to harm reduction measures are the extensive prevention activities that are part of the strategy focus on primary prevention in schools, homes, and the community at large¹⁷. Due to the fact that policy was changed through executive action and national legislation, Portugal's drug strategy is a cohesive set of clear and coherent guidelines that apply to the nation as a whole. The policies clearly indicate that in the eyes of the law, it is preferable to treat drug addiction as a disease rather than as an offense.

The Republic of Portugal is located on the western-most edge of the Iberian Peninsula, bordered by Spain to the East, and the North Atlantic Ocean to the West, and encompasses the Azores and Madeira island groups. Its landmass occupies approximately 92,000 square kilometers with a population of nearly 11 million inhabitants forms a society that is linguistically, religiously, and ethnically homogeneous.¹⁸ The country was ruled by a corporatist authoritarian regime (*Estado Novo*) for over half century, until the 'Carnation Revolution' of 1974 led to a successful transition to democratic institutions that continue to persist to this day.

Historically, Portugal's drug strategy has been one of prohibition. However, in 1998 in the face of a growing problem of heroin use and mounting rates of AIDS, the Commission for a National Drug Strategy was formed to propose alternative strategies to deal with illicit drugs and drug users. In late 1999, the CNDS submitted a report to the Council of Ministers recommending a radical change in shift from a prohibitive model towards a harm reduction strategy, including total decriminalization of all previously illicit psychoactive substances including heroin,

¹⁷ Mirjam Van Het Loo, Ineke Van Beusekom, James P. Kahan. "Decriminalization of Drug use in Portugal: The Development of a Policy." *The Annals of the American Academy of Political and Social Science*. Vol. 582. 2002. pp. 57

¹⁸ "CIA World Factbook: Portugal". Central Intelligence Agency.

<<https://www.cia.gov/library/publications/the-world-factbook/geos/po.html>> Mar. 2013.

cocaine, and marijuana.¹⁹ To the surprise of several CNDS members themselves, the Council approved the majority of the report and developed a comprehensive national strategy implementing the committee's recommendations. Upon receiving approval by the President of the Republic, Parliament passed specific legislation implementing the new national drug strategy.

The relevant laws went into effect on July 1st, 2001, and all illicit psychoactive substances, including heroine, cocaine, and marijuana were officially decriminalized in the Republic of Portugal. Accompanying this radical change in enforcement strategy was a new and comprehensive harm reduction strategy encompassing all “activities that reduce harm to the drug-consuming individual and society.”²⁰ A broad range of policies and measures fall into this broad definition, ranging from education on the ills of drug use to construction of new treatment centers, as consistent with the thirteen “strategic options” on which the decriminalization legislation is based. There are three of these that are worth underlining: The first is the decriminalization of drug use, prohibiting it as a breach of administrative regulations rather than a criminal act.²¹ The second is the commitment to extend the ability of the health care network to provide for the rehabilitation for drug addicts in order to ensure that treatment is accessible to all.²² The third is to improve cooperation and coordination between national and international law enforcement authorities in order to effectively prosecute drug trafficking and money laundering.²³

¹⁹ Mirjam van het Loo pp.50.

²⁰ Van Het Loo pp 54.

²¹ Government of Portugal 2000.

²² *Ibid*

²³ *Ibid*

Spain

Spain's drug strategy leans towards legalization due to the clear lack of sanctions associated with drug use, and focuses primarily on prevention and harm reduction, much like Portugal. Unlike Portugal, however, Spain did not make a clear shift from prohibition to decriminalization: Rather, Spain's decriminalization policy is the result of an accumulation of jurisprudence on drug possession since the early 1970s, when early court rulings focused on the preservation of civil liberties passing a major landmark decision on the legality of marijuana production under certain circumstances in 2001.

Spain's geographical position within Europe has made it one of the continent's most important points of transit for narcotics trafficking, along with Portugal. It is a parliamentary monarchy divided into 17 autonomous communities and two autonomous cities that have specific legislative and executive competences in the domains of public health and social welfare, some aspects of which pertain to educational programs on drug use and treatment for drug addicts. These communities and cities must abide national law and rulings by the Supreme Court, however they have a degree of discretion when it comes to implementing legislature on a local level.

In 1967, Law 17/1967 on Narcotic drugs established that use or possession of illicit psychotropic substances is permissible solely for scientific or medical purposes, but did not describe any sanctions to be applied to drug related offenses, stating only that such substances were to be confiscated²⁴. The Law was clarified seven years later when the Supreme Court ruled that consumption and possession of illicit drugs are not criminal offenses, establishing

²⁴ "Country Legal Profiles : Spain." European Monitoring Center for Drugs and Drug Addiction. <<http://www.emcdda.europa.eu/html.cfm/index5174EN.html?pluginMethod=eldd.countryprofiles&country=ES>>

jurisprudence on the issue of sanctions for drug use and possession. Trafficking and production of illicit substances remain criminal offenses, punishable by anywhere from three to nine years in prison, depending on the type of illicit substance, the quantity, and the possible presence of aggravating factors such as selling to minors. Administrative sanctions are also imposed, with fines based on the market value of the drugs in the individual's possession at the time of arrest.²⁵

In 1992 the Organic Law 1/1992 on The Protection of Citizens Security clearly established that the consumption of illicit substances in public localities as well as possession of an illicit substance is illegal²⁶. Less than a year later, the organization *Asociación Ramón Santos de Estudios Sobre el Cannabis* (ARSEC) began to gain in popularity: The goal of the organization was to end the prohibition of cannabis in public places and seek legal clarification on the legality of cannabis production for personal use²⁷. The association contacted the public prosecutor for illicit substances requesting an opinion as to whether growing cannabis for personal use would constitute a punishable offense, to which the prosecutor formally responded that it would not.

Following the prosecutor's response, ARSEC cultivated cannabis destined for a group of private users, which was then harvested in the presence of the media: The crop was immediately seized and destroyed by law enforcement.²⁸ Individuals responsible were arrested and given suspended prison sentences and fined for violating the Organic Law of 1992. Over the next several years ARSEC's experiment was repeated on several occasions, including one case where

²⁵ *Ibid*

²⁶ *Ibid*

²⁷ "Cannabis Social Clubs in Spain : A Normalizing Alternative Underway". Transnational Institute <<http://www.tni.org/sites/www.tni.org/files/download/dlr9.pdf>> Mar 2013

²⁸ *Ibid*

another organization, *Kalamudia*, produced a crop of 600 plants for approximately 200 members without police intervention.²⁹

In 2001, The Supreme Court overturned the initial judgment against ARSEC, stating that possession of even large quantities of cannabis is not a criminal offense if it can be established that there is no intent of trafficking.

