

ANTI-DRUG POLICIES: ON THE WRONG PATH TO PEACE

By

Hernán Maldonado Jaramillo

THESIS

Submitted to

KDISchool of Public Policy and Management

in partial fulfillment of the requirements

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ABSTRACT

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This paper identifies the policies that may reduce the drug rents going from the drug business to illegal groups in Colombia. The study analyzes the actual situation on drug policies and shows why a drug prohibition is the observed political outcome on the international political arena. To analyze the international drug policy a gravity model based on Akerlof 1997 is implemented recreating an international game which shows that drug prohibition is a stable suboptimal policy. Finally, this work suggests some ways of playing the game that could offer to Colombia the possibility of moving towards a politically less restrictive environment on drug policy issues. A situation that might reduce rents obtained from the drug business by the illegal groups and the intensity of the conflict.

Key words: Drugs rents, Gravity model, Colombia, Conflict resolution.

JEL Classification: F42, K42, O54.

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*To my big and small families;
Especially to all of them who have
kept questions on my mind*

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1. Introduction

The internal conflict in Colombia represents to the country a large cost in terms of environmental, social, political and economical development (i.e. Depletion of natural resources, human rights violations, economic growth reduction, institutional deterioration, increase on the social inequalities, reductions on the quality and quantity of the human capital; and deterioration of the Colombians international reputation among others), (see Steiner and Corchuelo 1999 and U.N.D.P. (2003))¹.

This complexity and broadness of the conflict seems to be an endless source of studies on many fields. However, a literature review shows that some works take the actual policies as given or omit to analyze the implications of the political stance weakening the analysis and its conclusions². This situation prevents the possibility of creating a critic mass of the political decisions made and implemented inside and outside the country. However, notable exceptions to that circumstance are present on many works such as, Moreno-Sanchez, Kraybill and Thompson 2003, Naranjo 2004, Jacobson and Naranjo 2004, Echeverry 2004, Becker et al. 2004 and Tabares and Rosales 2005.

The relevance of the consciousness about the policy implementation is determined by its potential to create a dynamic policy evaluation that allows the society to evolve by

¹ Studies have covered internal conflict on most of the mentioned subjects. This fact makes an attempt to summarize the literature on the topic a huge effort that could be a goal for more than one paper. Even though, to give a sense of the work that has been made and to contextualize the present work, a very simple classification that divides works by issue is presented on the **Appendix 1**. This classification acknowledges some of the most representative works on each area for the interested reader.

² As an example Diaz and Sánchez 2004 claim their research led them to “conclude that the expansion of illegal crop growing is a consequence of the expanding conflict. In contrast, coca crops can only be used to explain a small part of the armed conflict in Colombia.” This conclusion ignores a basic fact of drugs which is its illegal character.

developing a better strategy towards the termination of the Colombian internal conflict, or at least oriented to reduce the effects that influence the violent country situation.

This paper attempts to contribute on the policy decision making research literature. The objective here is to evaluate the determinant causes of the internal and external drug policy implementation, centered on the Colombian interests. The hypothesis is that depending on the strength of the political links that Colombia creates with other countries, the outcome of the drug stance towards drugs will vary.

This research shows that a strengthening the Colombian negotiation power, by creating new alliances on the international political arena, might lead the country to choose an internal drug policy stance that could reduce the negative effects of drugs business on the internal conflict.

This thesis is divided on seven main parts, the first part being this introduction. The second part makes a brief recount of historic facts that are relevant to the internal conflict in Colombia. The third part presents the economic interests of the actors in the actual (2005) conflict in Colombia. The fourth chapter is focused on the international drug business. The fifth presents the theoretical model that serves as analytical framework for the study of the international game of drug policies. The sixth part recounts for the previous parts, presenting a conflict resolution strategy to the drug business problem by designing a national policy focused on the international political arena. The seventh part concludes.

