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IS THE GRASS GREENER ON THE OTHER SIDE OF THE LAW?: THE ECONOMIC
IMPLICATIONS OF LEGALIZING MARIJUANA

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Abstract

This thesis will discuss a variety of economic implications that could result from the legalization of marijuana. It will provide background information on marijuana laws and drug policy, including arguments for and against legalization. Next, the thesis will discuss the estimated tax revenue that can be obtained if marijuana were legalized, drawing on reports by Dr. Jeffrey Miron, Dr. Jon Gettman, and Max Chaiken. The following section presents a cost-savings analysis as argued by Dr. Jeffrey Miron. The thesis will then examine other economic issues affected by legalization and determines that there is the possibility for a successful hemp industry in the United States as well as positive economic implications for Mexico. Finally, the thesis concludes with a libertarian perspective on the issue to demonstrate the way a good number of economists view drug policy an alternative view of legalization outside of the mainstream Democratic and Republican perspectives.

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I.   Introduction

Marijuana policy has been a widely disputed topic in the United States for the past 70 to 80 years, and only becomes more controversial as time goes by. Recently in the news, marijuana legalization has been championed as the solution to many economic problems as well as a potential source of economic growth.

For example, the United States is currently experiencing the largest recession in the past 70 years, so money is tight at every level of the economy. The recession has also prompted Congress to pass costly economic stimulus packages, thrusting the United States further into debt. The Congressional Budget office estimates that the federal budget deficit will be $1.6 trillion in 2009. State governments are also struggling. At least 48 states have addressed or still face shortfalls in their budgets for fiscal year 2010 totaling $168 billion or 24 percent of state budgets (Congressional Budget Office, 2009). Many supporters of legalizing marijuana have pointed out that a legal and regulated marijuana market could bring in revenue for states and for the federal government that could help them partially offset their astounding deficits.

Furthermore, proponents of legalization have become increasingly vocal about the cost savings a legal marijuana market would bring. Because many people view marijuana as a "soft drug," a colloquial term for drugs that are believed to be non-addictive and less dangerous, proponents of legalization claim that the criminal status of marijuana creates unnecessary costs in society. They believe that legalization could bring in large savings in criminal justice resources in the form of eliminating the costs of arrests, eliminating the costs of prosecutions, and eliminating the costs of incarcerations.

Another economic implication of legalizing marijuana is the rise of a productive hemp industry. Currently, hemp and marijuana are indistinguishable under the law. Although a bill

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legalizing hemp and not marijuana could lead to a hemp industry in the U.S., many proponents of legalization claim that marijuana legalization is necessary before a hemp industry will grow because commercial cultivation could increase covert production of marijuana, a hemp industry will complicate the Drug Enforcement Administration's surveillance and enforcement, and the hemp industry would add confusion to the U.S. government's stance on drugs.

Mexico has been in the news of late due to the increasing drug violence and crime along border cities. Proponents of legalization state that a legal marijuana market in the United States could dramatically decrease this violence, leading to economic implications for both the U.S. and Mexican economies. In the United States, legalization could reduce expenditures on eradication efforts, drug intelligence efforts, and aid to Mexico. Also, legalization would bring legal domestic production to the United States, which is highly profitable and would be a great cash crop for farmers. Mexico would benefit from a decrease in drug-related crime and violence. As the price of marijuana goes down in the legal market due to the removal of the black market premium, marijuana would be less lucrative for drug cartels. A less lucrative product would translate into less people joining the illegal drug trade because the expected revenues would be lower. Instead, people would join the formal sector and be employed in taxable jobs that create revenue for government spending on social programs and infrastructure. Moreover, Mexico would experience stability and a restored confidence in the economy.

Finally, many drug legalization arguments in recent years have fallen along "Democratic" or "Republican" arguments. Democrats usually favor medical marijuana laws and even some decriminalization, while Republicans usually favor the current status quo of Prohibition. Many proponents, however, have a libertarian mindset about drug legalization. Moreover, the Libertarian Party (LP) is the third largest party in the United States, and with the divide growing

between Republicans and Democrats, some experts say the LP will grow larger. Therefore, the libertarian perspective concerning the legalization of marijuana has become popular and provides an interesting commentary on the issue.

As shown above, proponents of legalization have been claiming many things about the economic benefits of legalization. This thesis aims to investigate the tax revenue produced from legalization, the cost savings of marijuana legalization, the economic feasibility of a hemp industry in the United States, and the changes in Mexican-American relations under legalization and prove that there are positive economic implications associated with marijuana legalization.

This paper is divided into seven more sections. The first section will provide background information on marijuana, including information about marijuana laws in the context of the War on Drugs, the failures of the War on Drugs, and the legal status options for marijuana. The second section discusses the main arguments for and against marijuana. The following three sections explore the economic implications of legalizing marijuana. The first topic discussed is the estimated amount of tax revenue generated by legalizing marijuana. The second section outlines the potential cost savings gained by legalizing marijuana. The third section investigates the economic feasibility of a legal hemp industry in the United States, along with the economic implications for Mexico of legalization in the United States. Next, the paper discusses legalization of marijuana from a libertarian perspective. Finally, the paper ends with a conclusion of the arguments presented along with speculation about the future of marijuana policy in the United States.

II.   Background Information

Before delving into the intricacies of marijuana legalization and its economic benefits, this section will provide basic facts about marijuana policy along with recent marijuana legislation. After a brief introduction of marijuana, this section will discuss the history of marijuana laws and the War on Drugs in the United States, the shortcomings of the War on Drugs, and the recent legislation regarding medical marijuana. The section will conclude with legal status options the government can pursue when forming marijuana policy.

Marijuana, which is the common name for the *Cannabis sativa L.* plant, is a mind-altering substance made from the dried, shredded leaves, stems, seeds, and flowers of the plant. The flowers, and to a lesser extent the leaves, stems, and seeds, contain marijuana's active chemical compounds called cannabinoids. Although there are around 60 cannabinoids found in marijuana, the primary active cannabinoid is called delta-9-tetrahydrocannabinol (THC), which produces the "high" experienced by users (DEA, 2010). Marijuana can affect people in different ways, but most commonly marijuana induces the user to feel euphoric, or "high." Additionally, the user may experience pleasant sensations, colors and sounds may seem more intense, and time appears to pass slowly. Occasionally, marijuana use can produce anxiety, fear, distrust, or panic (DEA, 2010). Marijuana is typically smoked, but can also be digested, used in ointments, or brewed in teas. It is the most widely used illegal drug in the world (Room et al., 2008, p. 7).

The laws regulating marijuana began in the early 20th century when marijuana first started appearing in southern states, brought mainly by Mexican immigrants (See Table 1 on the following page). By 1931, 29 states had enacted laws regulating marijuana use in nonmedical situations (Joy et al., 1999, p. 13). The first federal law regarding marijuana was the Marihuana

Table 1: Overview of Marijuana laws since 1900

1900-1920s
- Mexican immigrants introduce the recreational use of marijuana to the United States

1920s-1930s
- The fear of marijuana grows, as it is portrayed as causing violent behavior and social deviance. By 1931, 29 states had enacted laws regulating marijuana use in nonmedical situations.

1937
- Marijuana Tax Act of 1937 is passed, levying a high excise tax so as to force the market underground.

1942
- Marijuana is removed from the U.S. Pharmacopoeia

1950s
- Stricter sentencing laws for marijuana offenders in the Boggs Act of 1952 and the Narcotics Control Act of 1956

1960s
- There are large increases in marijuana use as it becomes popular in counterculture.

1970
- The Comprehensive Drug Abuse Prevention and Control Act (CDAPCA) is passed, defining marijuana as highly addictive with no medicinal value.

1971
- President Nixon officially declares the War on Drugs.

1973-1978
- Eleven states decriminalize marijuana. Moreover, the Families in Action parents' organization was created, and significantly influenced Washington to not decriminalize marijuana.

1980s
- Recriminalization of marijuana in states that had decriminalized it in the 1970s.

1990s
- The "War on Drugs" focuses heavily on preventing marijuana use.

1996
- Medical marijuana use legalized in California and Arizona, although users still face federal prosecution.

1996-2009
- Twelve more states legalize the use of medical marijuana

2009
- The Justice Department declares that it will no longer pursue medical marijuana users and distributors who comply with state laws.

Tax Act of 1937, which "required anyone producing, distributing, or using marijuana…to

register and pay a tax and which effectively prohibited nonmedical use of the drug" (Joy et al.,

1999, p. 13). Although this act did not criminalize the use of marijuana, it levied such a high tax

and enforced such high punishments for violation that it forced the marijuana market underground. However, marijuana regulation in 1937 is a curiosity because it was enacted before widespread recreational use of the drug became popular, and the legislation had little effect until the increase in marijuana use in the 1960s (Thornton, 1991, p. 65). In this case, why was marijuana regulated in 1937?

Researchers have posited two main theories as to the origins of marijuana regulation. The first is the "Anslinger hypothesis" set forth by Howard Becker in 1963 (Thornton, 1991, p. 65). Mark Thornton, an economist and specialist in the economics of drugs, explains, "The Federal Narcotics Bureau (FNB), headed by the former Prohibition commissioner Harry Anslinger, played an entrepreneurial role in bringing marijuana to the attention of the general public" by launching campaigns portraying marijuana users as social deviants and criminals and supporting anti-marijuana publications (Thornton, 1991, p. 65). Becker does not explain why Anslinger pushed this legislation, so others have hypothesized that the FNB was seeking publicity after the end of Prohibition and in the midst of budget cuts or that the FNB was trying to impose morality on society (Thornton, 1991, p. 66). The other hypothesis put forth is the "Mexican Hypothesis" by David F. Musto (1973) and John Helmer (1975). The "Mexican Hypothesis" states that marijuana regulation was a reactionary phenomenon against Mexicans immigrants and others, such as blacks and the lower class (Thornton, 1991, p. 66).

Rent-seeking behavior practiced by pharmaceutical companies is another contributing factor in the initial marijuana regulation[1]. These companies, which were developing artificial substitutes to industrial applications of marijuana (hemp) would benefit from marijuana regulation (Thornton, 1991, p. 68). The "Anslinger hypothesis," the "Mexican Hypothesis," and

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[1] Rent-seeking behavior is the expenditure of resources in order to bring about an uncompensated transfer of goods or services from another person or persons to one's self as the result of a "favorable" decision on some public policy. One example is lobbying for government regulation to manipulate the economic environment.

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rent-seeking behavior provide a comprehensive, historical-theoretical analysis of the causes of marijuana regulation as early as 1937.

Marijuana was removed from the U.S. Pharmacopoeia in 1942 after appearing there for almost 100 years because it was believed to be harmful and addictive[2] (Joy et al., 1999). In the 1950s two acts, the Boggs Act of 1952 and the Narcotics Control Act of 1956, enforced stricter sentencing laws. The acts punished first time cannabis possession offense with a minimum of two to ten years in jail with a fine up to $20,000 (Whitebread, 1995). Despite harsher penalties for marijuana possession, marijuana use increased dramatically in the 1960s.

By 1970, people realized that the stricter sentencing laws enacted in the 1950s did little to discourage marijuana use, so Congress repealed most mandatory minimum sentencing for marijuana possession in the Controlled Substances Act (CSA), which was Title II of the Comprehensive Drug Abuse Prevention and Control Act passed in 1970(CDAPCA). The CDAPCA also strengthened law enforcement by allowing police to conduct "no-knock" searches of suspected drug users and traffickers. Moreover, the CSA separates drugs into one of five schedules based upon their potential for abuse, their medical use, and the user's likelihood of dependence (See Table 2 on the following page). As Table 2 demonstrates, marijuana is classified as a Schedule I drug, meaning that it is highly addictive and has no medical value. Lastly, the CDAPCA ruled that the Bureau of Narcotics and Dangerous Drugs (BNDD), which became the Drug Enforcement Administration (DEA) in 1973, has the power to control which substances are on the control list. Any individual or organization can petition a drug's scheduling, after which the DEA will begin its own investigation into the drug, with the help of

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[2] The U.S. Pharmacopoeia is a non–governmental, official public standards–setting authority for all medicines and other healthcare products manufactured or sold in the United States.

the Department of Health and Human Services (HHS) and the Food and Drug Administration

(FDA). The CDAPCA is still the federal drug policy in the United States.

Table 2: DEA Federal Drug Scheduling Guidelines
(From Rosenthal and Kubby, 2003, pp. 52-53)

	Schedule I	Schedule II	Schedule III	Schedule IV	Schedule V
Substances	**Marijuana**, PCP, LSD, Heroin, Quaaludes	Amphetamines, Cocaine, Codeine, Morphine, Methadone, Opium	Marinol, Anabolic Steroids, Barbiturates, Phenobarbital	Xanax, Valium, Halcion, Ambien	Robitussin A-C, Lomotil
Potential For Abuse	High potential for abuse	High potential for abuse	Moderate potential for abuse (lower potential than substances in Schedules I or II)	Low potential for abuse (lower potential than substances in Schedule III)	Lowest potential for abuse (lower potential than substances in Schedule IV)
Medical Use	No currently accepted medical use in treatment in the U.S.	Medical use in treatment currently accepted in the U.S., possibly with severe restrictions	Medical use in treatment currently accepted in the U.S.	Medical use in treatment currently accepted in the U.S.	Medical use in treatment currently accepted in the U.S.
Likelihood of Dependence	There is no safe acceptable use even under medical supervision	Abuse may lead to severe psychological or physical dependence	Abuse may lead to moderate or low physical dependence or high psychological dependence	Abuse may lead to limited physical dependence or psychological dependence	Abuse may lead to limited physical dependence or psychological dependence

In 1969, President Richard Nixon broached the idea of a "war on drugs," which was

made official in 1971 when he called drugs "public enemy number one in the United States"

(PBS, 2010). Marijuana was one of the first drugs attacked under the auspices of the War on

Drugs during Operation Intercept in 1969. In an attempt to reduce marijuana trafficking across

the U.S.-Mexico border, Operation Intercept subjected every vehicle crossing the border into the U.S. to a three-minute inspection. After essentially shutting down cross-border traffic, Operation Intercept concluded in about two weeks (PBS, 2010).