Data

The data studied is the number of homicides per 100'000 individuals for Portugal, Spain, the United Kingdom, Germany, Austria and Finland. The data on homicides has been collected from the United Nations Office on Drugs and Crime (UNODC), which publishes data on the absolute number of homicides for most nations worldwide (some data is missing for certain countries, mainly in Africa)³⁰. The time period studied is 1995 through 2010, the widest range around changes in policy for Portugal and Spain. Data is provided to the UNODC by the agencies of 207 countries each year. Though different countries have different legal systems, the definition of intentional homicide is defined as the “unlawful death purposefully inflicted by one person on another person.”³¹

The second set of data is the number of drug law offenses per 100'000 individuals for Portugal, Spain, the United Kingdom, Germany, Austria and Finland. The data on drug law offenses has been collected from the European Monitoring Center for Drugs and Drug Addiction (EMCDDA). Unlike the data on homicides, there is no universal definition as to what constitutes

²⁹ *Ibid*

³⁰ UNODC H

³¹ UNODC Homicide Statistics.” United Nations: Office of Drugs and Crime
<<http://www.unodc.org/unodc/en/data-and-analysis/homicide.html>> Feb 2013.

an “offense,” however each country provides the EMCDDA with the official criteria used to report a drug law offense as shown in Table 1.

In order to establish the rates per 100’000 individuals, population totals for every year from 1996 to 2010 have been obtained from the US Census bureau for the United Kingdom, Germany, France, Austria, Portugal, and Spain.

Definition of Drug Law Offense By Country ³²

Germany	All offences under narcotic law.	All offences under narcotic law.
United Kingdom	Persons found guilty, cautioned, given a fiscal fine or dealt with by compounding for drug law offences.	Persons found guilty, cautioned, given a fiscal fine or dealt with by compounding for drug law offences.
Finland	2002-Present: Suspected drug offences recorded by the police and the customs.	Until 2002: Suspected drug offenses recorded by the police.
Austria	Reports to the police for violations of the Narcotic Substances Act.	Reports to the police for violations of the Narcotic Substances Act.
Spain	2001-Present: Arrests made in case of dealing/trafficking (criminal offences) and reports made in case of possession/use in public places (administrative offences).	Until 2001: Arrests made in case of dealing/trafficking (criminal offences) and reports made.
Portugal	2001-Present. Presumed offenders questioned by the police for drug-related offences (criminal offences) and suspected drug users referred to the Commission for the Dissuasion of Drug Use (CDT)	Until 2001: Drug related offense arrests by the police.

Table 1: Definition of Drug Law Offense By Country Including Changes in Reporting

Methodology

The principal issue with a transnational analysis such as the one addressed in this thesis is that there are many potential confounding variables, both domestic and international, that could call any result obtained into question. I have elected to regard Portugal's radical change to decriminalization and Spain's less drastic one as natural experiments, evaluated with a difference in differences test. The test is set up so that outcomes are observed for two groups at two time periods: One group is exposed to a treatment in the second period, but is not exposed to it in the first and the other group is not exposed to the treatment in either period. Subtracting the change observed over time for this group from that observed for the test group produces an estimate of the impact of the policy for the test group. The test therefore depends on a crucial assumption; that in the absence of the intervention the trend among the two groups would have been similar if no policy change had occurred.

The principal advantage of the difference in differences model is that confounding that could influence the homicide rates, including demographic factors such as a change in the age distribution of the population, or a change in the percentage of the population living in cities do not need to be accounted for in the calculation, as these differences are already accounted for in the differences between the control group and the test group. Additionally, minor changes in the individual countries of the control group are averaged out when they are incorporated into the control group.

The basic analysis for the difference in difference test is simply a matter of computing averages for the two groups in the two time periods. These averages are best displayed in tabular format, displaying the groups been compared in the rows and the time periods on the columns. The simple differences are found in the two margins, while the "difference between the

differences” is shown in the lowest right cell of the table, a value that simply represents the difference

Portugal and Spain are each experimental groups undergoing a particular treatment (decriminalization) at a specific point in time. The United Kingdom, Finland, Germany and Austria constitute a control group that does not undergo the decriminalization treatment at the specific point in time for either Spain or Portugal. In Portugal’s case, the change in policy took place in 2001, and as such data has been analyzed between 1996 and 2010, the greatest possible interval for which data on all countries is available. Spain’s transition was more gradual, however a major event in its timeline of decriminalization also occurred in 2001, allowing for a convenient comparison between the two test countries.

After doing this simple difference in differences test, a verification of the results is necessary with a multiple linear regression using the following model:

$$Y_{i,t} = \alpha + \beta T_i + \gamma P_t + \delta T_i * P_t + \varepsilon_{i,t}$$

Where:

$Y_{i,t}$ is the change in homicides per 100’00 inhabitants over period t of 1996-2010

T_i is a dummy variable : T is coded 0 for nations i that receive the treatment, and coded 1 for those that do not.

P_t is a dummy variable : P is coded 0 for the period before the decriminalization event of the experimental country, and coded 1 for the period after the event.

$T_i * P_t$ is an interaction term (the product of two variables) : It is the actual treatment variable. It is coded 1 only for countries i if the countries received the treatment. This is the actual treatment variable

$\alpha, \gamma, \beta, \delta$ are the regression parameters to be estimated

$\varepsilon_{i,t}$ is the standard error term of the regression with variance σ^2

The next step involves comparing the results of the regression with those computed in my difference-in-differences table in order to verify consistency of results in order to determine consistency in observed trends.

This aforementioned process relies entirely on the assumption that the data is consistent with a linear, an assumption that requires verification. Given the properties of this test and the limited number of observations in the data set, I elected to use the Shapiro-Wilk test in order to determine the probability that the residual observations are normally distributed at a 0.05 significance level.³³ After analysis of the data, the arrest rate is added to the regression as a covariate: the regression and verification process are repeated.