2. A Brief Review of the Colombian Conflict³

This section of the thesis describes the history of the Colombian conflict focusing on its main components in the present (2005). The first part consists of a chronological description of the most relevant facts. Its objective is to contextualize the historic moment of the conflict in a broader horizon. This set-up is an attempt to provide the reader with enough historical background to understand the causes and the actual interests of the parts in conflict. Once this is achieved, the design and analysis of a possible conflict resolution strategy can be better understood and described.

2.1. 1946 – 1966: Land, Parties and Gaitán

On this period of the Colombian history, disputes between landlords and peasants were common sources of tension among social classes. Peasants claimed an agrarian reform that never happened under any government in power (Richani 2002).

On the political arena, La Violencia (The Violence - 1946 to 1965) was a period of disputes between the two main political parties (Conservatives and Liberals) for the control of government. In 1948, the murder of Jorge Eliecer Gaitán in Bogotá set off a national strike from the people against the state or, the same but in different words, radical liberals against conservatives; Gaitán was a democratic populist, main leader of the radical liberal wing at that time in politics.

In 1953, to stop the massive murders created by The Violence, the army led by General Rojas Pinilla took over power. But in 1958 traditional parties looking forward to

³ For a more detailed review see Sánchez et al. 2003.

recovering control came to an agreement known as the National Front. The objective of this agreement was to share power avoiding violent aggressions between the two party's members. Two of the most relevant points of the agreement were the alternation of Presidents from each party and the setting apart of public positions for parties' members. The National Front agreement created a barrier that cut the opportunities for other parties to participate in the Colombian democracy; in particular, this was relevant for future events regarding the communist party which was declared illegal on 1954.

In the meanwhile, on rural areas communism was gaining power, creating communist communities and strengthening its links to the people that was left out from the governmental benefits and decisions.

2.2. 1967-1990: Corruption, Drug Cartels and Guerrillas

It is very likely that, after Spaniard conquer and colonization, this has been the most violent time in Colombian history. After the calm end of the 60's, on the year of 1970 the two traditional parties made a fraudulent negative to accept General Rojas Pinilla as the elected President of the country. The decision of naming an undemocratic president created an atmosphere of exclusion and repression that evolved into the creation of several discomfort movements, among others the leftist urban guerrilla called M-19.

Later on, the guerrilla movements such as the M-19 and the Revolutionary Armed Forces of Colombia (FARC) together with the drug cartels, gave birth to a chaotic situation on every aspect of the national arena.

The typical struggle between right and left during the cold war was also present in Colombia. The polarized situation was supported on each side by the Colombian

government (supported by the U.S.) and the guerrillas (supported by the U.S.S.R). The international tensions and their main players reinforced the Colombian internal disputes and provided the financial and military support to generate a deepened internal conflict.

This situation kept all the attention of the government focused on political issues for a considerable period of time⁴. In the meantime, drug cartels were sending thousands of tons of drugs into the U.S. and other markets. The results of the cartels' operations did not take long to show up: Extremely wealthy but violent mobs ruling one of the most, if not the most, profitable businesses in the world, with head quarters on a developing country and ruled by people that considered themselves as gods on earth.

Drug cartels used every mean to reach their objectives; they corrupted Colombian institutions with money and terror, they even appealed to the elimination of any persons on their way by killing them. They also bombed cities to put pressure on the government to favor their interests with policies. They were illegal, violent, rich and powerful people.

Naturally, the huge amount of resources coming to Colombia from developed countries put Colombian cartels as central targets of the drug policies on foreign drug consuming countries.

The country set-up created a highly volatile environment. The interaction of the established legitimate and illegitimate powers caused an expected confrontation. Guerrillas started kidnapping family members of the drug cartels to drain resources from them. This situation gave to drug cartels the chance to reinforce their links to the besieged

⁴ The situation was clear until 1984 when the Minister of Justice Rodrigo Lara Bonilla was assassinated.

Colombian population by creating the self defense armies which later on evolved into a right wing guerrilla.