The War on Drugs continued attacking various drugs (mainly heroin, cocaine, and marijuana) throughout the years. After a report in 1971 showing widespread use of heroin among servicemen in Vietnam, the government enacted Operation Golden Flow, subjecting returning soldiers to urinalysis tests to confirm or deny these allegations. In 1975, the federal government turned its attention to cocaine after Colombian officials seized 600 kilos of cocaine in a Cali airport. In response to the seizure, drug traffickers killed 40 people in Medellin in one weekend, which was only the beginning of decades of murders, kidnappings, and violence due to the drug trade. Cocaine continued to be a serious opponent in the war on drugs as the media glamorized cocaine use and the "Medellin Cartel" in Colombia gained power. Moreover, crack, a potent and highly-addictive form of smokeable cocaine, became popular in the early 1980s and fueled the demand for drugs.

From 1973 to 1978, 11 states adopted statutes that decriminalized marijuana (Joy et al., 1999, p. 14). Jimmy Carter even campaigned on the decriminalization of marijuana in the 1976 presidential election. At the same time, the anti-drug parents' movement began with the founding of Families in Action. Families in Action was the first parents' organization designed to fight teenage drug abuse and was influential in convincing Washington not to decriminalize marijuana.

In the 1980s, the Reagan Administration renewed society's interest in the War on Drugs with Nancy Reagan's "Just Say No" movement in 1984. A year later, over 5,000 "Just Say No" clubs had formed in the U.S. (Suddath, 2009). This campaign was followed by legislation when

President Reagan signed the Anti-Drug Abuse Act of 1986. The Anti-Drug Abuse Act appropriated $1.7 billion to fight the drug crisis and created mandatory minimum penalties for drug offenses (PBS, 2010). This bill was criticized for promoting racial disparities in the prison systems because of the differences in sentencing for crack and powder cocaine. Around the same time, the Los Angeles Police Department Drug Abuse Resistance Education (D.A.R.E.) school-lecture program gained nation-wide popularity. In 1987, Partnership for a Drug-Free America launched the ads that featured a hot skillet and a raw egg with the phrase "This is your brain on drugs." Although the War on Drugs in the 1980s focused mainly on decreasing heroin, crack, and cocaine use, it was during this time that many of the states that had decriminalized marijuana in the 1970s recriminalized marijuana again. Despite all of these reforms and education programs, drug use in the U.S. remained high.

The drug war took a dramatic shift during the 1990s. Throughout the 1990s and into the early 2000s, the percentage of all drug arrests for cocaine and heroin and other drugs decreased; while the percentage of all drug arrests for marijuana increased (See Figure 1 on the following page). The Sentencing Project, a national organization working for a fair and effective criminal justice system, conducted a study in 2005 about marijuana's position in the War on Drugs. The authors' analysis "indicates that the 'war on drugs' in the 1990s was, essentially, a 'war on marijuana'" (King and Mauer, 2005, p. 1). Their study found that marijuana arrests increased by 113% between 1990 and 2002, while overall arrests decreased by 3% (King and Mauer, 2005 p. 2). Since the 1990s show stability in other drug use violations as well as a decrease in overall drug arrests, King and Mauer conclude that "the growth is probably better understood as the result of selective enforcement decisions" (King and Mauer, 2005, p. 4). According to statistics

from a wide variety of sources, including King and Mauer, the increase in enforcement measures

has not led to a decrease in use or availability of marijuana, or an increase in cost.

Figure 1: Trends in Drug Enforcement (1982-2002)
(From King and Mauer, 2005, p. 6)
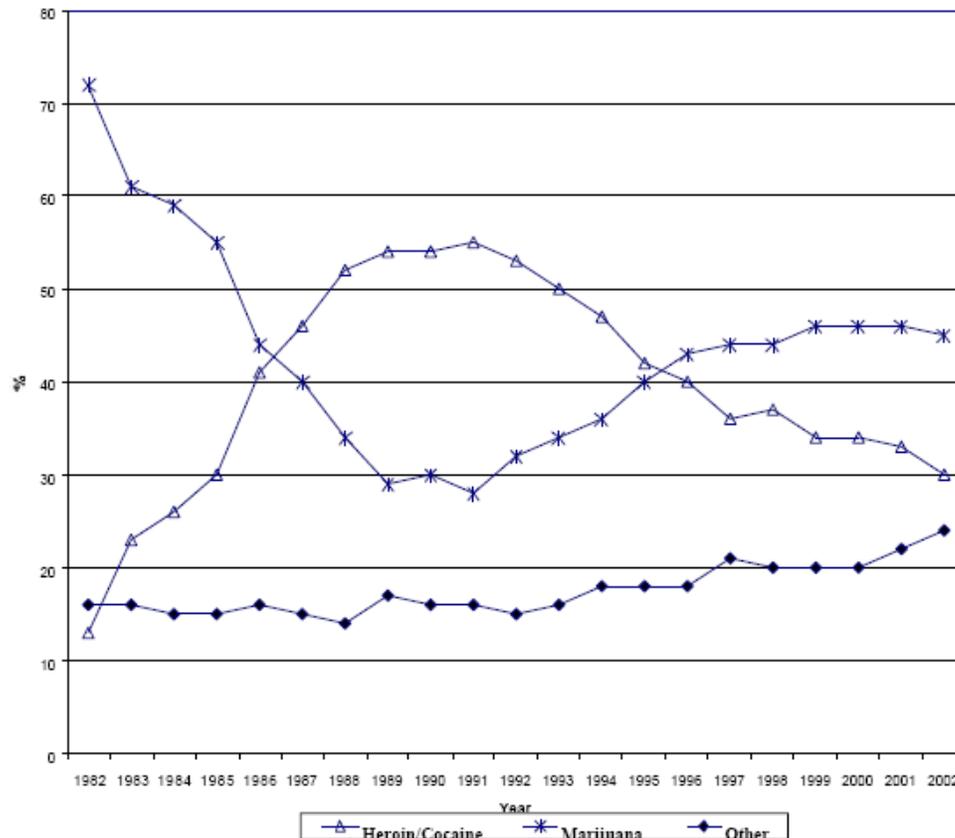
Another interesting shift in the 1990s was the rise and success of the medical marijuana

campaign. As early as the 1970s, cancer patients discovered that marijuana mitigated negative

effects of chemotherapy, such as nausea. Health departments in six states investigated and

documented these claims (Joy et al., 1999, p.13). In the 1980s, AIDs patients recognized that

smoking marijuana had therapeutic effects on some of their symptoms associated with AIDS

wasting, such as lack of appetite, nausea, and diarrhea. Law enforcement officials caught and

charged some of these patients with unlawful possession of marijuana, to which defendants

invoked the medical necessity defense, saying that they were using marijuana to treat medical

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conditions. Many scientific studies were conducted in the 1980s to prove marijuana's pharmacotherapeutic benefits, but the DEA rejected most reports on the grounds that they violated one or more of the traditional scientific experimental methods (too few patients involved, patients knew they were receiving marijuana, not randomized studies). Moreover, the DEA feared that the risks associated with consuming marijuana outweighed any medical benefits the drug could impart.

Medical marijuana supporters were unsuccessful in convincing the DEA of marijuana's proven medical benefits until 1988 when a DEA administrative law judge ruled favorably on a petition at the time and declared that marijuana unquestionably had medicinal value in relieving patients' distress and that the DEA should legalize marijuana for medical situations. Later, the DEA denied the rescheduling petition and kept marijuana as a Schedule I drug. Since then, the DEA has denied all rescheduling petitions.

Although the Bush Administration took a tough stance on drugs in the 1990s, lawmakers have relaxed policies in recent years. During this time, the movement to legalize medical marijuana has gained momentum. In fact, public opinion polls in 1997 and 1998 revealed that 60%-70% of respondents favored legalizing medical marijuana (Joy et al., 1999, p. 13). In 1996, California and Arizona legalized medical marijuana in two referendums, making them the first states to do so. Since then, 14 states have legalized medical marijuana by adopting referendums or legislation, but these state regulations were at odds with federal regulations in the CDAPCA. That means that if a medical marijuana user with a permit in California had been caught for marijuana possession during a federal raid, then that user would face criminal prosecution by the federal government.

However, the rules of the game changed in October of 2009 when the Justice Department declared that it would no longer pursue medical marijuana users and distributors who comply with state laws. This move was characteristic of the Obama Administration's new approach to the War on Drugs. The Obama Administration has been clear that it will discontinue the prohibition and "war on drugs" approach of previous administrations, and instead focus policy making on prevention and harm reduction strategies, which are often used in European countries. Harm reduction policies

> favor the treatment of drug addiction by health care professionals over incarceration in the penal system; maximizing the potential benefits of drugs; emphasizing that intervention should be based on the relative harmfulness of a drug to society; and reducing the hazards of drug use through education, prevention, and treatment (Romero, 2008, p. 144).

Instead of treating drug users as criminals and punishing them with fines and incarceration, harm reduction policies treat drug users as people dealing with a disease.

Many economists, politicians, and citizens support a move away from the zero tolerance policy of the War on Drugs because it is widely viewed as a failure for a variety of reasons. As mentioned earlier, the drugs have been seen as a threat to security, so the War on Drugs has been fought mainly through criminalization of drugs and a zero tolerance policy. However, critics claim that the emphasis placed on investigation, prosecution, and incarceration of people convicted of drug possession rather than on education, prevention, and treatment, has been the wrong approach and has not helped reduce crime as much as harm reduction could. For example, the average American pays nearly $300 in state taxes for drug enforcement measures, while only paying $10 for prevention and treatment (Romero, 2008, p. 144). This focus on incarceration has also led to high prison populations, with 21% of state and 55% of federal inmates held for drug violations (ibid.).
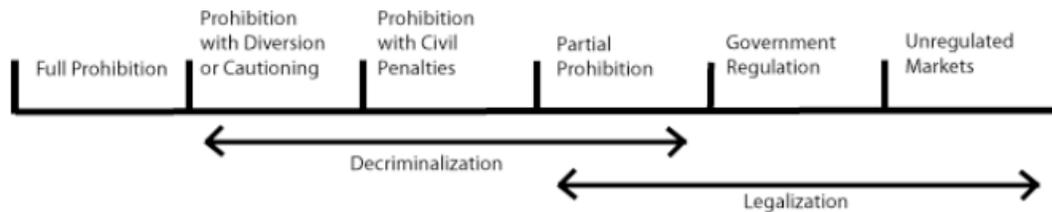
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The Drug War is also very costly. According to the Office of National Drug Control Policy's budgets, roughly $40 billion per year is spent on the state and federal level to fight drug use and drug abuse in the U.S. (ibid.). Many critics think this money could be better spent on other programs. Critics also question the War on Drugs' efficacy as the types of drugs used changes from the abuse of illicit drugs to abuse of prescription drugs. The War on Drugs is also costly because many people die each year in drug-related violence. Illegal drugs are costly because consumers must pay a black market premium, which has two consequences for the levels of crime and violence. First, high prices can lead drug users to commit crimes in order to feed their addictions. Second, high prices make it lucrative for people to enter the illegal drug industry and also make them more likely to resort to violence to keep away those threatening their livelihood.

Another criticism of the War on Drugs is that it unfairly targets minorities and infringes on the civil liberties of all. The Human Rights Watch issued a report in 2009 which studied arrests by race for drug possession and found that "in every year from 1980 to 2007, blacks were arrested nationwide on drug charges at rates relative to population that were 2.8 to 5.5 times higher than white arrest rates" (Human Rights Watch, 2009, p. 1). The report also notes that blacks and whites engage in drug use at comparable rates (ibid.). But according to critics, everyone's civil liberties are at stake also. Critics complain that the War on Drugs gives the government unprecedented power to conduct no-knock searches and surveillance with little cause. They say that we have become a "society of suspects," in the government's eyes.

As mentioned earlier, marijuana violations comprise a large part of drug arrests in the United States. Also, as will be discussed in the next section, many Americans do not feel that marijuana is a "hard" drug due to its low level of dependency and calming high. For these two

reasons, many critics of the War on Drugs think that the legal status of marijuana needs

changing. There are many legal status options the U.S. could take (See Figure 2).

Figure 2: Legal Status Options
(From Chaiken, 2009, p. 7)

| Full Prohibition | Prohibition with Diversion or Cautioning | Prohibition with Civil Penalties | Partial Prohibition | Government Regulation | Unregulated Markets |

Decriminalization

Legalization

Currently, the United States is at the left of the spectrum at "Full Prohibition," where

drug possession is criminalized. Prohibition with diversion or cautioning means that

intermediate measures are applied to offenders at various stages (Chaiken, 2009, p. 7). Diversion

refers to placing the offender into treatment or educational programs either before the trial or

instead of the trial. Cautioning is when the police force handles marijuana offenses that could

result in arrest by warning and cautioning the offenders. An important thing to note is that either

way, prohibition with diversion or cautioning does not change the legal status of marijuana; it

simply changes the penalties for violating the law.

The next category is prohibition with civil penalties, which is what is more commonly

thought of as decriminalization. In this legal status option, possession and use remain outlawed,

but instead of marijuana possession being a criminal penalty, it is treated as a civil infringement

(Chaiken, 2009, p. 7). The offender merely pays a fine or receives a citation like he or she would

if caught speeding. In the next category, partial prohibition, personal marijuana use and

possession is no longer illegal, but large-scale production and distribution is. Partial prohibition

also comes as both *de facto* and *de jure* legalization. Room et al., authors of the Global

Cannabis Commission Report of 2008, discuss this distinction further by explaining

In the [*de facto*] model, cannabis use is usually prohibited by criminal law, yet formalized procedures of enforcement practice (i.e.,either at the law enforcement or prosecution level) have created a situation in which personal cannabis use is reliably and predictably not sanctioned by any punitiveinterventions. In the [*de jure*] model, the legality of personal cannabis use is defined by the letter of the respective law, i.e. the non-punishment of cannabis use is either explicitly written into the relevant drug control statute or the scope of the law governing illegal drug use does not extend to cannabis possession. Importantly, *de jure* legalization of cannabis use is not dependent on the way the law is applied in practice (Room et al., 2008, p. 112).