Chapter Three

Homicide Rates

Portugal

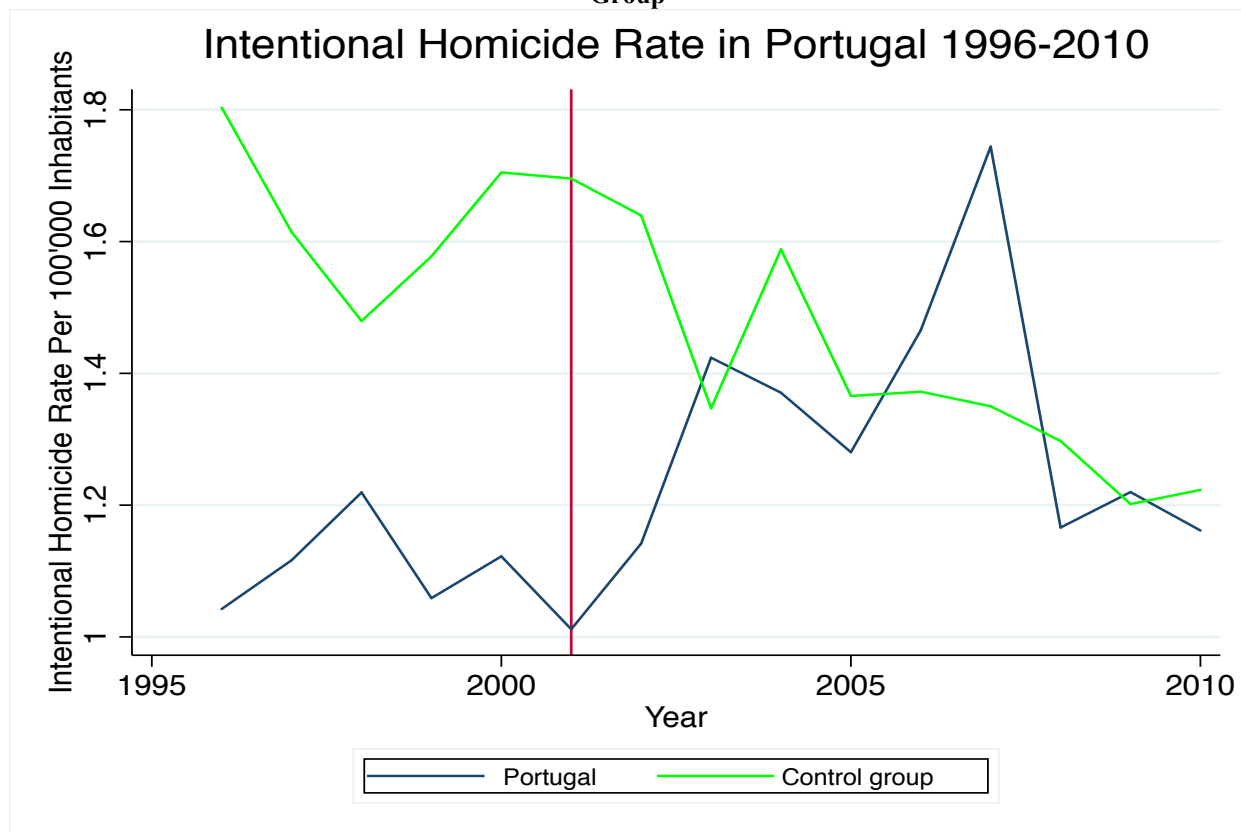
The initial difference-in-differences test indicates that, where the change in intentional homicides is concerned, the result is that the average homicide rate in Portugal is lower than that of the control group countries during the period of 1996 to 2001. However, during the period from 2001 to 2010, the homicide rate of Portugal increased substantially, while the homicide rate of the control group decreased significantly. The difference-in-differences rating is 0.5050, which indicates that the homicide rate in Portugal has an annual growth that is 0.505% higher than in countries where decriminalization did not occur. Though the homicide rate in Portugal is still lower than that of the control group after the decriminalization event, the homicide rate has in fact increased while that of the control group has decreased.

Table 2: Change in Intentional Homicide Before and After the Decriminalization Event Per 100'000 inhabitants: Portugal and the Control Group
Change in Intentional Homicide: Portugal and the Control Group

	1996-2001	2001-2010	Difference Between Periods
Average of Homicides in Portugal	1.0951	1.3303	0.2352
Average of Homicides in Control Group	1.6459	1.3761	-0.2698
Difference Between Groups	-0.5507	-0.0457	0.5050

A time series plot comparing homicide rates for Portugal and the control group during the test period provides a visual representation of the apparent difference in homicide trends between the test group and the control group.

Figure 1: Intentional Homicide Rates per 100'000 Between 1996 and 2010 for Portugal and the Control Group



The data on homicides for the control group and Portugal are fitted to a multiple linear regression model and linearity is verified through the Shapiro-Wilk test. The obtained coefficients provide support for the initial difference-differences-test, with an R-squared coefficient of 0.6164 indicating that approximately 61% of the increase in the rate of homicides can be explained by the shift in policy.

Table 3: Multiple Linear Regression of Intentional Homicide Rates for Portugal and the Control Group

Intentional Homicide Rates Portugal: Multiple Linear Regression						
	Observations	Parameters	RMSE	R-squared	F	P
Equation: $ihr = p * t * pt$	30.0000000	4.0000000	0.1485010	0.6164000	13.9277800	0.0000000
Intentional Homicide Rate (ihr)	Coefficient	Standard Error	t	P> t 	[95% Confidence Interval]	
Binary: Before/After (p)	-0.5507167	0.0857371	-6.4200000	0.0000000	-0.7269518	-0.3744816
Binary: Treatment/No Treatment (t)	-0.2697723	0.0782669	-3.4500000	0.0020000	-0.4306521	-0.1088924
Binary: Interaction Term (pt)	0.5049833	0.1106861	4.5600000	0.0000000	0.2774648	0.7325019
Constant	1.6458500	0.0606253	27.1500000	0.0000000	1.5212330	1.7704670
			0			
Variable	Observations	Shapiro-Wilk Test			z	Prob>z
Residuals (r)	30.0000000	0.9314500	2.1790000	1.6100000	1.6100000	0.0536700
		0		0		

Spain

The initial difference-in-differences test indicates that here the change in international homicides is concerned, the average homicide rate in Spain is lower than that of the control group during the period of 1996 to 2001. During the post-treatment period between 2001-2010, the homicide in Spain falls, as it does in the control group. The difference-in-differences rating of 0.1319 indicates in this case that the homicide rate in Spain that is 0.1319% lower than for the control group, where no form of decriminalization occurred.