Rich landlords, target of the guerrilla kidnappers, supported the creation of local armies to combat against the drain of resources. This was reinforced by the absence of a strong presence of the state on rural areas and the strengthening of the guerrillas' links into the population.

This polarization and confrontations, translated to the political arena caused one of the most dreadful political exterminations in Colombia. The leftist party known as the Patriotic Union, which was the political branch of the FARC guerrilla, was systematically exterminated by the right wing armies as a response to the people's support to them on democratic elections. As a consequence, the Colombian people lost a democratic chance of terminating the internal guerrilla war⁵.

At the same time, other small guerrillas were focused on the extraction of resources from the enterprises in charge of the oil production in the country. Extortions took place and pipelines blows were very common. This generated international disapproval since most of the companies on the oil business were foreign⁶.

The U.S. pressure to stop the drug cartels combined with the high magnitude of the attacks led by the drug cartels (i.e. Murders of Ministers and several Presidential candidates) and the weakness of some of the Colombian institutions (i.e. very weak and

⁵ Naturally the powerful armed leftist movements also exterminate leaders of other parties; but might be the Patriotic Union case one of the most important in terms of the political power that was exercised by them.

⁶ For more details on this subject see Offstein (2002)

corrupted Judicial branch) led to a situation where the government started a strong war against drug cartels which involved extradition as one of the most frightening punishments against drug capos. Drug cartels answered back to that policy stance by increasing the assassinations of political leaders who supported the extradition and the war against drugs and by bombing the cities.

2.3. 1990-2005: End of big cartels and the raise of the guerrillas

At the beginning of the 90's the 1991 Constitution created an emotive environment towards a fairer more equitable society for the people. Nevertheless, some of the changes were less than perfect and the initial effervescence was turned into a more pessimistic reality.

It is important to mention that some changes did give the opportunity of governmental participation to former excluded groups (aborigines, blacks, leftist and so on and so forth). This environment created during the first five years (1990-1994) a flexible society able to adapt to the needs of a multicultural society.

This new set-up created an appropriate environment for large demobilization of most of the leftist guerrillas. Many were demobilized under agreements, except for the FARC, the ELN and the AUC. The successful demobilizations were:

- Labor Party (Partido de los trabajadores) January 25th 1991
- People Liberation Army (Ejército Popular de Liberación - EPL) January 15th 1991.
- Quintín Lame May 27th 1991.

- Guerrilla National Coordinator (Coordinadora Nacional Guerrillera) April 9th 1994.

This momentum changed under President Samper's regime, when most reforms were either stopped or back warded under his polemic and corrupted government. During this government the Colombian state had a weak and disorganized army compared to guerrillas; the government was ineffective, corrupted and distrusted by the national and international communities. The Colombian society kept its inequitable character and experienced a lack of reforms (Maldonado 2004). Even the guerrilla said it was a weak government to talk with.

Nevertheless, during the 90's drug cartels were mostly dismantled although the drugs crops and structures remained. This situation caused an accommodation of drug structures. The new system left smaller cartels in charge of the drug commercialization process and illegal armed groups (ELN – National Army for freedom, FARC – Colombian Revolutionary Armed Forces and AUC – Colombian United Self Defense) in charge of the drug production.

Drug cartels were part of the drug business as profit oriented structures. But under the new arrangement, guerrillas and self defense groups with objectives that not let them be clearly defined as exclusively profits oriented structures took control of the large profits generated by the drug business. As a result, the money coming from the drugs reinforced the structures of the guerrillas' and self defense armies, giving them more power to buy weapons and to extend their influence on more regions.

In 1998 Colombia ended the nightmare of Samper as President and started a slow recovery under President Pastrana. The economic growth as one of the most important

motors of social stability stopped its poor performance after 1999 (Maldonado 2004).

On January the 7th of 1999 President Pastrana, working in cooperation with the FARC guerrilla, initiated a peace process. All members of the FARC group were allowed to stay on a demilitarized zone conformed by 42.000 km² on southern Colombia.