The most prominent example of *de facto* legalization is found in the Netherlands. Marijuana use is technically illegal in the Dutch penal code, but under the "expediency principle," the police can decide if enforcing the law in different situations is in the public's best interest (Room et al., 2008, p. 113). Essentially, this is a system of *de facto* legalization, where marijuana use is tolerated in certain areas, such as the home or the unique institution of *coffee shops*, where small amounts of marijuana (up to 5 grams per day) can openly be consumed and purchased for personal use (ibid.). Outside of these areas, marijuana use and possession is followed by police warnings or fines.

One of the benefits of the Dutch system is that it creates a separate market for marijuana, meaning that marijuana is largely traded in an environment void of "hard drugs," thus limiting users' exposure to other drugs. While this situation works relatively well for the Dutch, who have a lower uses of marijuana than Americans, problems have been reported with the control of the wholesale supply to the vending outlets (Room et al., 2008, p. 114). The Global Cannabis Commission Report refers to the "backdoor problem" of Dutch marijuana policy, in which grower and supplier networks have formed in the market to meet the current demand, but are not legally regulated by the *de facto* framework that regulates the coffee shops (ibid.).

The last two legal status options are government regulation and unregulated markets. The difference between the two is that under government regulation, marijuana is not freely

available for sale and distribution like computers and cereal. Instead, it is taxed at higher rates than other products and would be sold in a restricted fashion similar to tobacco and alcohol.

For the sake of this thesis, a "legal marijuana market" or "the legalization of marijuana" refers to a legal status option of government regulation. This is for two main reasons. First of all, it is highly unlikely that the government would create unregulated markets for a drug that is currently a Schedule I drug. Changes in scheduling will most likely occur on a graduated and progressive basis. Second, it is a common assumption in the literature that if legalized, the government would treat marijuana similarly to tobacco and alcohol, consequently regulating it with high taxes.

III.   Arguments For and Against Marijuana Legalization

This section will give an overview of economic, social and other arguments for and

against marijuana legalization. Using economic arguments as a base for discussion, this thesis

argues that legalizing marijuana has favorable implications for the economy, such as raising tax

revenue, saving on prohibition costs, creating new industries, and lessening violence in Mexico.

Nevertheless, this section will provide a range of views on other issues that affect individuals'

beliefs about legalization to demonstrate that in reality, there are other arguments besides

economic ones that can affect individuals' beliefs about marijuana policy. Lastly, this list is not

meant to be inclusive of every viewpoint and opinion in regard to marijuana legalization.

Rather, it offers an overview of many of the main arguments. The cases against and for

legalization will be broken down into economic, social, and other arguments.

A. Arguments Against Legalization

a. Economic Arguments

The main economic argument against legalization of marijuana is that it causes negative

externalities for non-users. A negative externality exists when the actions of one individual

impose a cost on society as a whole. The traditional approach to solving externalities has been

government intervention, which in this case is prohibiting marijuana use[3]. The two main

externalities opponents to legalization identify are second-hand smoke inhalation and stoned

driving.

The first externality is that legalizing marijuana would create an externality in the form of

smoke for non-users. Unless smoking marijuana were banned in public places, when a

marijuana user smokes, he or she imposes a negative externality on bystanders who are subject to

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[3] It is also typical for governments to solve externalities through taxation.

inhaling second-hand smoke against their wills. The problem of externalities is serious in the United States, as seen by the recent legislation passed in many states to ban tobacco smoking in many public places. Opponents of legalization claim that prohibition reduces the risk of this externality, and changes in the law would make second-hand smoke a larger problem unless mitigated by other laws to ban smoking marijuana in public.

A second externality that is created by legalization of marijuana would be stoned driving. A study conducted by the National Highway Traffic Safety Administration and a Dutch university found that "THC impaired a driver's ability to maintain a constant speed, stay in one's lane, and react to the speed of the car in front; even a relatively low dose of THC slowed reaction time" (Ruschmann, 2004, p. 32). Also, another study found that teenagers who drove more than six times a month after using marijuana were two and a half times more likely to be involved in a crash (ibid.). The individual is not the only person assuming risk when he or she decides to drive stoned; rather, all drivers and passengers on the road are negatively affected as well. Since stoned driving can lead to disastrous results, it is the job of the government to keep protecting society from this negative externality through prohibition.

b. Social

The main social arguments against legalization are that marijuana is a gateway drug; legalization would create demand for marijuana; legalization would increase crime if marijuana users are not punished; and the government should not legalize something that is unhealthy and can cause dependence.

For years, marijuana has been called a gateway drug, meaning that a person typically uses marijuana before progressing to more dangerous substances. Studies support this argument by finding that regular marijuana users commonly consume harder drugs too, while those who have

never tried marijuana rarely do (Ruschmann, 2004, pp. 25-36). Also, marijuana exposes users to a culture that supports experimentation with harder drugs, increasing their likelihood of becoming dependent on more drugs. With marijuana legalized, opponents fear that drug use on the whole will increase.

Not only will drug use overall increase, but opponents fear that marijuana legalization would lead to more marijuana users than exist currently under prohibition. With no black market premium, prices would fall, which could increase use. Also, removing its illegal status could make people think it is "ok" to use and could give them more reason to try it when they never would have if it were illegal. Lastly, liberal marijuana laws have been associated with increased marijuana use in the past, especially amongst teens. After a number of states decriminalized marijuana, a 1979 study found that a record-high 51% of twelfth graders had used marijuana in the past year (Ruschmann, 2004, p. 92). Thirteen years later, after the establishment of tougher marijuana laws, that number was down to 22% (ibid.). Many opponents explain this drop in use from 1979 to 1992 by the tougher drug laws in place. Opponents also fear that increased use amongst teens could lead to permanent developmental damage. Adolescence is a critical time for maturation and brain development, and studies have linked heavy marijuana use with abnormalities in regions of the brain dealing with memory, attention, decision-making, language and executive functioning skills (Ashtari et al., 2009).

Opponents of legalization believe that marijuana users are people who have committed or are likely to commit more serious crimes and can be taken off the streets under prohibition. However, if marijuana were legalized, these offenders would be free, and crime would increase. In a study of men who had been arrested, more than half of them had at least one drug in their systems, which most commonly was marijuana (Ruschmann, 2004, p. 25). Also, juvenile

delinquents report that marijuana is their drug of choice (ibid.). Citing studies like these, opponents argue that marijuana use can create criminals, so it is necessary to remove these criminals from the streets to decrease crime.

Finally, opponents argue that marijuana use is not safe and can lead to dependence. Smoking marijuana can cause a variety of illnesses, such as increased frequency of bronchitis, emphysema, and asthma. Long-term users can suffer from apathy, loss of motivation, damages to the immune system, heart, and lungs, and even cancer. Those who smoke marijuana "inhale three to five times as much tar and carbon monoxide as cigarette smokers" (Rushmann, 2004, p. 27). Moreover, although proponents of legalization claim that marijuana is not addictive, they cannot deny that marijuana can cause dependence and users experience mild withdrawal symptoms upon quitting. Symptoms may include restlessness, irritability, mild agitation, and sleep disruption (NORML, 2009). Opponents of legalization also believe that this dependence could strain the health care system as more and more users seek medical care if prohibition ended.

c. Other Arguments

The final principal argument of those opposed to legalization is that marijuana use is morally wrong. Some people believe that using drugs or intoxicating substances violates religious, personal, or societal values. They think that society should not endorse the use of harmful drugs for anyone, so prohibition should remain in place.

B. *Arguments For Legalization*

a. Economic Arguments

Because these economic arguments will be addressed in the thesis, this section will only list them. Further discussion can be found in subsequent sections. The main economic

arguments for legalization are that it can create tax revenues for the government, save money in criminal justice resources, lead to a productive hemp industry, lower the price for marijuana, thus reducing related crimes and violence (in both the U.S. and Mexico), and limit government coercion and promote individual freedoms.

   b. Social Arguments

The main social arguments for legalization are that it provides the opportunity for health warnings; the opportunity for drug regulation and its contents, also meaning that there will be more limited access for children; fewer social costs for users; fewer drug dealers; and the opportunity to be used for medicinal purposes.

The first two arguments are related. In a legal market, foods and drugs must be regulated by the United States Food and Drug Administration (FDA) to protect public health by assuring the safety, effectiveness, and security of a variety of products, including drugs. For example, the FDA regulates the manufacturing, marketing, and sale of tobacco products, so that a standard of quality is established and every producer is following the same rules. Proponents of legalization say that FDA regulation of marijuana would be beneficial. FDA regulation would require warning labels on marijuana products, thus informing consumers of its harmful effects. FDA oversight would regulate the amount of THC in marijuana, which can range from 3% to 15% (and increasingly, even more) in black market marijuana (Roulac, 1997, p. 6). With FDA regulation, the government could maintain THC content at a reasonable level. Additionally, consumers could have better information on what products they are buying and pay for it accordingly.

Lastly, regulation would limit children's access to marijuana. Without regulation, marijuana is accessible to children of any age, as opposed to regulated drugs, like tobacco, which

have minimum purchasing ages and have been on the decline amongst teen users. Marijuana use, however, has increased amongst teens. A 2009 survey published by the National Institute on Drug Abuse says that declines in marijuana use amongst teens have stalled, and that 33% of twelfth graders, 27% of tenth graders, and 12% of eighth graders are self-reported marijuana users (NIDA, 2009, p. 2). Supporters of legalization claim one reason why teen use is so great is due to marijuana's easy accessibility in the black market, which can be significantly curbed by governmental restrictions similar to alcohol regulation.

Proponents of legalization also say that marijuana users face significant social costs. Many users and producers do not feel that they are committing crimes because they think U.S. marijuana laws are unjust and based upon ignorance. Nevertheless, they face the social costs of their actions. Recreational marijuana users, the majority of whom are not criminals, face the social costs of incarceration, limited access to government jobs, loss of privacy due to drug testing, and limited access to government scholarships for those attending school, to name a few (Rosenthal and Kubby, 2003, p. 72-82). Moreover, proponents claim that many young users, once caught for marijuana use, are trapped in a system of incarceration that puts them in contact with serious drug offenders, leading to a lifetime of crime.

Another social benefit to legalizing marijuana is that it could bring a decrease in the number, power, and influence of drug dealers. As will be explained in greater detail later, a legal marijuana market would mean lower drug prices, and this competition could bring an end to many dealers' careers. Without marijuana, the cash cow of many cartels and gangs, their power would decrease, and so would their violent activities.

The last social benefit is that legalization would allow people to use marijuana in medical situations in all 50 states. Currently, 14 states allow marijuana use in medical situations. Those

in favor of legalization claim that medical marijuana has a variety of therapeutic effects for chronic illnesses such as AIDS, asthma, arthritis, cancer, chronic pain, glaucoma, epilepsy, multiple sclerosis, migraine headaches, insomnia, and depression. Opponents of medical marijuana law reform often argue that few or no health authorities recognize cannabis as a legitimate therapeutic agent. However, more than 60 U.S. and international health organizations, including the American Public Health Association, Health Canada, The Belgian Ministry of Health, and the Federation of American Scientists, support granting patients immediate legal access to medicinal marijuana under a physician's supervision (NORML, 2008). Several others, including the American Cancer Society and the American Medical Association, support the facilitation of wide-scale, clinical research trials so that physicians may better assess marijuana's medical potential (ibid.).

 c. Other Arguments

Proponents of legalization also argue that marijuana should be legal because it is no more harmful than tobacco or alcohol and law enforcement should handle more serious crimes than marijuana offenses.

Many experts, politicians, and doctors have determined that marijuana is no more harmful than legal drugs such as tobacco or alcohol, and may be less harmful. In fact, the former British government's chief drug adviser created controversy this fall when he claimed that marijuana is the eleventh most harmful drug, ranked after alcohol (fifth) and tobacco (ninth) (AP, Drugs Chief, 2009). According to the CDC, 443,000 and 22,000 people die yearly from tobacco-related and alcohol-related deaths, respectively (CDC, 2009). As for marijuana, lethal doses are not known (Shohov, 2003, p. 26). Experts have also determined that both alcohol and tobacco

have stronger withdrawal effects, are more intoxicating, and pose a higher risk of dependence than marijuana (Ruschmann, 2004, p. 48).

Another argument is that courts should be handling more serious crimes than marijuana possession and trafficking. Paul Ruschmann, a researcher, writer, and editor, explains that "critics question the wisdom of spending scarce law-enforcement resources on pursuing minor marijuana offenders instead of high-level growers and traffickers, especially when marijuana remains plentiful and millions of people still use it" (Ruschmann, 2004, p. 55). If legal, proponents say that resources could be spent on other, "harder" and more harmful drug enforcement or on non-drug-related crimes.

Lastly, legalization means that marijuana would no longer be in the same market as harder drugs. Proponents say this is a good thing because marijuana would no longer be a gateway drug to harder drugs, and users would not be exposed to a drug culture promoting experimentation.

As mentioned before, this thesis will not use arguments besides economic ones to champion marijuana legalization. Opponents of legalization point to externalities as economic reasons why prohibition should remain. However, similar externalities already exist due to legal drugs. Second-hand smoke and drunk driving are two examples. Society is able to cope with these negative externalities with regulation, not outright prohibition. This would most likely be the case with marijuana as well.

IV.   Estimated Amount of Tax Revenue Generated by Legalization

This section discusses three reports that attempt to estimate the amount of tax revenue that could be raised under a legal marijuana market. The primary problem with literature about estimating the tax revenues is that marijuana is an illegal good, so the data available carries a level of uncertainty and researchers must rely heavily on assumptions. Although each report discussed in this section includes analysis of the marijuana market in general, the literature review focuses mainly on a legal marijuana market's potential for generating tax revenue.

Dr. Jeffrey Miron's Analysis: "The Budgetary Implications of Marijuana Prohibition"

The first prominent estimation of the potential tax revenue that could be raised from legalizing marijuana is from Jeffrey Miron's 2005 report entitled "The Budgetary Implications of Marijuana Prohibition." Jeffrey Miron is a Visiting Professor in the Department of Economics at Harvard University. He specializes in the economics of libertarianism, with a special emphasis on the economics of illegal drugs (Miron, 2006). His report outlines not only the tax revenue that could be collected from legalization, but also the cost-savings analysis that will be discussed later in the thesis.