Table 4: The Change in Intentional Homicide Rates per 100'000 Inhabitants Before and After the Decriminalization Event: Spain and the Control Group

	1996-2010	2001-2010	Difference between periods
Average of Homicides in Spain	1.2486	1.1107	-0.1379
Average of Homicides in Control Group	1.6459	1.3761	-0.2698
Difference Between Groups	-0.3973	-0.2654	0.1319

A time series plot comparing homicide rates for Spain and the control group during the period between 1996 and 2009 supports the results of the initial difference-in-differences test:

Figure 2: Intentional Homicide Rates per 100'000 Between 1996 and 2010 for Spain and the Control Group



The data on homicides for the control group and Spain are also fitted to a multiple linear regression model and linearity is verified through the Shapiro-Wilk test. As with Portugal, the obtained coefficients are consistent with the initial difference-indifferences-test: the R-squared coefficient of 0.5390 indicates that approximately 53.9% of the change in homicide rate is explained by the change in policy.

Table 5: Multiple Linear Regression of Intentional Homicide Rates for Spain and the Control Group

Intentional Homicide Rates Spain: Multiple Linear Regression						
	Observations	Parameters	RMSE	R-squared	F	P
Equation: $ihr = p * t * pt$	30	4	0.176798 3	0.539	10.13314	0.0001
Intentional Homicide Rate (ihr)	Coefficient	Standard Error	t	P> t 	[95% Confidence Interval]	
Binary: Before/After (p)	-0.420620	0.111817	- 3.760000	0.001000	-0.650463	-0.190777
Binary: Treatment/No Treatment (t)	-0.227870	0.096836	- 2.350000	0.026000	-0.426920	-0.028820
Binary: Interaction Term (pt)	0.153800	0.136947	1.120000	0.272000	-0.127699	0.435299
Constant	1.635900	0.079067	20.69000 0	0.000000	1.473376	1.798424
Shapiro-Wilk Test						
Variable	Observations	W	V	z	Prob>z	
Residuals (r)	30	0.95629	1.389	0.68	0.24823	

Discussion of Results for Spain and Portugal: Homicide Rates

The results for both Spain and Portugal are consistent with the initial hypothesis that a sudden shift from prohibition to decriminalization policy leads to an increase in violence, while a gradual shift in policy towards increased decriminalization leads to a decrease in violence. These

results, though encouraging, are incomplete: While the expected correlation occurs in both cases, these results alone provide no indication as to whether redistribution in law enforcement resources has occurred or had any significant effect on the homicide rates per 100'000 for Spain and Portugal. It is therefore necessary to test whether there is a significant correlation between the change in homicide rates and a redistribution of law enforcement resources.

The principal issue in determining whether law enforcement resources have been redistributed is that national governments do not routinely make the data on funding or distribution of personnel in specific of law enforcement available to the public at large. Additionally, an increase in funding does not necessarily translate into any noticeable effect: As a result, I have elected to work backwards and study the rate of drug law arrests, in order to make an inference as to whether a redistribution of resources has in fact occurred. Logically, if little or no resources are reallocated to dealing with the supply-end of the illicit drug market and are instead assigned to other areas of criminal activity, the drug law offense rate should decrease starting in 2001. If, on the other hand, a significant portion of the resources was put towards prosecuting offenses related to the production and sale of illicit drugs, then one would expect the drug law offense rate to rise after 2001.

A rise in arrests would be consistent with Friedman's and Miron's conclusions about the negative externalities associated with prohibition strategies: In prohibition regimes a large portion of law enforcement resources is so focused on dealing with enforcing prohibition that other types of violent crime are neglected. The same logic can be applied to nations where decriminalization has occurred: The *use* of illicit substances may not be punishable by criminal sanctions, but activities related to *production* such as trafficking and money-laundering continue to be prohibited. In this sense, decriminalization is still partially a prohibition regime, and so it is

only logical that prosecution of crime on the supply-side would intensify and lead to an increase in certain negative externalities.

At first glance, the trends in drug law offenses rates per 100'000 appear to consistent in both cases. For Spain, the increase is fairly linear for much of the observed time period. Portugal's case is less obvious: There is an apparent overall increase levels of drug law arrests, which had plummeted sharply shortly before the 2001 policy shift though the rising levels did not return to pre-policy heights. Interestingly in both the Spanish and the Portuguese cases, the trends appear to be unusual when compared to the control group. The Portuguese trend follows that of the control group, but it is at a much lower level. The Spanish case, however, departs from the pattern of the control group completely as of the year 2000, increasing much more rapidly.