The peace process was an initial step towards negotiation but at the end both parts blamed each other for not showing a real willingness for cooperation. Experiencing a slow economic recovery and still under an uncertain political situation, Colombia ended the XX century.

As a response to the little cooperation signs on the peace process, reinforced by the suspicion of an internal reform plan of the FARC guerrilla, the government decided to reinforce the army.

That was a strategic plan of the government to face an eventual military confrontation against the FARC guerrilla, contingent to a failure on the result of the peace process. The strategic reinforcement was called Plan Colombia, which attempted to attack all the Illegal armed groups' structures by weakening their financial sources (especially drug related) and by implementing a stronger military structure to fight them.

Up to today, donations from the U.S. to Plan Colombia have been successful on some of their objectives but not in others. The Government has recovered presence on many Colombian regions, but reduction on drug crops has not been as effective as expected. Plan Colombia has always been questioned but it has been effective in stopping guerrilla attacks and their negative impact on the economy. This was achieved by putting more pressure over the drug business and reconstructing a weakened army. The Plan Colombia

agreement has been used by both President Pastrana and President Uribe Vélez⁷.

The consolidation of the project has been achieved under the super effective Colombian armed forces led by President Uribe Vélez, with a terrific combination of a strengthened army by the Plan Colombia resources and leadership of the pro military President Alvaro Uribe Vélez. To all lights the army has gained a better position on the internal armed conflict.

In the 90's and early 00's, the AUC right wing self defense army has gained more power. Nevertheless, on the year 2004 President Alvaro Uribe Vélez started a negotiation process with them to reincorporate its leaders and troops to the civil society. The leaders have explicitly mentioned their intentions to be part of the democratic process as a new force on the Colombian political arena.

The historic review of the conflict presented here accounts for some of the most important historic trends that led to the actual situation of the Colombian conflict. Nevertheless, the description just pretends to act as a context to analyze the drug business and the policies related to that phenomenon.

3. Economic interests in the conflict

The illegal actors on the Colombian conflict use typically three main sources of rents to finance their activities:

1. **Rent Creation:** Mainly defined by production and traffic of cocaine, heroin or other drugs to obtain rents.

⁷ For more information on Plan Colombia visit US Department of State: www.state.gov; to see the aid expressed in terms of money go to **Appendix 2**.

2. **Private Rent Extraction:** Kidnappings and extortions of persons or enterprises to extract their private wealth.
3. **Public Rent Extraction:** Kidnappings and extortions of persons or state entities to extract rents from a public fund.

Every one of these subjects has been analyzed on the economic literature. Nevertheless those topics involve many different aspects creating a vast amount of sub fields of research. Some of the most important studies on the roles of rents in the Colombian conflict are described below.

3.1. Rent Creation

Díaz and Sánchez (2004) among others have found evidence of the strong linkage between operations of illegal armed groups and drug crops. Also other information sources⁸ have shown that rents from drugs are one of the main funds for the illegal armed groups to keep the structures working properly and to finance the war expenditures (i.e. troop's wages, ammunition, weapons, etc). For this reason there are policies oriented to stop the mentioned link. Those policies are supported mainly by the Colombian government and by the U.S. government, because both have interests to cut off the drug business and its associated rents.

The literature shows interesting features of drug policies oriented to reduce the size of the drug market. On one hand, Naranjo (2004) concludes that reinforcement of reduction on the demand side of the drug market has a larger impact on drug consumption than efforts

⁸ "Las cuentas de las FARC", Semana magazine ed. 1187, January 2005.

on the supply side. This work is nicely complemented by Tabares and Rosales (2005) who conclude that alternative developments to coca crops have larger effects on drug crops reduction than crops eradication.

By a combined analysis of Naranjo and Tabares and Rosales, it can be concluded that: creation of an alternative source of rents to drug farmers' cause an effective reduction of drug production which affects the supply side of the drug market. But moreover, the policy objective should not be just focused on drug production but on drug consumption too.