To determine the amount of revenue that the government could collect from a licit marijuana market, the report first estimates the current expenditure on marijuana on a national level. Second, it estimates the expenditures that would most likely occur if marijuana were legalized. Next, Miron estimates the revenue the government could raise based on these expenditures under legalization, given his assumptions about the taxing system the government would apply. Lastly, Miron estimates the revenues that would accrue to each state.

To estimate the expenditure on marijuana in the current state of prohibition, Miron uses the numbers presented by the Office of National Drug Control Policy (ONDCP). The ONDCP

reports that in 2000, United States residents spent $10.5 billion on purchasing marijuana (ONDCP, 2001, as cited in Miron, 2005, p. 11). He adds that this figure "relies on a range of assumptions about the marijuana market," and that changing of these assumptions could alter the level of estimated expenditure (Miron, 2005, p. 11). Further research of the ONDCP report revealed nothing about the assumptions the organization made.

Next, Miron estimates the national expenditure on marijuana in a legal market. Miron frames this estimation in terms of the changes in the supply and demand curves for marijuana from a state of prohibition to a state of legalization. He assumes that if marijuana were legalized, there would be no change in the demand for marijuana (Miron, 2005, p. 12). Miron claims that this assumption would likely understate the tax revenue because prohibition likely deters some people from using marijuana who otherwise would if it were legal (ibid.). He notes that any increase in demand would likely come from casual users who would have little effect on the overall demand (ibid.). Increase in marijuana use could also result in a decrease in the use of other legal drugs, such as tobacco or alcohol, in which case the revenue generated from marijuana sales would be partially offset by the decrease in revenue from traditional sources (ibid.). Miron states that there might be a forbidden fruit effect from prohibition, meaning that marijuana use would in fact increase when illegal (ibid.). He believes that this effect would offset the demand-decreasing effects of penalties under prohibition. Therefore, the assumption of no change in demand is plausible.

Since demand is fixed, any price and quantity changes would result from changes in the supply conditions. On one hand, suppliers in a legal market would not incur penalties such as threat of arrest, incarceration, or fines, as they would under prohibition, which suggests an increase in supply and subsequently lower prices under legalization. On the other hand, a

regulated market means that suppliers would face regulatory institutions and taxes they would

normally avoid in the black market, which could push the supply down and drive prices up.

Because marijuana is illegal, Miron concludes that it is difficult to quantify the changes in prices

from prohibition to legalization (ibid.).   He says that the best available data is from the

Netherlands, a country with de facto legalization. The prices of marijuana in coffee shops in the

Netherlands are roughly 50 to 100 percent of U.S. prices (MacCoun and Reuter, 1997, as cited in

Miron, 2005, p. 13).

Another factor affecting price decline is the elasticity of demand, or the responsiveness of

the quantity demanded of a good or service to a change in its price. For example, if the price of

an inelastic good increases, the quantity demanded will not change significantly. Because of the

illegal status of marijuana, it is once again difficult to obtain data on its elasticity of demand.

Nevertheless, current estimates from Nisbet and Vakil using survey and purchase data imply an

elasticity from -0.5 to -1.0, and another survey from Clemens and Daryal uses Australian data to

reach an elasticity of -0.5 (Nisbet and Vakil, 1972 and Clemens and Daryal 2001, as cited in

Miron, 2005, p. 12). This estimate is on par with elasticities of "similar" goods, such as heroin,

tobacco, cocaine, etc. An elasticity of demand of -0.5 up to -1.0 makes marijuana a relatively

inelastic good (see Table 3).

Table 3

Value	Meaning
$E_d = 0$	Perfectly inelastic
$-1 < E_d < 0$	Relatively inelastic
$E_d = -1$	Unitary elastic
$-\infty < E_d < -1$	Relatively elastic
$E_d = \infty$	Perfectly elastic

Miron explains the effect of price decline by saying,

> If the price decline under legalization is minimal, then expenditure will not change regardless of the demand elasticity. If the price decline is noticeable but the demand elasticity is greater than or equal to 1.0 in absolute value, then expenditure will remain constant or increase. If the price decline is noticeable and the demand elasticity is less than one, then expenditure will decline (Miron, 2005, p. 13).

Miron believes that a decline in price greater than 50% is unlikely. Coupled with a minimum demand elasticity of -.05, the probable decline in expenditure is approximately 25% (Miron, 2005, p. 14). Given the $10.5 billion estimate of expenditure under prohibition from the ONDCP report, this 25% decline results in an expenditure under legalization of around $7.9 billion (Miron, 2005, p. 14).

Miron's next step is to make assumptions about the tax system that the government would apply under legalization. One way that marijuana could be taxed is like other goods, in which case the tax revenue as a fraction of expenditure would be around 30%. This translates into revenues of about $2.4 billion (ibid). The government could also tax marijuana by levying a sin tax, as is done with alcohol and tobacco. The tax must not be too high as to create another black market. Miron therefore assumes an excise tax that doubles the price (Miron, 2005, p. 15). Assuming that the general tax rate is 30%, the sin tax (50%) would make the tax revenue 80% (=30%+50%) of the price (ibid.). Doubling the price with an elasticity of demand of -0.5 would increase expenditures by roughly 50% and lead to a total expenditure of $11.85 billion (=$7.9 x 1.5), 80% of which would be tax revenue (ibid.). Tax revenue would then be $9.5 billion (=$11.85 billion x .8) (ibid.). He notes that this figure should be considered an upper limit because some production might remain underground and also the elasticity could increase with price, thus decreasing consumption, expenditures, and therefore tax revenue. He says then that an excise tax that would increase the price by 50% is more modest and feasible, and would raise $6.2 billion in revenue (ibid.).

Miron's report was endorsed by more than 530 economists including Dr. Milton

Friedman, Dr. George Akerlof of the University of California at Berkeley, and Dr. Vernon Smith

of George Mason University (Marijuana Policy Project, 2005). It brought the economic

implications of legalization to the forefront and has precipitated more discussions about the

United States' failed marijuana policy. Miron clearly explains the demand-side effects of

legalization on price and quantity of marijuana, yet his analysis includes only a brief overview

about supply-side effects. Also, he bases many of his assumptions on only one or two sources,

when other researchers in the field use a broader base of literature when making key

assumptions. For example, Miron uses an ONDCP report to establish the current level of

American expenditures on marijuana, but the report relies on a range of unknown assumptions

about the market which Miron does not explain and furthermore dismisses as unable to affect his

estimates. However, methodology matters, and even one assumption could alter his conclusions.

Dr. Jon Gettman's Analysis: "Lost Taxes and Other Costs of Marijuana Laws"

Dr. Jon Gettman is a prominent marijuana reform activist who frequently publishes

articles mainly about marijuana reform. He holds a Ph.D. in public policy and regional

economic development (Gettman, 2009). His report, called "Lost Taxes and Other Costs of

Marijuana Laws," discusses the tax revenue that the United States government loses as a result of

people diverting money into the illegal marijuana market.

Gettman first tries to determine the price of marijuana. He discusses five ways to

determine the price which are the following: using marijuana seizures reported by the police;

using the range of prices reported in government reports on marijuana-related trends; using the

federal government's System to Retrieve Information from Drug Enforcement (STRIDE)

program which provides information on prices from undercover police purchases; using the

National Survey on Drug Use and Health (NSDUH) which asks respondents the price they paid

for marijuana; and using *High Times*, a magazine that gathers price information from readers

(Gettman, 2007, p. 22). Gettman contends that the most accurate sources are from STRIDE,

NSDUH, and *High Times*. To establish a price to use in the rest of his analysis, he calculates the

price per gram reported in these three sources, converts them to 2007 constant dollars, and

averages them. The prices he averages range from $6.46 per gram to $9.66 per gram. The price

he determines is $7.87 (Gettman, 2007, p. 23).

Next, Gettman maintains that there are three ways to estimate the amount of supply of

marijuana in the United States. The first method is based on the federal seizures of marijuana.

Gettman cites a Library of Congress report that reveals that 50% of marijuana available in the

United States is imported (Library of Congress 2003, as cited in Gettman, 2007, pp 25). The

report also says that only 10% of illicit drugs smuggled into the country are seized by law

enforcement (ibid.). From 1998 to 2002 law enforcement officials seized an average of

2,410,571 pounds of marijuana each year, and if this is only 10% of the drugs smuggled into the

United States, one could estimate that traffickers smuggled roughly 24.1 million pounds, or

10,932 metric tons (mt) into the United States. Domestic production comprises the other half of

production, so doubling 10,932 mt yields a marijuana supply of 21,865 mt in an average year

(ibid.).

The second way to estimate supply is based on government study groups. In 2003, the

Library of Congress estimated that the marijuana supply in the United States was 17,000 mt

(ibid.). The State Department and the National Drug Intelligence Committee (NDIC) published

a report in 2006 that estimates that at least 8,700 mt of marijuana was available for sale

(Gettman, 2007, p. 28). Other groups have studied the supply, but Gettman cites the Library of Congress, the State Department and the NDIC reports as the most reliable.

The last method to estimate supply is based on consumption models. Gettman argues that the consumption model created by the ONDCP in 2001 is seriously flawed for many reasons, such as inconsistencies between the consumption report and actual marijuana seizures, and poor assumptions about the size of a joint and about people's average monthly consumption (Gettman, 2007, p. 29). Therefore, Gettman creates an improved consumption model based on the National Household Survey on Drug Abuse from 1991-1993.[4] Gettman multiplies the number of days used per year by the number of joints consumed, the size of a joint, and the number of people using marijuana with the same frequency to estimate consumption. This process yields a consumption of 9,830 mt of marijuana (Gettman, 2007, p. 32).

Gettman writes that the best way to estimate supply is to average the results from all these sources.

> Consequently, all the data presented above suggests the most reliable estimate of annual supply is one that takes each of four most prominent estimates into consideration: 1) the 21,865 mt estimate based on seizures and domestic production; 2) the 17,000 mt estimate reported by the Library of Congress; 3) the 8,700 mt estimate generated by combining State Department and NDIC reports; and 4) the 9,830 mt consumption estimate above derived from National Survey data. The average of these four estimates of supply is 14,349 mt of marijuana available in the US on an annual basis (Gettman, 2007, p. 33).

The last section of Gettman's report discusses the budgetary impact caused by the diversion of money to the illegal market for marijuana. Using the information he gathered about supply and price, Gettman determines the value of the marijuana available for sale in the United States. Converting the price of $7.87 a gram yields a price of $7,871,480 per mt (Gettman, 2007, pp34). This price is then multiplied by the 14,349 mt of marijuana in the United States to give the marijuana a value of $112.9 billion (ibid.). Gettman then argues that the illegal marijuana

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[4] Questions about marijuana consumption amounts and frequency of use were discontinued after the 1993 survey.

market diverts funds in the quantity of $112.9 billion away from the licit economy, especially

from the channels the local, state, and federal government use to collect tax revenue (ibid.).

Although some of the funds diverted into the black market eventually reenter the legal economy,

the initial purchase of marijuana occurs illegally and cannot be captured by the government. If

the $112.9 billion currently spent on marijuana were spent in the legal economy, the economic

transactions would produce billions more dollars in revenues for governments at all levels. By

examining the current levels of government revenue as a percentage of gross domestic product

(GDP), Gettman estimates that total federal and state revenue loss is $31.1 billion (ibid). He

explains that tax revenue for the local, state, and federal governments comprises 28.7% of GDP.

If $112.9 billion were added to GDP, then the governments would receive 28.7% of this, or

$31.1 billion worth of tax revenues (See Figure 3, ibid.).

Figure 3: Government Receipts by Source as Percentages of Gross Domestic Product Applied to
the Illicit Marijuana Market. (Reference Year 2006)
(From Jon Gettman, 2007, p. 35)

Illicit Marijuana Market $112,947,860,206

|	GDP %	Revenue $
State/Local Government Revenue Loss	10.30%	$11,633,629,601
Federal Government Revenue Loss		
Individual Income Taxes	8.00%	$9,035,828,817
Corporation Taxes	2.70%	$3,049,592,226
Social Insurance	6.40%	$7,228,663,053
Excise Taxes	0.6%	$67,768,716
Other	0.7%	$79,063,502
Total Federal Revenue Loss	18.40%	$19,460,916,314
Total Federal/State Revenue Loss	28.70%	$31,094,545,915

Gettman's report focuses on the revenue lost by the government instead of the revenue that can be raised, which produces a similar discussion and conclusion, but involves a different methodology in calculating revenue. Overall Gettman's approach is more comprehensive because it draws on a wider base of sources and weighs the pros and cons of alternative assumptions to find the most reasonable one. Gettman's analysis of the current literature is more rigorous than Miron's, and his report gives more weight to his discussion of marijuana supply and its effect on price and quantity. Lastly, Gettman touches on the diversion of money away from the licit economy, which adds an interesting dimension to his argument. Although this money could not be collected purely as revenue, it diverts productive capital to an illegal market which cannot be taxed.

Max Chaiken's Analysis: "The Other Green Economy: An Estimate of the Potential Tax Revenue Generated by a Legally Taxed and Regulated Marijuana Market"

The third work that attempts to estimate the tax revenue that could be generated by legalizing marijuana is Max Chaiken's thesis called "The Other Green Economy: An Estimate of the Potential Tax Revenue Generated by a Legally Taxed and Regulated Marijuana Market." Max Chaiken wrote this thesis in 2009 to earn a Bachelor of Arts degree from Brown University.

Chaiken begins his report with a hypothetical analysis of the shifts that would occur in the supply and demand curves for marijuana in the case of legalization. The effects of the curve shifts shape his methodology for determining revenue. Chaiken first discusses the supply side. He says that he expects legalization to shift the supply outward due to a decrease in production risk and the entrance of more producers, resulting in decreasing the price and increasing the quantity on the market (See Figure 4 on the following page) (Chaiken, 2009, p. 12). In Figure 4, this is denoted by a shift from the dotted black supply line to S_1. He notes, however, that there is likely to be a secondary shift of the curve inward because producers would be subject to

Figure 4
(From Chaiken, 2009, p. 13)
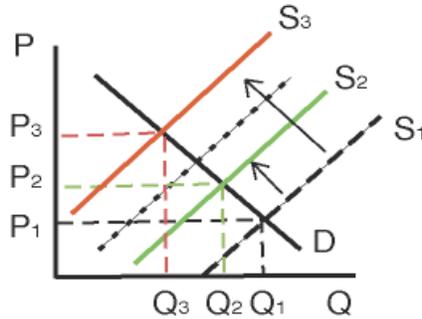
regulatory measures, such as quotas or license fees, and an excise tax (Chaiken, 2009, p. 13).