Figure 3: Drug Law Offense Rate per 100'000 Between 1996 and 2010 in Spain

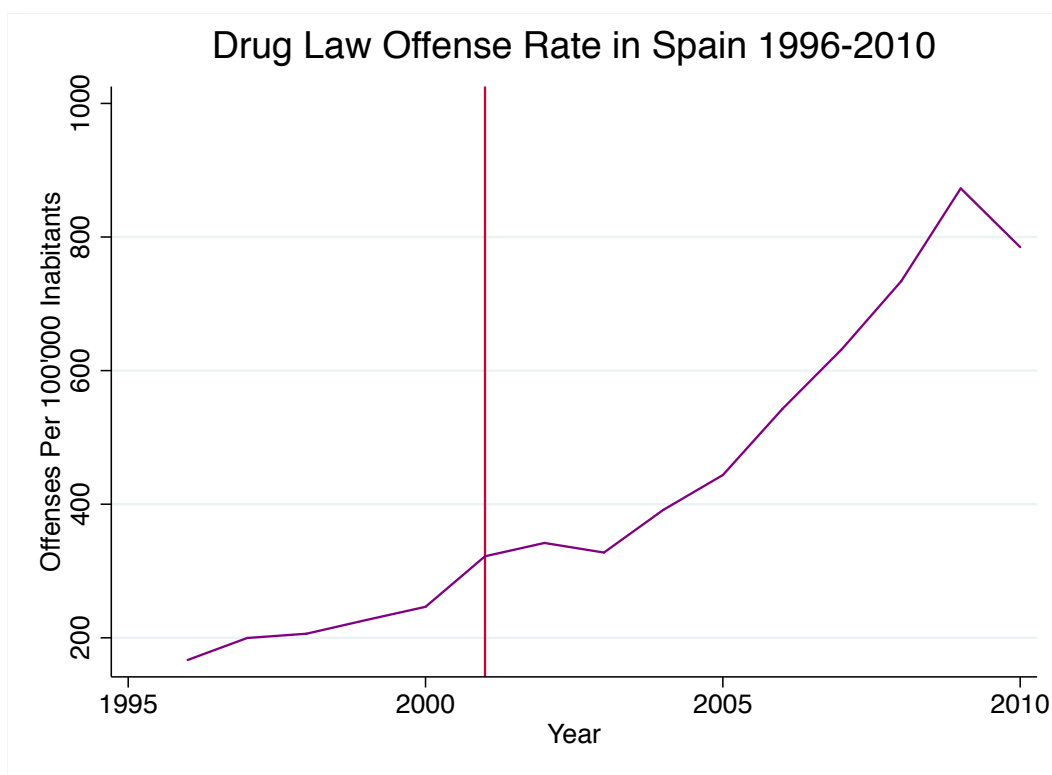


Figure 4: Drug Law Offense Rate per 100'000 Between 1996 and 2010 in Spain and the Control Group