The logic behind the argument is: a reduction on the drug cultivated area could possibly move out the drug business from Colombia. This, added to a reduction on the effectiveness of drug distribution in the U.S. market, might increase the cost of the drug trafficking business.

These conclusions leave one last question remaining; by implementing the mentioned policies, is it possible to terminate the drug business in the U.S.? In other words, is it possible to terminate the drug crops in the world and drug consumption in the U.S. by any of the mentioned policies? The evidence shows that cocaine crops may have been reducing in Colombia but the price and expenditures have been declining and the consumption has been recently increasing in the U.S. market; even under an expansion of counter drug expenditures on the production side such as Plan Colombia (See **Appendix 2** and **Appendix 3**). All these are symptoms of an ineffective policy, which leads to conclude that drug policy should be reviewed by both countries.

In particular for the Colombian interests could be relevant to identify if prohibition and

repression of the drug business is an optimal policy to reduce the rents that are transferred from drug business to illegal groups⁹ ¹⁰. Moreover, Colombian policy designers and makers should be able to identify the optimal policies that could lead Colombia to reduce the size of the drug rents that feed the internal war. The answer to that question could give a clue about the possibility of reducing one of the three main financial sources of the war in Colombia.

3.2. Private Rent Extraction

Other source of rents in the Colombian conflict is extortion to private individuals or companies.

Offstein (2002) shows that guerrilla attacks are related to oil company extortions. He found that guerrilla groups expect to receive compensation from the oil companies for not blowing their oil-pipelines. Rubio (2003) presents a historical recount of the kidnappings in Colombia by showing the links between illegal groups and this form of private rent extraction. Another example of private rent extraction is Pshisva and Suárez (2004); they analyze the impact of crime on firm investment. The central finding on the paper is that firms invest less when kidnappings target them.

⁹ Echeverry (2004) found that war on drugs, as it is defined now, could make sense just in the long run.

¹⁰ The termination of the drug consumption in the world is not as relevant to Colombia as the termination of the link that connects drug business and internal conflict in Colombia. The reason behind that fact is that drugs consumption in Colombia is far from being as important as in other countries. While the incoming money from drugs to the internal conflict acts as the energy that keeps it as a main problem to the country.

3.3. Public Rent extraction

Finally and closely linked to the last subsection, is the public rent extraction. This kind of rent extraction is associated to extortions or kidnappings made by illegal armed groups against public servants to obtain public funds.

The main study on public rent extraction is Rubio 2002. This study found that the most relevant public rents associated to the presence of illegal groups are oil rents transfers to municipalities¹¹ and rents from gambling.

Bottía 2003 found that there is no evidence to affirm that state absence is a cause of increment on the presence of illegal groups. This might be a blurry clue of a tie between illegal armed groups' presence and rent extraction of the state funds on the municipal level. Even though, this hypothetical relationship should be the objective of more studies to find more concluding evidence on the issue.

On the next section this work will focus on the first phenomenon mentioned: rent creation. The analysis will center on the role played by drug rents on the Colombian internal conflict. A descriptive approach of the main links of drugs rents to the conflict and the international cycle of drugs rents will be addressed to provide an outlook of this economic phenomenon.

¹¹ These transfers are given to the Colombian municipalities that have oil on their ground as a compensation for the extraction.

4. Drug Business and Colombian Conflict

Colombian conflict is particularly lucrative to the parts that have links to the drug business. It plays a key role in making available a very large amount of rents for its participants. On that sense drugs business' rents in Colombia are used mainly on three issues:

- 1) To finance large scale armed forces under a flag of an ideology (guerrillas or paramilitary groups) or;
- 2) to create or maintain working strong armed mobs (Cartels) that can keep the government apart from their illegal business (by the use of violence acts) and therefore from their source of profits or;
- 3) a combination of the first two cases.

This section will present how the economics of drug business work in Colombia and also will explain the main interests of the parties in the process.