When the producers experience these regulations, they will shift their supply inward to S_2. The

goal of policy makers would be to ensure that the shift inward would not result in a supply less

than under prohibition, as depicted by S_3, because this would likely drive the market

underground again.

Chaiken then considers the elasticity of supply. He assumes that in the short-run, supply

is inelastic, while in the long run, it is perfectly elastic (Chaiken, 2009, p. 14). Figure 5 shows

this transition from elastic to inelastic supply.

Figure 5
(From Chaiken, 2009, p. 14)
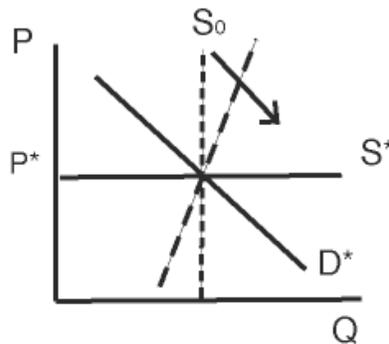
With a perfectly elastic supply in the long run, the equilibrium price is equal to the marginal cost of production, and the price the consumers pay increases by the full amount of any tax that is levied. Therefore, there is no difference between levying an ad-valorem tax, a tax as a percentage of the price of the good, or a unit tax, a tax levied as a percentage of the quantity of the good.

Next, Chaiken discusses the demand side of the situation. He notes that it is natural to assume that the demand curve would shift outward due to factors such as doctors prescribing more marijuana, increased use because of decreased risk, or changing attitudes about marijuana. Chaiken's big assumption is that the demand will not shift in the long run, which Miron also assumes in "The Budgetary Implications of Marijuana Prohibition" (Chaiken, 2009, p. 17). Chaiken notes that an unchanging demand curve still leaves room for new users in the market. If a person decides to enter the marijuana market because of a fall in prices, then this would be represented as a movement along the curve, not a shift in the demand curve (ibid.). Chaiken argues that the risk for consumers in the current state of prohibition is low, the drug is highly available, and the effects of decriminalization are still inconclusive, so it is plausible that demand would not shift in the long run. He also assumes a constant elasticity of demand because the data is not sophisticated enough to determine a change (ibid.).

Chaiken uses Figure 6 as summary of the shifts in supply and demand. In Figure 5, Chaiken estimates the shift from P_0 and Q_0 to P_2 and Q_2. S_1 and Q_1 help to determine P_1, or the price before taxes so that the tax level can be determined (Chaiken, 2009, p. 22). When the tax is levied, the supply shifts to S_2, making the new equilibrium quantity and price Q_2 and P_2 respectively, with P_2 being simply $P_1+\tau$, where τ equals the tax rate (ibid.). The revenue generated by these shifts is highlighted in pink.

Figure 6
(From Chaiken, 2009, p. 22)
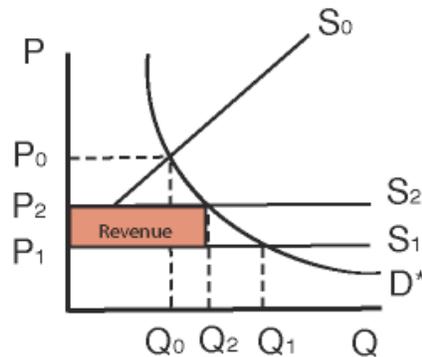
He uses these shifts in conjunction with revenue, supply, and demand equations to determine the

amount of tax revenue that can be generated. Equation 1 is the estimate for the revenue collected

in a legal market, or simply that the revenue is the tax rate multiplied by the quantity consumed.

1. $R = \tau * Q_2$
τ=the tax rate,
P=price of the good
Q=quantity consumed

Then Chaiken determines the equation for elasticity, which by definition is the percentage

change in quantity relative to the percentage change in price. Mathematically, this relationship

is:

2. $\varepsilon_D = [(Q_2 - Q_0)/Q_0]/[(P_2 - P_0)/P_0]$

Rearranging the equation to solve for Q_2 based on Q_0, P_0, and ε_D, the variables for which

Chaiken can observe data, Chaiken estimates the following equation:

3. $[\varepsilon_D * [(P_2 - P_0)/P_0]] * Q_0 + Q_0 = Q_2$

As mentioned above, P_2 is the difference between the taxed price and the illict price, which is

expressed mathematically in two different ways depending upon if the government levies a unit

tax or an ad-valorem tax.

For a unit tax:
   4. $P_2 = P_1 + \tau$

For an ad-valorem tax:
   5. $P_2 = P_1(1+\tau)$

To rewrite equations 4 and 5 in terms of variables Chaiken can estimate, he uses the following equations:

For a unit tax:
   6. $[\varepsilon_D * [[(P_1+\tau)-P_0)/P_0]] * Q_0 + Q_0 = Q_2$

For an ad-valorem tax:
   7. $[\varepsilon_D * [[(P_1\tau+P_1)-P_0)/P_0]] * Q_0 + Q_0 = Q_2$

Chaiken spends the rest of the paper discussing how to find ε_D, P_1, P_0, and Q_0 in order to determine Q_2, which multiplied by a tax rate gives the revenue generated by a regulated marijuana market.

After a section discussing regulatory structure options, Chaiken sets out to determine the current price of marijuana, or P_0, in the United States. He notes that the price depends on many factors, such as the quantity purchased, the quality of marijuana, and the location of purchase (Chaiken, 2009, p. 34). Chaiken's analysis of price is very similar to Gettman's because he uses the NSDUH, STRIDE, and High Times information from Gettman's report. The difference is that Chaiken weights these sources based on a discussion of their merits and determines that the current price is $11.12 per gram (Chaiken, 2009, p. 40). However, the price would shift in a legal market. Chaiken uses Miron's estimate that price would fall by no more than 50% in a legal market and takes his weighted averages and discounts them by 30%, 50%, and 65%. His best guess is $3.05 per gram on a regulated market (Chaiken, 2009, p. 42).

The next section attempts to estimate the quantity of marijuana, or Q_0, in the United States. He begins by determining an elasticity of demand (ε_D). Based upon the literature on cigarettes, Chaiken writes that the elasticity for marijuana is called an unconditional, or total,

elasticity, which is "the sum of the price elasticity of participation and the price elasticity of the number of cigarettes smoked conditional on positive smoking" (Grossman, 2004, as cited in Chaiken, 2009, p. 49). This type of elasticity implies that some consumers will initiate consumption of marijuana based on a decline in prices. Once again, Chaiken points out that this will not affect the assumption that demand is unchanging because the new users are already represented on the demand curve for the illegal market, but their prices are not being met; therefore, there is a movement along the curve when the number of users increases, not a shift of the curve (Chaiken, 2009, p. 49). Chaiken makes a table with various estimations of the unconditional elasticity of demand based on the age groups 12-17 and 18 and older to find an average for both age groups. He then inflates the averages by an "addictiveness" ratio to account for the fact that elasticity decreases as the level of addiction increases. His best estimate is an elasticity of -0.857 with a sensitivity range of -0.72 to -0.994, which is well within the estimates found in current literature (Chaiken, 2009, p. 51).

To determine the quantity of marijuana in the market, or Q_0, Chaiken uses supply-side methods, such as seizures of foreign imports of marijuana and plant eradication of domestic production because of the many flaws with using traditional and demand-side methods. Chaiken uses information from the Sourcebook on Criminal Justice Statistics from 2006-2009 and the Domestic Cannabis Cultivation Assessment. He then assumes that only 10% of the marijuana from foreign sources is seized, which increases his estimate of imported marijuana (Chaiken, 2009, p. 55). Chaiken also accounts for plant yields and eradication rates in his estimates of domestic production. Incorporating these parameters, he makes a best guess, minimum quantity, and maximum quantity calculation. Chaiken's best-guess estimate of a ten year average of quantity of marijuana in the market is 44,680 mt (Chaiken, 2009, p. 59).

The last part of the puzzle is to establish the optimal tax rate. The tax rate must maximize the revenue generated while minimizing the incentive for selling marijuana. If the tax is too low, the incentives to use marijuana are too high, and if the tax is too high, the incentives to pay the tax are too low. Chaiken determines that this rate is one that allows the price to fall a small amount to ensure compliance while minimizing an increase in quantity in the market. Therefore, under an optimal tax rate, P_2 is only slightly lower than P_0 (Chaiken, 2009, p. 61). Chaiken demonstrates the revenue that would be generated by setting $P_2=P_0$ by solving equations 6 and 7 for τ such that $Q_2=Q_0$ (ibid.). Therefore, the optimal tax, or τ^*, is mathematically shown in equations 8 and 9.

For a unit tax:

    8. $P_0-P_1=\tau^*$

For an ad-valorem tax:

    9. $(P_0-P_1)/P_1=\tau^*$

Chaiken's estimated Q_2 accounts for the fact that tax evasion could account for up to 10% of the sales. He then makes his estimates of the tax revenue that can be generated. Chaiken presents different scenarios based upon minimum and maximum values for the different variables, but his best guess is that $211 billion in tax revenue can be generated by a legal marijuana market (Chaiken, 2009, p. 65).

Chaiken's analysis is by far the most rigorous and complete of the three. His methodological framework emphasizes both the demand-side and supply-side effects of legalization and his equations provide a sound economic foundation for his analysis and final conclusions. Chaiken's methodological framework builds off of Gettman's report but is more extensive. For example, Chaiken weights his variables depending upon the accuracy of his

sources and also provides minimum estimates, maximum estimates, and best-guess estimates for each variable which results in more accurate conclusions if done correctly. Chaiken's estimates for the potential tax revenue are significantly higher than Gettman's and Miron's (by billions of dollars), which could be due to his more extensive approach or to faulty assumptions. However, Chaiken's assumptions closely followed Miron's and Gettman's and were consistent with current literature, so his final conclusions are likely the most accurate.

Summary of Findings

As mentioned earlier, it is very difficult to estimate the amount of tax revenue raised by a legal marijuana market. All three writers discussed generated different amounts of tax revenue, which proves that the methodology behind solving this problem matters. Table 4 provides a summary of the three analyses.

Table 4

Analysis	Author	Tax Revenue Figure
1	Dr. Jeffrey Miron	$6.2 billion
2	Dr. Jon Gettman	$31.1 billion
3	Max Chaiken	$211 billion

There is a great disparity between the three reports discussed in this section. What is the reason for this? What could be driving the fluctuation in estimates? First of all, Miron's report differs greatly from Gettman and especially Chaiken because he uses a different methodology to determine tax revenue. Miron takes the 2002 ONDCP figure of $10.5 billion in expenditure on marijuana annually and builds his estimates off of that figure. Chaiken, and to a lesser extent, Gettman, estimate a market equilibrium model using supply and demand theory. By only using one figure of $10.5 billion, which might underestimate the expenditure, Miron's estimate cannot exceed that figure and does not account for any other market forces like Chaiken and Gettman.

Gettman's and Chaiken's analyses are more similar in methodology. However, they differ in key ways as to arrive at drastically different tax revenue estimates. Gettman, unlike Chaiken, does not account for how the market equilibrium would change under legally taxed and regulated conditions. In other words, Gettman estimates the amount of tax revenue that could be generated under the current, prohibited market, while Chaiken estimates the amount of tax revenue that could be generated allowing for shifts in supply and demand under legalization. This minor difference can account for a large amount of the discrepancy between Gettman and Chaiken's estimates.

Another difference between Gettman's and Chaiken's estimates is in how they determine the supply of marijuana and the pricing of marijuana. As mentioned earlier, Gettman creates his own consumption model to help determine supply. However, the figures he uses are from over 15 years ago, so consumption today could be very different from the numbers his model suggests. Moreover, Chaiken explains,

> Gettman's model does not attempt to account for methods of using marijuana other than the joint, the social nature of marijuana usage or the observable demographic variation in use by categories other than gender. Most notably, Gettman fails to differentiate consumption by age, which is undoubtedly critical in determining how much is consumed by a given user in a typical use (Chaiken, 2009, p. 46).

For the reasons, Chaiken does not use this consumption model, or any demand-side estimates of supply. By excluding demand-side consumption models to determine supply, Chaiken finds a wider range of supply estimates that are greater than previous estimates because demand-side estimates consistently underreport the number of marijuana users. Lastly, in estimating price, Gettman's analysis uses data for the price range from 10 to 100 grams, while Chaiken includes price estimates for the less-than-10 gram quantity level because he feels it is more appropriate for the legal market.

Other than these key differences, Chaiken's report differs from Gettman's in its range of data included and the extent of its methodological framework. Taking all of these factors into account can explain the wide variations in estimates. Moreover, upon close examination, it is the author's opinion that Chaiken's analysis is the most complete and thorough, and although his estimates seem high, they most accurately reflect the amount of tax revenue that could be raised in a legal market.

V.   Cost Savings Analysis

In addition to raising tax revenue, the government can save money on marijuana

prohibition enforcement on a state/local level and a federal level. This discussion follows Jeffrey

Miron's 2005 report "The Budgetary Implications of Marijuana Prohibition" because it is the

most extensive cost-savings analysis in the current literature. The methodology in the report also

serves as a model to economists conducting cost-savings analyses in individual states, and as

explained above, Dr. Miron's research has been endorsed by hundreds of economists. The report

only analyzes the costs and benefits in pecuniary values and does not discuss any societal costs

or benefits.

Miron begins this section of the report by determining the amount of savings in criminal

justice resources that state and local governments could expect as a result of marijuana

legalization. The savings in criminal justice resources has three main components, which are the

following: enforcement reduction, or the elimination of arrests; prosecutorial and judicial

resources reduction, or the elimination of prosecutions; and reduction in correctional resources or

the elimination of incarcerations (Miron, 2005, p. 4). Miron notes that there are other possible

savings from legalization, but these savings are minor and difficult to estimate. Thus, his

estimate is likely biased downward. To arrive at his approximation of the savings, the report

> …estimates the percentage of arrests in a state for marijuana violations and multiplies
> this by the budget for police. It estimates the percentage of prosecutions in a state for marijuana
> violations and multiplies this by the budget for prosecutors and judges. It estimates the
> percentage of incarcerations in a state for marijuana violations and multiplies this by the budget
> for prisons. It then sums these components to estimate the overall reduction in government
> expenditure. (ibid.).