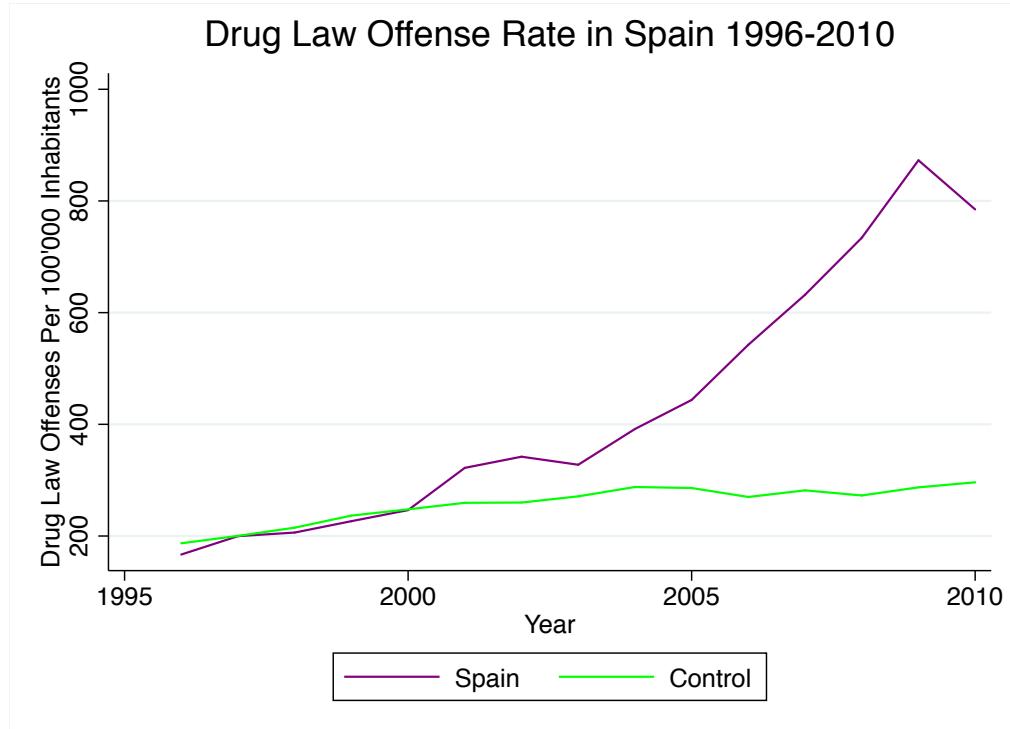


Figure 5: Drug Law Offense Rate per 100'000 Between 1996 and 2010 in Portugal

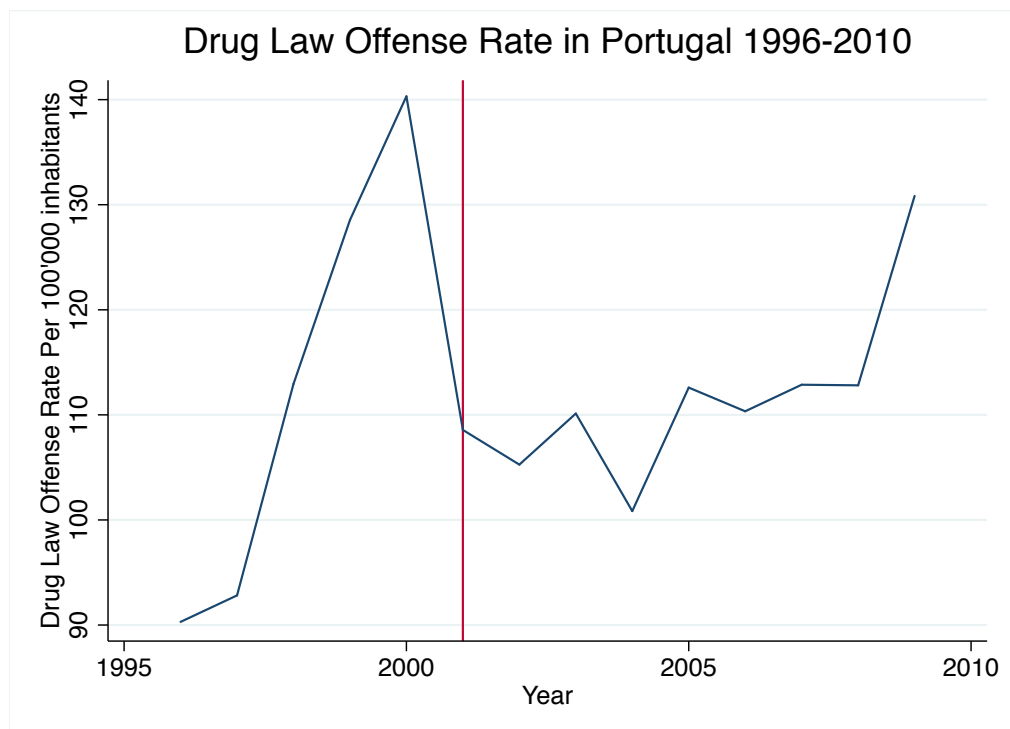
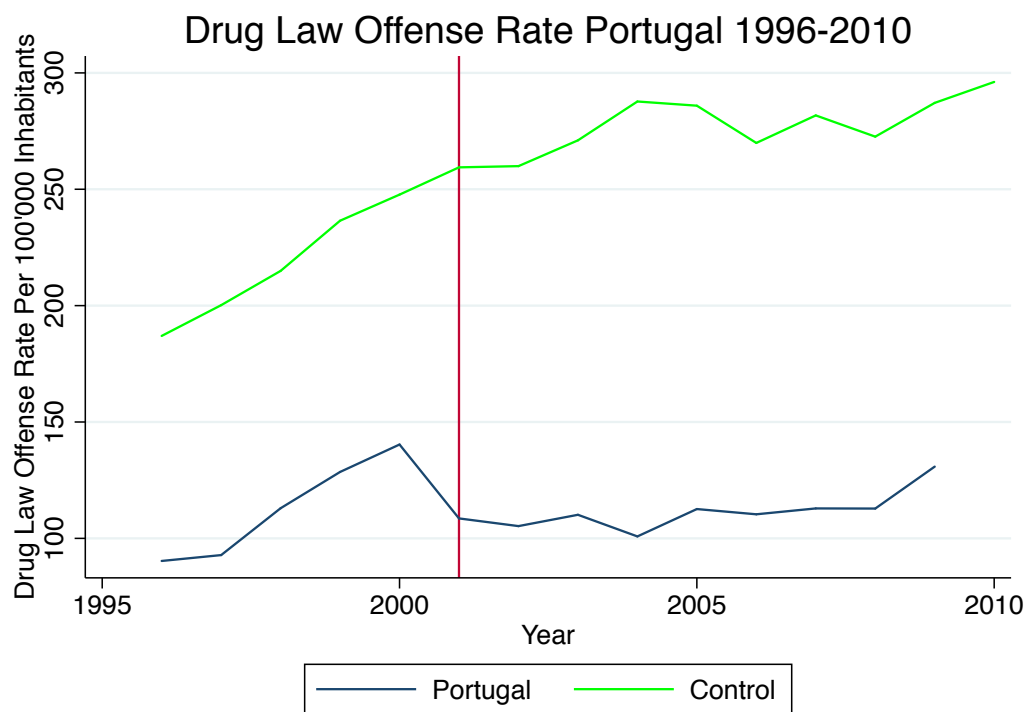


Figure 6: Drug Law Offense Rate per 100'000 Between 1996 and 2010 for Portugal and the Control Group



The effect of Drug Law Offense Rates on Homicide

Portugal Drug Law Offense Rates

The drug law offense rate per 100'000 is introduced into the initial multiple regression as an additional independent variable for both Portugal and the control group. Linearity is again verified through the Shapiro-Wilk test. The obtained R-Squared coefficient 0.6336 indicates that approximately 63.36% of the change in homicide rate is explained by the change in policy and the drug law offense rate.

Table 5: Multiple Linear Regression of Intentional Homicide Rates per 100'000 Inhabitants Before and After the Decriminalization Event, Including the Drug Law Offense Rate Per 100'000 Inhabitants: Portugal and the Control Group

Effect of Drug Law Offense Rate on The Intentional Homicide Rates Portugal: Multiple Linear Regression						
	Observations	Parameters	RMSE	R-squared	F	P
Equation ihr= p*t*pt*arrest	29.0000000	5.0000000	0.1489943	0.6336000	10.3741900	0.0001000
Intentional Homicide Rate (ihr)	Coefficient	Standard Error	t	P> t 	[95% Confidence Interval]	
Binary: Before/After (p)	-0.6701418	0.2111937	-3.1700000	0.0040000	-1.1060240	-0.2342594
Binary: Treatment/No Treatment (t)	-0.2113222	0.1227929	-1.7200000	0.0980000	-0.4647543	0.0421100
Binary: Interaction Term (pt)	0.4673328	0.1471274	3.1800000	0.0040000	0.1636769	0.7709888
Drug Law Offenses (arrest)	-0.0010660	0.0017216	-0.6200000	0.5420000	-0.0046192	0.0024873
Constant	1.8849270	0.3908897	4.8200000	0.0000000	1.0781700	2.6916840
Shapiro-Wilk Test						
Variable	Observations	W	V	z	Prob>z	
Residuals (r)	29.0000000	0.9508000	1.5250000	0.8710000	0.1919800	

Spain Drug Law Offense Rates

The drug law offense rate per 100'000 is introduced into the initial multiple regression as an additional independent variable for both Spain and the control group, and linearity is again confirmed through the Shapiro-Wilk test at a 5% significance level. The obtained R-Square coefficient 0.7504 indicates that approximately 75.04% of the change in homicide rate is explained by the change in policy and the drug law offense rate.

Table 6: Multiple Linear Regression of Intentional Homicide Rates per 100'000 Inhabitants Before and After the Decriminalization Event, Including the Drug Law Offense Rate Per 100'000 Inhabitants: Spain and the Control Group

Effect of Drug Law Offense Rate on The Intentional Homicide Rates Spain: Multiple Linear Regression						
	Observations	Parameters	RMSE	R-squared	F	P
Equation: ihr= p*t*pt*arrest	30.0000000	5.0000000	0.1326664	0.7504000	18.7908200	0.0000000
Intentional Homicide Rate (ihr)	Coefficient	Standard Error	t	P> t 	[95% Confidence Interval]	
Binary: Before/After (p)	-0.42859330	0.08392350	-5.11000000	0.00000000	-0.60143710	-0.25574960
Binary: Treatment/No Treatment (t)	-0.16913130	0.07377710	-2.29000000	0.03100000	-0.32107800	-0.01718460
Binary: Interaction Term (pt)	0.41888600	0.11780830	3.56000000	0.00200000	0.17625530	0.66151670
Drug Law Offenses (arrest)	-0.00098080	0.00021310	-4.60000000	0.00000000	-0.00141980	-0.00054180
Constant	1.84898300	0.07526160	24.57000000	0.00000000	1.69397900	2.00398700
Variable	Observations	Shapiro-Wilk Test		z	Prob>z	
Residuals (r)	30.0000000	W	V			
		0.9715400	0.9050000	-0.2070000	0.5820600	

Discussion of Results for Spain and Portugal: Drug Law Offense Rate

The results of the second regression are consistent with the initial hypothesis advanced at the beginning of this thesis: In both cases, including the drug law offense rate in the regression helps to explain the respective rise and fall of homicide rates for Portugal and Spain.

The implications of these results are quite intriguing: For decades the debate between policymakers and economists alike has been whether decriminalization leads to more negative

externalities, but very little work has been done on *how* making those policy changes can affect the general population in ways that are not directly linked to drug policy.

Assuming the validity the estimated coefficients and standard errors, the results show a clear, positive correlation between the sudden shift to decriminalization, an increase in drug law offenses and an increase in homicides in the Portuguese case. The rate of drug law offenses increases despite the fact that there are far fewer punishable offenses associated with the illicit drug market suggests that law enforcement focused more intently on the supply-side of the drug trade after the 2001 policy shift. Those enforcement resources however, were not available to deal with other forms of crime such as property crime, and as a result individuals resorted to extra-judicial means of conflict resolution to obtain satisfaction that was not being granted by the relevant enforcement agency.

There are of course other possibilities to explain this result: For instance, according to Becker's theoretical framework, the shift in policy worsened the negative externalities associated with the illicit trade. The number of providers of illicit substances increased, facilitated by the lower cost of decriminalized substances, leading to an increase in drug law offense rates. However, even if one accepts the theory that it is decriminalization as a policy, rather than some side-effects of a particular implementation of the policy, that lead to an increase in the rate of homicides, the effects could be temporary: It is plausible that such a major shift in policy strategy could cause a massive reorganization within the illicit drug market and lead to a significant increase in violence.

The Spanish case is more intriguing: Once again, assuming the validity of estimated coefficients and standard errors, the results show a positive correlation between the legalization of marijuana collectives and the increase in drug law offenses with a decrease in the homicide

rate. However, it has already been established that Spain and Portugal are very different cases when it comes to implementing policy implementation. When these results are taken in conjunction with the Portuguese experience with decriminalization, they raise an intriguing question on the nature of drug policy: Is it the type of policy, or the way in which it is implemented that most determines the type and severity of negative externalities associated with a change in policy?

Chapter Four

Possible Issues

Due to limited data availability and the problems associated with conducting transnational analyses with data from different sources, that had to conform to specific criteria (outlined in Chapter 2) only four countries were included in the control group. The United Kingdom, Germany, Finland and Austria, comprise a selection of countries with stable, unchanging drug policies, but are not necessarily representative of the entirety of the European Union. The small number of countries included in the analysis means that, while large shocks to individual countries are averaged out over the control group, the difference in differences model may not be sufficiently sensitive to reflect the impact of smaller variations. A cluster model would produce more reliable results of the standard errors, but it would require a far greater number of countries in the control group. Including such nations with such a variety of economic, geographic, and social parameters could potentially lead to unreliable results: This study therefore represents an imperfect analysis, as it is based on limited data.

The decision to use drug arrest data is somewhat problematic: The fact that the data is self-reported and the criteria are different for each country could lead to over- or under-estimation of the value of drug arrests in Spain or Portugal relative to the control group countries.

It is also important to remember in the interpretation of these results is that they consider only two separate cases of decriminalization events over a short period of time. Any number of time trends within both Portugal and Spain could have produced the observed relative increase in homicide and drug arrest rates, and such trends would not be otherwise observable from the

results of the difference in differences model.

Finally, it should be stressed that decriminalization did not occur in isolation from the rest of the world: changes in any number of factors such as enforcement policy or public opinion might have also played a part in the observed effects. In Portugal, the decriminalization event was not a true experiment, but a natural one. The policy was formed to address certain specific problems, mainly high levels of HIV infection and an increase in the use of psychoactive substances such as heroine. It is therefore possible that the increase in homicide rates and the increase in the levels of drug use after 2001 are simply the delayed effects of the pre-policy change conditions in the country. There are similar problems in the case of Spain. The 2001 Supreme Court ruling did have far reaching consequences for the production and use of marijuana, but there were other rulings and legislation, such as the 1992 Organic Law, which preceded the 2001 ruling: As such, it is possible that the increase in the drug arrest and homicide rates is not entirely attributable to ruling. The problems with these findings therefore arise from the very limited availability on data available for study, as well as the complexities associated with any analysis of transnational data.

Conclusion

Drug Policy has been a point of contention among economists, political scientists and policymakers for decades: Those supporting increased liberalization of illicit substances argue that treatment, rather than punishment, is the important for the good of society, while proponents of prohibition point to the multitude of ills that could arise from a potential rise in drug use and an increase in the number of drug users. As there are very few nations in the world that have adopted drug decriminalization, and as such the debate on the effects of drug decriminalization policy has been primarily theoretical. As prohibitionist policies perpetually fall short of their

goals to eradicate the illicit drug market and reduce violence, decriminalization has increasingly come to be regarded as a viable option to reduce drug use and weaken the illicit drug trade. Yet, there are few cases of decriminalization that can be available for more intense scrutiny. It is against this backdrop that this thesis has examined two rare cases of decriminalization, Portugal and Spain, finding that the pace at which decriminalization policies are implemented have opposite effects on trends in violence, due to redistribution of law enforcement resources.

In the literature review section, this thesis considered both theoretical and empirical works concerning the negative externalities of both prohibition and decriminalization. The theoretical literature is mostly unanimous in suggesting that drug prohibition is likely to lead to an increase in negative externalities such as violence, as authors have an ample number of cases upon which to base their conclusions. It is less clear what the effects of decriminalization would be: Certain authors such as Paul Taubman, project that there are potentially serious negative consequences linked to decriminalization, such as an increase in the number of individuals who use illicit substances, an increase in automobile deaths, and an increase in the number of children with severe physical or mental developmental issues.

Data on decriminalization is rare, limiting the potential for study. While certain studies such as that conducted by MacCoun and Reuter were able to assess that in Italy's case drug mortality rates did increase during periods of decriminalization, they are unable to make inferences about negative externalities such as those described by Becker or Taubman. Those who support decriminalization and point to the Portuguese decriminalization experiment, such as Greenwald, encounter the opposite problem, unable to conclusively establish that the shift in policy is beneficial overall. This paper has therefore attempted to do two things: The first was to determine the effect of decriminalization on levels of homicide, and the second is to explain that

effect, in an attempt to shed light on the negative externalities associated with a policy shift to decriminalization.