Miron starts by estimating the amount of police resources that can be eliminated due to

legalization. On a state by state basis, he estimates the percentage of total arrests for marijuana

possession and sale/manufacture of marijuana. Miron says that it is important to include only

"stand-alone" cases of marijuana possession. To explain, Miron points out that the police oftentimes suspect arrestees for non-drug related crimes, but during routine police searches, they find the arrestee guilty of marijuana possession. Therefore, an arrest for marijuana possession is recorded along with another charge. This means that without marijuana prohibition the suspects in such cases would still be arrested on the charge that led to the original source, thus exhausting police resources to the same extent as when marijuana possession is illegal (Miron, 2005, p. 5). Using his own 2002 report along with a 2001 report by Reuter, Hirschfield, and Davies, Miron approximates that the fraction of all arrests involving marijuana that are stand-alone cases is between 33% and 85% (ibid.). For this report, Miron estimates that 50% of the possession arrests are due to marijuana possession rather than coinciding with another non-drug related crime (Miron, 2005, p.6). Miron then multiplies each state's police budget by the percentage of stand-alone cases for possession and the percentage of sale/manufacture of marijuana to arrive at total savings. He sums all the states together to arrive at a total savings on police budgets for state/local governments of $1.7 billion (ibid.).

The second cost of marijuana prohibition is judicial and prosecutorial expenditures. Miron uses the fraction of felony convictions in state courts for marijuana offenses as an indicator of the amount of money spent on judicial and prosecutorial resources. Because data is not available on a state-by-state basis, Miron uses the national percentage for all states. Moreover, data on the percentage of possession convictions is also unavailable, so Miron assumes that it equals the percentage for trafficking convictions (ibid.). It is important to note that this methodology assumes that crime costs are invariant with respect to the type of crime.

The percentage for trafficking convictions in 2000 was 22%, and of this total, 2.7% were due to marijuana, 5.9% were due to other drugs, and 13.4% were unspecified (Miron, 2005, p. 6).

To account for any marijuana convictions in the unspecified category, Miron assumes that the percentage of marijuana trafficking convictions that are unspecified is equal to the fraction for those in which a drug is reported. This number is 31.4% [=2.7%/(2.7%+5.9%)], which is also equal to the percentage of marijuana possessions. Next, Miron says that the percentage of felony convictions due to any other drug offense[5] is 34.6% (ibid.). To arrive at the percentage of felony convictions due to marijuana, Miron explains that it is necessary to multiply the percentage of felony convictions due to any drug offense (34.6%) by the percentage of trafficking violations due to marijuana (31.4%). Miron multiplies 34.6% by 31.4% to get 10.9% (ibid.). Following this, he multiplies the judicial and prosecutorial budget for each state by 10.9% and adds together all the states to arrive at a prosecutorial and judicial budget savings of $2.94 billion.

The third and final component of savings from marijuana legalization is savings in the corrections, or incarcerations, budget. Miron uses the percentage of prisoners incarcerated for marijuana offenses and multiplies it by the overall corrections budget for each state. State-by-state information again is not available for the percentage of prisoners incarcerated for marijuana offenses. To address this issue, Miron uses the data given by a few states and extrapolates it across all the states, assuming that all the states' incarceration patterns for marijuana are similar. Miron explains that the report, "computes a population-weighted average based on the few states for which data exist; it then imposes this percentage on all states," which is 1.0% (Miron, 2005, p. 6-7). After multiplying 1.0% by the overall corrections budget for each state, Miron estimates a correctional savings of $484 million.

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[5] "Other drug offenses" include felony convictions for other drugs, such as cocaine offenses, heroin offenses, etc.

Therefore, adding together the three components of savings (=$2.94 billion+$1.7 billion+$484 million) gives a total savings for state/local governments of approximately $5.1 billion (Miron, 2005, p. 7). Miron claims this figure is an overstatement for two reasons. First of all, in cases of marijuana arrest, the government often seizes assets of the arrestee to fund the police and prosecutors. Also, current prohibition laws force some offenders to pay fines to offset police, prosecutorial, and corrections costs. Data suggests, however, that only $100 million yearly is collected from offenders to offset costs, so the net savings of criminal justice resources from marijuana legalization is more likely $5.0 billion.

In his last section about cost savings, Miron estimates the federal expenditure for marijuana prohibition enforcement. Because the data on drug prohibition enforcement is reported as an aggregate amount, no data exists on the amount of enforcement spent on each individual drug. Miron attempts to find out the cost of prohibition enforcement by doing the following steps:

1. Estimate federal expenditure for all drug interdiction;
2. Estimate the fraction of this expenditure due to marijuana interdiction based on the fraction of federal prosecutions for marijuana;
3. Multiply the first estimate by the second estimate (Miron, 205, p. 9).

Miron says that the federal expenditure for drug interdiction was $13.6 billion in 2002, which applies to all drugs (ibid). Miron uses the percentage of Drug Enforcement Agency (DEA) arrests or convictions for marijuana as opposed to other drugs as an indicator of the relative magnitude of marijuana interdiction compared to other drug interdiction. This figure is 19%, which makes the federal expenditure for marijuana interdiction $2.6 billion (=$13.6 billion*.19). He adjusts this downward by $214.2 million to account for the offsetting cost of government seizures and fines. Therefore, he anticipates that the federal government could save

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$2.39 billion (=$2.6 billion-$214.2 million) in prohibition enforcement yearly (Miron, 2005, p. 10).

Miron's estimates, like the estimates seen in the previous section, rely heavily on assumptions, thus making them subject to criticism. However, Miron's assumptions are generally plausible. Some are questionable, such as the percentage of trafficking charges equals the percentage of possession charges or each state having the same number of incarcerations when in reality marijuana is used in some states more than others. Also embedded in this approach is the assumption that every marijuana case and every non-marijuana case uses the same amount of resources and entails the same costs, which might not be the case. Miron claims that any other factors that might affect his analysis are small and negligible.

One factor that could make a difference, however, is the increase in marijuana users needing health care. While marijuana has been shown to have some therapeutic effects, it has also been shown to be detrimental to health, especially to heavy users (Ruschmann, 2004, p. 27). With more people needing health care, which is already an increasingly expensive service, costs could further increase and add strain to the system. Miron makes no mention of this possibility or its potential cost in his analysis. Despite some dubious assumptions, Miron's analysis is the most complete and most cited in the literature, and gives an excellent picture of the great cost marijuana prohibition places on society.

VI.   Other Economic Issues

Legalizing marijuana does not simply impact the economy through taxes and cost savings. The end of prohibition also implies the rise of new industries and a change for the United States in its relations with other countries. Therefore, this section of the thesis will examine the potential for the creation of one new industry in the United States—a legal hemp industry. Next, this section will discuss the marijuana situation in regards to Mexican-American relations and economic ties.

A. Economic Effects of a Legal Hemp Industry

The first special economic topic discussed is the industrial hemp industry. Although no law exists, or has ever existed, to prevent the production of industrial hemp, the legacy of historical confusion between marijuana and hemp along with strict rules by the DEA have made it risky or even impossible to produce industrial hemp in the majority of states (Roulac, 1997, p. 49). The legalization of marijuana, while not the only way to resurrect the U.S. hemp industry, would erase all political and historical confusion and make it impossible to restrict the production of hemp. Moreover, some experts claim that hemp will only be legalized when marijuana is because it is too difficult for the DEA to distinguish the two if only hemp is legal. This subsection will describe hemp and its relation to marijuana, give a historical account of the politics and laws of hemp, then conclude with the economic implications of a newly revived hemp industry.

Industrial hemp and marijuana are different varieties of the same species, *Cannabis sativa L* and are distinguishable by their content of tetrahydrocannabinol (THC), the psychoactive drug that induces a "high" when consumed. Marijuana's THC content is generally 3 to 15 percent or more, while industrial hemp's content is less than 1 percent (Roulac, 1997, p.

6). Smoking or ingesting industrial hemp would not produce a "high," instead, it would cause

headaches. The two crops are very similar in appearance, and their leaves are indistinguishable

from one another.

Industrial hemp can produce six different raw materials—long bast fiber, medium fiber,

short core fiber, seed, seed oil, and seed meal (Roulac, 1997, p. 12, See Table 5). Moreover,

hemp is an excellent rotational crop that stabilizes and enriches soil.

Table 5
From Roulac, 1997, p. 13-14

Long Fiber
- Has long, strong strands that are superior to cotton and very desirable for textiles;
- Has antimildew and antimicrobial properties that are particularly useful for sails, tarps, awnings, and carpets;
- Is biodegradable and serves as an environmentally sound substitute for fiberglass.

Medium Fiber
- Has low lignin (resinous plant glue) levels that make it ideal for paper and nonwoven applications;
- Shares the bast fiber's antimildew and antimicrobial properties, so it is well suited for medical applications and hygiene products, such as diapers and sanitary napkins.

Short core fiber
- Is up to twice as absorbent as wood shavings, making it an excellent choice for packaging and animal bedding;
- Serves as a direct, often sturdier replacement for wood in construction materials;
- Blends easily with lime to create a strong yet lightweight concrete or plaster;
- Is biodegradable and serves as an environmentally responsible material for use in manufacturing plastics.

Seed
- Is a highly nutritious protein source, better tasting and more digestible than the soybean;
- Equals the soybean's versatility, and can be processed into milk, cheese, ice cream, and margarine, among other foods;
- Is favored in making birdseed.

Seed oil
- Has the highest volume, among edible oils, of essential fatty acids, so it makes a superb nutritional supplement;
- Tastes better and has a longer shelf life than flax oil;
- Has anitmildew and antimicrobial properties that make an ideal base for soaps, shampoos, and detergents;

- Blends easily with other substances to produce lubricants, paints, and printing inks.

Seed meal
- Supplies high protein and nourishment in food for people and in animal feed;
- Serves as a mild digestive bulking agent;
- Can be blended with other grains into flours for baking.

In addition to these uses, hemp has applications in the automobile industry, in construction materials, in foods, in paints and sealants, in paper, in potential biofuels, and in making plastics and textiles (Roulac, 1997, p. 115-121). If hemp is such a productive crop with such a variety of useful applications, then why is its production illegal? What is the history of this crop, and how have politics influenced its perception and place in U.S. agriculture?

The first records of hemp cultivation are found in China. Due to trade, hemp reached Europe and the Americas in the 16th and 17th centuries. By 1775, the cultivation of hemp had spread throughout Kentucky and Virginia, where a commercial market sprang up. From 1840-1860, the hemp industry boomed in Kentucky, Missouri, and Illinois because of strong demand for sailcloth and cord by the U.S. Navy.

The first federal law restricting *Cannabis sativa L.* was the Marihuana Tax Act of 1937, which placed all *Cannabis sativa L.* production under the regulatory control of the Federal Bureau of Narcotics (FBN, the precursor to the DEA), under the U.S. Treasury Department (USDA, 2000, p. 3). The law allowed for farmers to obtain licenses to produce industrial hemp, but in reality, the FBN ignored requests for licenses (Roulac, 1997, p. 53). Moreover, the Marihuana Tax Act made it risky to produce hemp because if any leaves remained on the hemp stalks after removal, which occasionally happened, then the farmer could face the threat of criminal prosecution and confiscation of the product (ibid.). Because of these harsh restrictions, hemp production quickly faded away in the United States until World War II when the

importation of hemp for textiles and rope was curtailed. After the war, however, the government

canceled all hemp permits and the industry declined once again.

In 1970, the federal government enacted the Comprehensive Drug Abuse Prevention and

Control Act (CDAPCA), which is currently in effect. As discussed in the earlier section entitled

"Background Information," the CDAPCA repealed the Marihuana Tax Act of 1937 and was to

be enforced by the Bureau of Narcotics and Dangerous Drugs (BNDD) under the Justice

Department (predecessor of the DEA). However the CDAPCA kept the same definition of

marijuana as the Marijuana Tax Act of 1937, this time with no distinction between industrial

hemp and recreational marijuana. The DEA ultimately has the power to control which

substances are on the control list, and is required to give advanced notice to the public and allow

for comment before doing so. The DEA has never added industrial hemp to the control list, and

no federal court has done so. Nevertheless, the DEA has refused to grant any industrial hemp

permits to applicants. This refusal has added to the common misconception that hemp is the

same as recreational marijuana, and has stifled the growth of a healthy hemp industry.

The restriction of the hemp industry has left the United States out of a market which is

now dominated by older producers, such as Ukraine, Hungry, China, and France, as well as new

entrants, such as Canada, Australia, England, Holland, and Poland (Rosenthal, 1994, p. 185-

186). The United States could enter this market, and a bill legalizing marijuana is one way to do

so. But is there a market for hemp products? Could jobs be created?

According to Renée Johnson, a specialist in agricultural policy and the author of the 2007

Congressional Report, *Hemp as an Agricultural Commodity,* there have been mixed forecasts on

the economic benefits of hemp production. However, Johnson adds that most negative forecasts

were published in the 1990s, and reports in more recent years have had a more positive outlook

due to successes in European and Canadian industries and the increasing applications and

demand of hemp. For example, a 2007 update of a 2003 Canadian economics report paints an

optimistic picture of the industry's future based upon consumer interest.

> Hemp's remarkable advantages are hard to beat: it thrives without herbicides, it reinvigorates the
> soil, it requires less water than cotton, it matures in three to four months, and it can yield four
> times as much paper per acre as trees. Hemp can be used to create building materials that are
> twice as strong as wood and concrete, textile fiber that is stronger than cotton, better oil and paint
> than petroleum, clean-burning diesel fuel, and biodegradable plastics. In addition, it can produce
> more digestible protein per acre than any other food source. These advantages are in tune with
> the environmental and health preferences of today's North American public. The growing
> curiosity of consumers, the interest shown by farmers and processors, and Canada's excellent
> growing conditions for industrial hemp allow optimistic views for its future (Congressional
> Report, 2007, p. 6).

Moreover, the Hemp Industries Association (HIA) estimates that the value of annual sales of all

hemp products is around $360 million, so with a legalized hemp industry, the United States

could avert $360 million in imports[6] (HIA, 2009). This import figure makes the United States

the largest hemp consumer in the world (Vote Hemp, Inc., 2009). The HIA Food and Oil

Committee also found that the combined hemp food, body care, and vitamin product sales grew

from $27.4 million in 2007 to $33.5 million in 2008, which is a 22% increase (HIA, 2009).

Because many of these food and health products are in a niche, high-end market, producers can

charge a premium on prices to make a higher profit. Demand for hemp is also expected to rise

due to its various uses, the value in farming it, the current nutrition craze, and the "Going Green"

movement (Vote Hemp, Inc., 2009).

A demand for hemp certainly exists. But is it economically feasible? In the late 1990s,

experts wrote many reports on creating a hemp industry in different U.S. states. A 2000 report

written by the United States Department of Agriculture (USDA) provided a summary of the

estimated costs and returns according to three state reports from Kentucky, Oregon, and North

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[6] Hemp derives most of its potential profit from value-added activities. Therefore, this figure is greater than those
seen in many other reports because it accounts for value-added activities.

Dakota (See Table 5 on the following page). As with the estimates of potential tax revenue from

legalizing recreational marijuana, these figures are speculative and subject to error due to the

large number of assumptions the authors made.

Table 5: Comparison of Estimated Costs and Returns for Hemp in the Various State Studies
(From USDA, 2000, p. 22)

Report	Variable costs	Fixed costs[1]	Operator labor	Total costs	Revenue	Net returns
			Dollars/acre			
1995 Kentucky:						
Fiber	184	46	56	286	170 to 759	-116 to 473
Seed	98	41	56	196	60 to 800	-136 to 604
Certified seed	98	65	70	233	na	na
Oregon:						
Fiber	371	245	na	616	375	-241
1998 Kentucky:						
Fiber	257	50	56	364	680	316
Seed	156	45	56	257	477	220
Certified seed	153	71	70	294	900	606
Fiber and seed	265	75	63	403	723	320
North Dakota:						
Fiber and seed	na	na	na	175	180 to 316	5 to 142

na = not available.
[1] In the two Kentucky studies, fixed costs include depreciation, taxes, and insurance. In the Oregon study, fixed costs include land rent ($150), irrigation-system depreciation and interest ($44), machinery depreciation and interest, and insurance.

The authors of the report made assumptions about the possible yields, future demand,

fixed and variable cost prices, processing center prices, and competitor prices, to name a few.

The net returns vary from state to state based upon different assumptions and differences

between estimated production and processing capacity. For example, land rents are much higher

in Oregon, leading to a negative net return. However, the most recent reports by Kentucky and

North Dakota show positive net returns, meaning that the hemp industry could be economically

viable in the United States.

Along with the potential profit benefits to farmers, the hemp industry has the potential to

create new jobs in research and development, agricultural processing, and rural agriculture.

Thompson et al.'s 1998 report, titled *Economic Impact of Industrial Hemp in Kentucky,* cites a study from the United Kingdom. They write

> The authors of the UK study measure the economic impacts of a scenario in which the hemp industry locates itself in an agricultural county creating one decorticating facility, one industrial hemp paper pulp plant, and cultivating 25,600 acres for straw or straw/grain and 2,050 acres of certified seed. They estimate that 771 full-time equivalent jobs and $17,600,000 in worker earnings would be created (Thompson et al., 1998, p. i).

The report mentions that this is only one study which takes into account one county; if more counties are included, the economic benefits increase more.

Currently, eight states—Hawaii, Kentucky, Maine, Maryland, Montana, North Dakota, Vermont, and West Virginia—allow industrial hemp production or research (Grim, 2009). However, due to the DEA's refusal to grant permits, these state laws are trumped by federal law. A new bill sponsored by Ron Paul (R-Texas) called the Industrial Hemp Farming Act of 2009 (HR 1866) has been referred to the Subcommittee on Crime, Terrorism, and Homeland Security, so it is still in the first step in the legislative process. This bill would amend the CDAPCA of 1970 to exclude industrial hemp from the definition of marijuana and give states the right to allow production permits. However, its passage may prove difficult. According to the specialist Renée Johnson, the DEA says that, "commercial cultivation would increase the likelihood of covert production of high-THC marijuana, significantly complicate DEA's surveillance and enforcement activities, and send the wrong message to the American public concerning the government's position on drugs" (CRS, 2007, p. 8) Therefore, many experts believe that the production of hemp is unlikely without the legalization of marijuana.

As with most reports this thesis discusses, there is a high level of uncertainty in the literature about the hemp industry. Since it is virtually nonexistent in the United States, the hemp industry's profitability and economic feasibility can only be estimated. Nevertheless, the

majority of the literature, especially recent literature, is characterized by an optimistic view for the hemp industry if started in the United States.

B. *Economic Effects and Mexican-American Relations*

Not only are the United States and Mexico neighbors, but they are also economically, politically, and increasingly, culturally, linked. Another, albeit unfortunate, linkage between the two countries is drug trafficking. For years now, Mexico and the United States have had a symbiotic relationship, where the United States demands drugs, especially marijuana, and Mexican drug cartels are happy to supply them. In fact, the U.S. government estimates that Mexico produced 35 million pounds of marijuana for the U.S. market last year, which is worth an estimated $20 billion (Fainaru and Booth, 2009). This section discusses some of the economic implications for Mexico and the United States if marijuana were legalized in the United States. After a brief background on Mexican drug cartels and the violence they create, there follows a discussion on the supply and demand of marijuana and the changing economics of the current situation.

A full description of Mexico's drug history and its recent problems could comprise an entire thesis alone. Instead of addressing all the issues Mexico faces, this thesis will only discuss those relevant to the topic of marijuana and the economy. As is seen often in the news, the Mexican economy has significantly deteriorated in the past few years, mainly because of the increasing power of drug cartels and corruption caused by their infiltration into the government. Mexico's current strategy to combat drug trafficking is based largely on the increased militarization of Mexico; however, this tactic is not doing enough to end government corruption. The following still occur: corruption finances drug traffickers and vice versa; judges take bribes; unregulated financial markets make money laundering easy; a weak, poorly-trained police force

can be paid off; thousands of people are being killed due to gang violence (over 9,900 people since 2007); and Mexico's economic structure (based on illegal activities) thwarts economic growth and social mobility (LA Times Staff, 2010). Many government officials in the United States and in Mexico have deemed Mexico a failing state. Because of these problems, many Mexicans feel that they face two options. They can either immigrate to the United States or join in the drug trade, and many choose the latter.

All of this violence stems from drug trade, mainly with the United States. While the trafficking of cocaine, heroin and methamphetamine is the main focus of U.S. law enforcement, it is marijuana that has long provided most of the revenue for Mexican drug cartels. More than 60% of the cartels' revenue—$8.6 billion out of $13.8 billion in 2006—came from U.S. marijuana sales, according to the White House Office of National Drug Control Policy (Fainaru and Booth, 2009). Unlike cocaine, which must be bought and transported from South America, marijuana is especially lucrative for the cartels because they control the business from the hidden fields in Mexico to the wholesale dealers in the United States (ibid). Marijuana is the Mexican drug cartels' cash cow, consistently demanded and providing high margins. Luis Astorga, a leading authority on the drug cartels at the National Autonomous University of Mexico explains, "Marijuana created the drug trafficking organizations you see today. The founding families of the cartels got their start with pot. And marijuana remains a highly profitable business they will fight to protect" (Fairnu and Booth, 2009).

If this is the case, as many experts (including Secretary of State Hillary Clinton) believe, then the drug violence is unlikely to end if there is still a high demand for drugs in the United States. In the United States, the street value of marijuana is extremely high compared to what it would be under a competitive market, making production and sales more profitable and more

attractive to cartels in Mexico, who earn as much as 90% in profits (Romero, 2008, p. 138). Economists refer to this as the balloon effect, which is when increased law enforcement in one geographic area leads to a rise in criminal activity and market profitability in another (ibid). This can also be explained by using a basic model of supply and demand. In the U.S., the market for marijuana can be depicted by a simple supply and demand curve (See Figure 7). In Figure 7, which represents the supply and demand for marijuana in the United States under prohibition, there is an inelastic demand for marijuana (the red line) and a supply (the blue line). More than half of the supply of marijuana in the U.S. is believed to come from Mexico (Fainru and Booth, 2009).

Figure 7: Supply and Demand for Marijuana in the United States Under Prohibition

If marijuana were legalized in the U.S., the equilibrium price and quantity would change, ceteris paribus (See Figure 8 on the following page). The supply of marijuana in the United States would shift outward due to legal production within the United States, thus lowering the price and revenues cartels could gain from selling marijuana.

Figure 8: Supply and Demand for Marijuana in the United States if Legalized

Moreover, with increased competition from domestic U.S. producers, cartels would begin to lose

their cash cow. This analysis shows that current U.S. drug policies create an artificially high

price for drugs and an artificially high value for drug-related activity and even violence.

Legalizing marijuana would reduce this price and could eliminate a great deal of drug-related

violence in Mexico, which would have great economic implications for both the U.S. and

Mexico.

One implication this situation could have on Mexico's economy is a decrease in the

informal sector. The informal sector provides employment for an estimated 12 million workers,

representing a quarter of the economically active population (Romero, 2009, p. 153). The

informal sector is most likely so large because there is inadequate demand in the formal

economy. However, these informal jobs can also be a drag on the economy because they divert

workers from formal sectors and leave the economy unfed. In addition, they operate outside of

government taxation, meaning that the government cannot collect money from these workers to

use in providing infrastructure, education, sanitation, social programs, and other similar services.

A study conducted by the Center for Strategic and International studies (CSIS) and the Instituto

Tecnológico Autónomo de México (ITAM) shows that only 40% of the Mexican workforce pays taxes (ibid.).

Another implication is that a decrease in crime can stimulate the economy. Nobel laureate Gary S. Becker studied crime and economics in his collection of essays *Accounting For Tastes*. According to Becker, crime is socially harmful. Crime does not redistribute resources from the rich to the poor as many people think. Becker writes, "...Criminals spend on weapons and on the value of the time in planning and carrying out their crimes, and that such spending is socially unproductive—it is what is now called "rent-seeking"—because it does not create wealth, only forcibly redistributes it" (Becker, 1996, p. 144). This comment relates to the fact that a decrease in the amount of jobs in the informal sector could lead to economic growth. However, Becker goes on to say that crime is unproductive because innocent individuals have to spend money to prevent it, and as an extension of this thought, governments have to spend money to prevent it as well. Both individuals and the government could spend less on crime protection and law enforcement if marijuana were legalized in the U.S. and drug cartel violence declined.

The United States would benefit economically as well. One U.S. benefit would be in saving money in drug enforcement along Mexico's border. In 2007, the United States and Mexico signed the Merida Initiative, which is a cooperative program between the two countries acknowledging their shared responsibilities in countering drug-fueled violence (U.S. Department of State, 2008). It is a bipartisan initiative that currently provides technical support and expertise to Mexico for "police professionalization, judicial and prison reform, information technology enhancement, infrastructure development, border security, and the promotion of a culture of lawfulness" (ibid.). In total, Congress appropriated $1.4 billion to the effort in Mexico. This

money is in addition to the estimated $2.5 billion the U.S. government spends on enforcement of marijuana prohibition (Miron, 2005, p. 10). Therefore, legalization could bring savings of nearly $4 billion, which is no paltry sum of money. Especially in recessionary times, this money could be used to fund social programs, research and development, and a variety of other initiatives that are important to taxpayers.

Another U.S. benefit from legalizing marijuana would be legal, domestic production. Although illegal to grow, marijuana is already the largest cash crop in the United States (Gettman, 2006, p. 3). Government estimates indicate that domestic marijuana production has increased ten fold over the last 25 years from 2.2 million pounds in 1981 to 22 million pounds in 2006 (ibid.). Even though it is a great risk, people grow marijuana because it is highly profitable. High-end marijuana grown in the United States sells for 10 times the price of poorer-quality Mexican marijuana, and many authorities equate growing marijuana to "growing money" (Fairnu and Booth, 2009). Although this price would surely fall in a legal market, the end of prohibition would mean the expansion of an already profitable business.

The legalization of marijuana in the U.S. would precipitate many changes in the Mexican and American economies. Legalization would lower the price, slashing the Mexican drug cartels' profits and influence. Without their power, drug cartels could not continue infiltrating the Mexican government and waging drug wars. Mexico can benefit economically by decreasing the jobs in the informal sector, reducing socially harmful crime, and decreasing government spending on enforcement. The United States could save money on enforcement as well, and also begin to promote a lucrative domestic market. In addition, both countries would surely benefit economically from stability.

VII.   A Libertarian Perspective

Many people's positions on the legalization of marijuana fall down party lines. Officially, both parties agree that the current state of prohibition should continue, although Democrats, in general, increasingly prefer a more lenient stance on marijuana, such as decriminalization or use in medical situations. Democratic and Republican opinions and philosophies gain the most media attention in the debate. However, the third-largest political party in the nation, the Libertarian Party, advocates full legalization. A discussion of the Libertarian point of view on the issue of legalization reflects a great number of economists' perspectives, while showing how libertarians view the relationship between personal freedoms, government, and economics. This section will first describe the history and basic tenets of Libertarian philosophy, followed by a discussion on the Libertarian role of government in drug policy and peoples' personal freedom to use marijuana.

Libertarianism is "a group of positions concerning political institutions stressing the primacy of individual liberty" (Machan & Rasmussen, 1995, p. 3). Libertarians stress the importance of Americans' heritage of liberty, enterprise, and personal responsibility; people's freedom and independence; respect of the individual; the principles of self-ownership and limited government control; and, finally, the tolerance of others' ways of life (The Libertarian Party, 2010a).