This paper applied a difference in differences model in order to analyze the effect of both decriminalization and drug law offense rates on the level of homicides in Portugal and Spain, using a difference in differences model to analyze these effects relative to the control group, comprised of the United Kingdom, Germany, France, and Austria. The analysis consisted of two sets of results: The first consisted of assessing the effect of the policy change on decriminalization on homicide rates, and the second repeated the operation and incorporated the drug law offense rate. The regression produced a significant positive correlation between the policy shift in Portugal and an increase in the homicide rate, as well as a positive correlation between the Supreme Court ruling in Spain and a decrease in the homicide rates. The second set found that the increase in drug law offense, combined with the change in policy have a positive correlation with the increase of the homicide rate in Portugal, and the decrease in the homicide rate in Spain.

This results do not provide conclusive evidence that a redistribution of law enforcement resources that focuses on the supply-side of the illicit drug market leads to an increase in homicides: The study concerns only two particular cases over a fairly the course of a fairly short period time. It would therefore be unwise to make any generalizations about the negative externalities associated with decriminalization, particularly as the scarcity of empirical studies on decriminalization and the limited number of cases available for study make it quite difficult to establish more general, empirically proven, facts about the effects of decriminalization on a multitude of factors such as homicide, public health and levels of drug use. However, these findings should give policymakers pause when making generalizations about the benefits and ills

of decriminalization: The debate perhaps should not be about whether decriminalization is beneficial or harmful, but rather about the speed and scope in which it is implemented.

It has been established that both prohibition and decriminalization have the potential for serious problems: Does this imply that outright legalization is preferable to prohibition or decriminalization? As little empirical analysis as there is on decriminalization, there is even less still on complete legalization. It is logical, however, to assume that such a policy would carry its own set of issues: On the one hand, one could envision a best case scenario where psychoactive substances are regulated and taxed by the national government, and a portion the revenue generated by the sale of such substances would be used for educational campaigns and addiction treatment centers.

The other, more pessimistic scenario is that if legalization became more commonplace, the national governments of certain states that are already large producers of illicit substances would simply implement decriminalization as a way of becoming a legitimized narco-state: Economies of entire nations would rest solely on the production and export of psychoactive substances such as cocaine or opium, controlled by a small and powerful elite linked to international organized crime or terrorist groups that it would be in an ideal position to fund. There is not enough data, I think, to make any kind of reasonable prediction either way: I hope that in the future, more data will become available on decriminalization and legalization policies so that legislators and scholars alike are better able to predict the consequences of drug policy.

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Data Appendix

Data submitted electronically to Arianne Parks on April 1st, 2013

Portugal

File: "finalportugal.dta"

Variable list

lhr: dependant variable, the intentional homicide rate for both Portugal and the control group

p: binary variable coded 0 for before 2001, and 1 for 2001 and after

t: binary variable coded 1 for Portugal and 0 for the control group

pt: the interaction variable a multiplication of p and t at each point of the "time" variable

year: independent variable, every year from 1996 to 2010.

arrest: drug law offense rate per year, per 100'000 inhabitants for both Portugal and the control groups

Intentional Homicide

Source: United Nations Office on Drugs and Crime Measured in absolute numbers of intentional homicides per country. <<http://www.unodc.org/unodc/en/data-and-analysis/homicide.html>>

Population: Population numbers were obtained from the US Census Bureaus International Database from 1996 to 2010: <<http://www.census.gov/population/international/data/idb/informationGateway.php>>

Rates of Intentional Homicide: Rates of Intentional Homicide are calculated using the absolute number of intentional homicides in conjunction with the population statistics in order to achieve rates per 100'000.

Rates of Intentional Homicide for the Control Group: Rates of Intentional Homicide are calculated using the absolute number of intentional homicides in conjunction with the population statistics in order to achieve rates per 100'000. For the control group, the rates are combined and averaged.

Drug Law Offenses

Source: European Monitoring Centre for Drugs and Drug Addiction, measured in absolute numbers of reports of drug law offenses per country. <<http://www.emcdda.europa.eu/stats12/dlota1a>>

Population: Population numbers were obtained from the US Census Bureaus International

Database from 1996 to 2010: <<http://www.census.gov/population/international/data/idb/informationGateway.php>>

Rate of Drug Law Offenses: The Rate of Drug Law Offenses is calculated using the absolute number of drug law offenses in conjunction with the population statistics in order to achieve rates per 100'000.

Spain

File "spain.dta"

Variable Labels

Ihr: dependant variable, the intentional homicide rate for both Spain and the Control group

p: binary variable coded 0 for before 2001, and 1 for 2001 and after

t: binary variable coded 1 for Spain and 0 for the control group

pt: the interaction variable a multiplication of p and t at each point of the "time" variable

year: independent variable, every year from 1996 to 2010.

sarrest: drug law offense rate per year, per 100'000 inhabitants for both Portugal and the control group

Intentional Homicide

Source: United Nations Office on Drugs and Crime Measured in absolute numbers of intentional homicides per country. <<http://www.unodc.org/unodc/en/data-and-analysis/homicide.html>>

Population: Population numbers were obtained from the US Census Bureaus International Database from 1996 to 2010: <<http://www.census.gov/population/international/data/idb/informationGateway.php>>

Rates of Intentional Homicide: Rates of Intentional Homicide are calculated using the absolute number of intentional homicides in conjunction with the population statistics in order to achieve rates per 100'000.

Rates of Intentional Homicide for the Control Group: Rates of Intentional Homicide are calculated using the absolute number of intentional homicides in conjunction with the population statistics in order to achieve rates per 100'000. For the control group, the rates are combined and averaged.

Drug Law Offenses

Source: European Monitoring Centre for Drugs and Drug Addiction, measured in

absolute numbers of reports of drug law offenses per country.
<<http://www.emcdda.europa.eu/stats12/dlotab1a>>

Population: Population numbers were obtained from the US Census Bureaus International Database from 1996 to 2010: <<http://www.census.gov/population/international/data/idb/informationGateway.php>>

Rate of Drug Law Offenses: The Rate of Drug Law Offenses is calculated using the absolute number of drug law offenses in conjunction with the population statistics in order to achieve rates per 100'000.