Libertarian ideas have been found in the works of ancient thinkers including Alcibiades, Lykophron, Hippodamus, and Democritus, and in the works of medieval thinkers such as Ockham, Aquinas, and Lessius (Machan, 1982, p. vii). The largest contributors to libertarian thought in the modern sense, however, are John Locke and Adam Smith, along with some utilitarians and Social Darwinists (ibid.). Nevertheless, these thinkers did not stress the

importance of personal freedom and the individual's absolute right to life, liberty, and property, both of which characterize present-day libertarian thought (ibid.). Contemporary writers, such as philosopher Ayn Rand and economists Friedrich von Hayek, Ludwig von Mises, and Milton Friedman, expanded on these earlier works to give libertarian thought its current characteristics. With the publication of Robert Nozick's *Anarchy, State, and Utopia* (1974), libertarian philosophy began to gain respect among academics (ibid.). Today, there are many types of libertarians, such as anarcho-capitalist libertarians (wanting complete privatization and corporations to carry out governments' current activities), civil libertarians (following the idea that "a man's right to swing his fist ends where my nose begins") and fiscal libertarianism (believing in low taxes, free trade, and minimal corporate regulation), to name a few. This section on libertarianism will incorporate a broad range of libertarian philosophies and center on the Libertarian Party's self-description of its goals and aims.

Libertarians, as their name suggests, are greatly concerned with individual liberty. One important distinction libertarians make is the difference between negative and positive liberty, an idea dating back to the philosopher Immanuel Kant and studied in more depth by the philosopher and historian Isaiah Berlin. Negative liberty, or the freedom-from, is when a person can act unobstructed and is not prevented from doing what he or she would do otherwise (Berlin, 1958, p. 3). If a person's actions are obstructed, than he can be said to be coerced, which is "the deliberate interference of other human beings within the area in which [one] could otherwise act" (ibid.). Therefore, individuals lack liberty if they are prevented from achieving their goals by other human beings or institutions. For example, libertarians say that people have the freedom from, or a negative right against, interference with their life, liberty, happiness, and property.

Positive liberty, or the freedom-to, is the idea that "the degree of one's liberty is proportional to one's range of choices" (Hospers, 1974, p.5). In other words, positive liberty is when an individual wants to be his own master and make his own life decisions. However, there exists the threat that these decisions will impede others' actions; positive liberty often results in coercion, as individuals make choices that interfere with others' desires. For this reason, libertarians' sense of liberty is negative liberty. When people are not coerced by others, they are able to exercise their choices to their own best interest, and subsequently, to the best interest of society.

The belief in positive and negative liberty has implications for libertarians' belief about the role of government. According to libertarians, the government should be very limited in nature, primarily concerning itself with upholding its citizens' individual rights to life, liberty, and property. The government should not engage in coercive taxation; all payments to the government should be voluntary. The Libertarian Party's (LP) website defines the current government as "too large, too expensive, woefully inefficient, arrogant, intrusive, and downright dangerous (The Libertarian Party, 2010b). Libertarians believe that in order to have political freedom, the government cannot be coercive and must be limited in nature, thus allowing individuals to make decisions that are best for them.

Another important part of total freedom is economic freedom, which is often seen to lead to political freedom (Friedman, 1962, p. 77). The economist Milton Friedman notes that competitive capitalism is the economic organization that directly promotes economic freedom and political freedom because it separates economic power from political power, so one can offset the other (ibid.). Libertarians believe strongly in a free, competitive market, in which the

government protects voluntary trade, but does not engage in coercive measures such as the redistribution of wealth or the control of trade (The Libertarian Party, 2008).

Now that the libertarian philosophy in terms of rights, the role of government, and economics is understood, it must be applied to the issue at hand, namely, the legalization of marijuana. After understanding the basic tenets of libertarianism, it should not come as a surprise that libertarians believe that prohibition of any drug should not be tolerated. They believe in a fully legalized drug market with no government taxation or intervention.

Mark Thornton, an economist and specialist in the economics of drugs, has written extensively on the issue of prohibition from a libertarian perspective. In his essay, "The Repeal of Prohibitionism" (1995), Thornton discusses the reasons why libertarians find prohibition intolerable, the failures of prohibition, and his free-market solution. His entire discussion reflects libertarian thought and offers a justification for legalization rarely seen in politics today. It also emphasizes the implications of legalization for the government, markets, and civil liberties, which is important to the current discussion.

Thornton begins by saying that prohibition interferes with one of the most important freedoms, which is the freedom to make consumptive decisions (Thornton, 1995, p. 187). Moreover, prohibition undermines all other rights by setting a legal precedent which corrupts liberty, allowing the government to determine what is best for the individual instead of letting the individual make that decision (ibid.). Enforcement of prohibition also interferes with civil liberties because it can create a police state where all United States citizens are subject to scrutiny by the police. Here again, the discussion emphasizes the importance of individual civil liberties and limited government.

Thornton continues explaining that the case for legalization rests upon understanding the market and the problems that government interference in the market creates. He uses the market-as-a-process approach to understanding the market and how prohibition influences the market and undermines its successful self-regulation (Thornton, 1995, p. 188). The market-as-a-process approach derives from the Austrian school of economic thought, which is not synonymous with libertarianism, but which shares many of its main ideas such as the adherence to classical liberalism and the importance of individual liberties. Therefore, the analysis provides an Austrian libertarian perspective of market processes under prohibition.

In the market-as-a-process approach, the market is free from government intervention and driven by consumer demand and competition amongst producers (Thornton, 1995, p.188). This is called the *discovery process* of the market, or the "insatiable search for new ways in which...stock resources can be rearranged to improve consumer satisfaction" (Thornton, 1995, p.188). When the government interferes in the market process through prohibition, this is called the *undiscovered discovery process*. Government officials and proponents of interventionist measures do not fully understand the market's abilities to correct for imperfections and potential problems (ibid.). After the undiscovered discovery process comes the *unsimulated discovery process,* which is when the government interference in the market is an imperfect substitute for the market processes. Thornton explains that the government cannot foster the innovation or entrepreneurialism of the free market, and instead enforces national regulations inappropriate to local conditions (ibid.). This situation leads to the *stifled discovery process* where the bureaucracy of the government inhibits the production of new goods, higher product quality, the availability of substitutes and complements, and product information (ibid.). Lastly, government intervention leads to the *wholly superfluous discovery process*, which is the creation of a new set

of incentives (Thornton, 1995, p. 190). For example, in a black market for drugs, the incentives of suppliers are based upon the effects of prohibition.

Based upon this analysis, Thornton concludes that prohibition makes no economic sense in the Austrian libertarian perspective. Instead, he champions the free-market solution. (Thornton, 1995, p. 196).

> The free-market solution involves voluntary choices of individuals within an environment of free entry, property rights, and the rule of law. Entrepreneurs hire labor and purchase resources to produce, promote, and sell products to consumers. Consumers choose among diversified products in an attempt to maximize utility. Exchange provides gains to both parties and an efficient allocation of resources. Social institutions, firms, charitable organizations, and self-help groups form to solve problems (ibid.).

Basically, Thornton promotes the idea of the drug market becoming the neoclassical idea of a self-regulating market with no government intervention. He acknowledges that the market is characterized by risk and uncertainty and that mistakes and overdoses would occur; however, these problems are likely to occur in any system. He believes that competition and the discovery process would promote solutions to the problems of drug abuse (ibid.).

As described above, Thornton's analysis provides a libertarian perspective on governmental intervention in markets which can be applied to the drug market to show the problems that prohibition creates. Because of the libertarian principles that emphasize the importance of individual liberties, a limited government, and economic freedom, libertarians regard prohibitionist attempts as coercive measures that undermine freedoms and grant the government too much power. According to libertarians, the market forces under full legalization can correct market imperfections better than the government can and also return to individuals' the liberties they sacrifice under prohibition.

VIII. Conclusion

A. Summary of Findings

After exploring the economic arguments for legalization of marijuana, this thesis has shown that with a federally regulated marijuana market, the United States could experience positive economic growth. Not only would legalization generate tax revenue to cut back on federal and state deficits and save the United States money in enforcement, prosecution, and incarceration, but it could lead to new industries and help improve Mexico's economy as well.

The first analytical section of this thesis showed different estimates of tax revenue that the government could collect if marijuana were legalized (See Table 3 from p. 41 below).

Table 3 from p. 41

Analysis	Author	Tax Revenue Figure
1	Dr. Jeffrey Miron	$6.2 billion
2	Dr. Jon Gettman	$31.1 billion
3	Max Chaiken	$211 billion

Miron, Getman, and Chaiken all used different methods and based their works on different assumptions to estimate the amount of tax revenue generated by the government. Chaiken's analysis was the most comprehensive and complete; moreover, he incorporated improvements upon Miron's and Gettman's work to make his estimate more accurate.

The second section of economic analysis discussed the cost-savings analysis of legalizing marijuana. Miron's 2005 report includes the most comprehensive analysis, showing that the government could save $2.39 billion yearly in marijuana enforcement, incarceration, and prosecution. Although this report makes some challengeable assumptions, it is the largest federal cost-savings analysis in the current literature.

The third section of economic analysis centered on the hemp industry and the Mexican-American relationship and economic changes. This section found that it is economically feasible to introduce the hemp industry into some areas of the United States, especially because the demand for hemp increases each year. This section also explored how the legalization of marijuana could affect the Mexican-American economic relationship. Legalization in the United States would end the black market for marijuana, thus reducing the profits from marijuana as the supply grows. This situation would lead to a decline in revenue for drug cartels, and perhaps a decline in their power and crime. Removing drug-related crime in the Mexican economy would save the government and citizens money on protection from crime. At the same time, it would lead to an increase in formal sector jobs and government revenue from taxing these jobs. For the United States, legalization would mean a reduction in expenditures to combat drug cartel violence, while also creating a legal, domestic market for marijuana production.

The final section of the thesis discussed the idea of legalization from a libertarian perspective. In today's partisan world, most views are expressed in either Democratic or Republican terms. Nevertheless, many supporters of marijuana legalization view the situation from a libertarian perspective, so this section provided insight into their beliefs.

B. Future Research and Speculation

This thesis did not include all of the potential economic implications of marijuana legalization; rather, it raises a few provocative issues that policy makers and citizens have brought to the forefront of the discussion in recent years. With regards to the labor market, further research can be done on measuring any employee productivity loss due to marijuana legalization. Although current reports are inconclusive on this matter, it is still important because if the productivity loss is greater than the economic gains from spin-off industries like

hemp, head shops, and domestic cultivation, then perhaps marijuana legalization would not bring economic growth, but rather economic decline.

Another interesting area of study would be a scenario analysis of economic variables under different legal status options. For example, research on answering questions like, "How much more economic growth could the U.S. experience under partial prohibition in comparison with governmental regulation?" could be helpful in determining public policy.

Also, the literature on marijuana and issues of economic growth could be further enriched by updated reports reflecting more recent statistics. For example, Jeffrey Miron's report, "The Budgetary Implications of Marijuana Prohibition" is five years old, and the numbers he uses in it are a few years older than that. Updated numbers could perhaps show a more convincing argument for legalizing marijuana, and at the very least, present a more accurate picture of the current situation.

Although there is no way to know what the future will bring for marijuana policy, it is an interesting exercise to make predictions based upon current moods in the United States. As stated throughout this thesis, the tide has been shifting away from current marijuana policy toward a more lenient legal environment. This can be evidenced in the number of editorials, articles, books, and blogs written about the issue. However, legalizing marijuana requires the president, his administration, and Congress to take risk, and as all economists know, most people are risk averse. Moreover, legalization would require policy makers to place the opinions of the people above political agendas and fears of not being reelected. Based upon the Obama Administration's previous statements concerning marijuana policy and the current issues it is facing in regards to health care reform, partisan battles, and the battles in the Middle East, it is unlikely that federal marijuana policy will change anytime soon, even with popular support.

That being said, it is equally difficult to believe that marijuana prohibition will last throughout the remainder of this century. As this thesis discovered, there is significant potential for economic gains by legalizing marijuana, and this fact combined with the shifting social perspectives on the War on Drugs, and more specifically, marijuana, will spell doom for prohibition in the future.

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PERMANENT ADDRESS

8301 Post Road
Allison Park, PA 15101

EDUCATION

The Pennsylvania State University	**University Park, PA**
	Graduation: May 2010
	Economics Student Marshal

Smeal College of Business

Schreyer Honors College
Major: Economics with an minor in International Business

The College of Liberal Arts
Major: Spanish   **Seville, Spain**
The University of Sevilla/CIEE Study Center

WORK EXPERIENCE

Dick's Sporting Goods   May 2009-Aug
Intern   2009
- Placed weekly replenishment orders, allocated from backstock, completed transfers
- Created replenishment set lists for baseballs and bats for the 2010 season

The Pennsylvania State University
Teaching Assistant, Management 100   May 2007-Aug 2008
- Write exams, formulate test questions, tutor students during office hours

Payless Shoe Source
Associate   May 2007-Aug
- Opened and closed the store, managed cash, learned about customer relations   2007
  management

Planned Parenthood of Western Pennsylvania
Intern
- Worked with Accounts Receivable to reconcile cash settlements   May 2007-Aug 2007
- Completed inventory for August audit

LEADERSHIP/ACTIVITIES

Professional Development Committee   **University Park,**
President   **PA**
- Facilitates and leads workshops along with Penn State's corporate sponsors   Oct 2006-Present
- Plans, organizes, and leads all marketing for PDC events

English Teacher Volunteer
- Helps students in Seville learn English   **Seville, Spain**
- Plans events that teach students about American culture   Jan 2009-May 2009

Schreyer Honors College Mentor   **University Park,**
Mentor   **PA**
- Trained for, planned, and led a three day orientation seminar for a group of fifteen   Aug 2007-Present
  new Schreyer Scholars and has continued to serve as a mentor throughout their
  freshman year

Lion Scouts   **University Park,**
Membership Committee   **PA**
- Leads tours of Penn State and holds chat room sessions for prospective students   Sep 2007-Present
- Reviews applications, conducts interviews for prospective members, organizes
  orientation

AWARDS/RECOGNITIONS

The Evan Pugh Scholar Award   Mar 2007
- Recognizes students with a cumulative GPA of 3.98 or higher after the fall semester

Finalist in the New York Times Speaking Contest
- Received fourth place in a civic engagement speaking contest   Dec 2007

COMPUTER SKILLS/LANGUAGES

- Proficient in speaking and writing Spanish
- Proficient in Windows, Microsoft Word, Excel, and PowerPoint