4.1. Recapitulation and definitions

Recalling the historical review, Colombian drug business has changed its leading group many times. Leaders started as small drug traffickers on the 70's that evolved into Cartels on 80's, and after an strengthening on Government opposition to drug business they mutated into a cooperative hybrid conformed by drug cartels and illegal armed groups on the early 90's. Even though, the level of influence by illegal armed groups over drug business has varied between leftist guerrilla and paramilitary groups; the big picture of drug business reached a stable situation on 90's since when small drug cartels and both

kinds of illegal armed groups have worked closely on the drug production and traffic.

This background serves to be aware of the relevant influence of drug business in the Colombian conflict. However, to understand the drug business from an economic perspective some relevant concepts must be explored.

4.1.1. What is the Drug Business Market?

It is an illegal market conformed by a supply side (producers) and a demand side (buyers). Naturally there are many different levels of relations between buyers and sellers around drugs. It starts at the farming stage going thru a market chain until it reaches the final costumer.

4.1.2. What is the Attractiveness of the Drug Business?¹²

The drug business, as many other illegal businesses, is highly profitable. Typically there are not many players at some stages of the market. This situation creates space for rents from a non-competitive structure¹³. Additionally, the possibility of being caught by the state and subsequently being punished by it is incorporated as a risk prime (see also Steiner and Corchuelo 2000). Finally, the demand side of the market is very inelastic, which allows supply side players to transfer any cost variation as an additional price to consumers.

¹² For more detail on this subject see Corchuelo and Steiner 2000.

¹³ The market power structure on the drug business was clear on the 80's and early 90's in Colombia when the drug cartels used to be at most three and they where the lords of the whole market.

It is also important to mention the large size of the market in the case of drugs. Although, revenues from drug traffic have been showing a declining participation in the Colombian G.D.P. on the last twenty years, the size of the market is still large. Rocha (1999) estimates net revenue from drug trafficking to average U.S.\$2,229 million annually between 1982 and 1998¹⁴. Steiner (1997) estimated revenue in the range of U.S.\$1,500 - \$2,500 million annually between 1980 and 1995¹⁵.

Steiner and Corchuelo (2000) point out that those revenues have fallen from around 6% in 1990 to 2.3% in 1998. This can be explained by the drug cartels disarticulation that took place in Colombia on the 90's, that process might have created a more competitive structure on the Colombian drug business, moving part of the revenues that were going to Colombian traffickers to traffic Cartels in countries like Mexico.

The general aspects presented above are useful to understand some of the main details and motivations behind the drug business and the cruelty of the internal conflict in Colombia. The next step to create a picture of the role of drugs in the Colombian conflict is to articulate the drug business to the Colombian conflict.

4.2. Colombian Conflict from the Drug Business Perspective

The drug business conflict in Colombia is represented by the **Figure 1** and can be explained as follows:

¹⁴ Quoted by Steiner and Corchuelo (2000).

¹⁵ Quoted by Steiner and Corchuelo (2000).

- Drug consumers in high income countries demand drugs (mainly the United States of America and European countries; in general, all high income countries),
- Governments of high income countries where drug consumers live prohibit drug production and consumption within their borders. This implies they spend money to control the drug market.
- As a policy to decrease consumption on high income countries; governments try to cut drug supplies coming from low income countries, by supporting governments of those countries on drug business eradication.
- Drug demand is satisfied by drug producing structures on low income countries (in this case Colombia).
- The inputs for drug production are bought on the national and international market.
- Colombia prohibits drugs production and consumption then:
 - Drug producers are more likely to be people living in the illegality because they have lower marginal costs of doing more illegal activities. For example, illegal armed groups have constituted drugs production structure to finance their objectives in Colombia.
 - Also since drugs are illegal in Colombia and foreign countries pay for its control, Colombian security forces such as the police or the army pursue drug producers like illegal armed groups.
- The drugs business represents a large amount of profits for suppliers and with that money state corruption and armed opposition to the state are made to retain the profits

obtained from the drug traffic and in some cases to keep other illegal structures working (i.e. insurgency or self defense armies for the Colombian case).

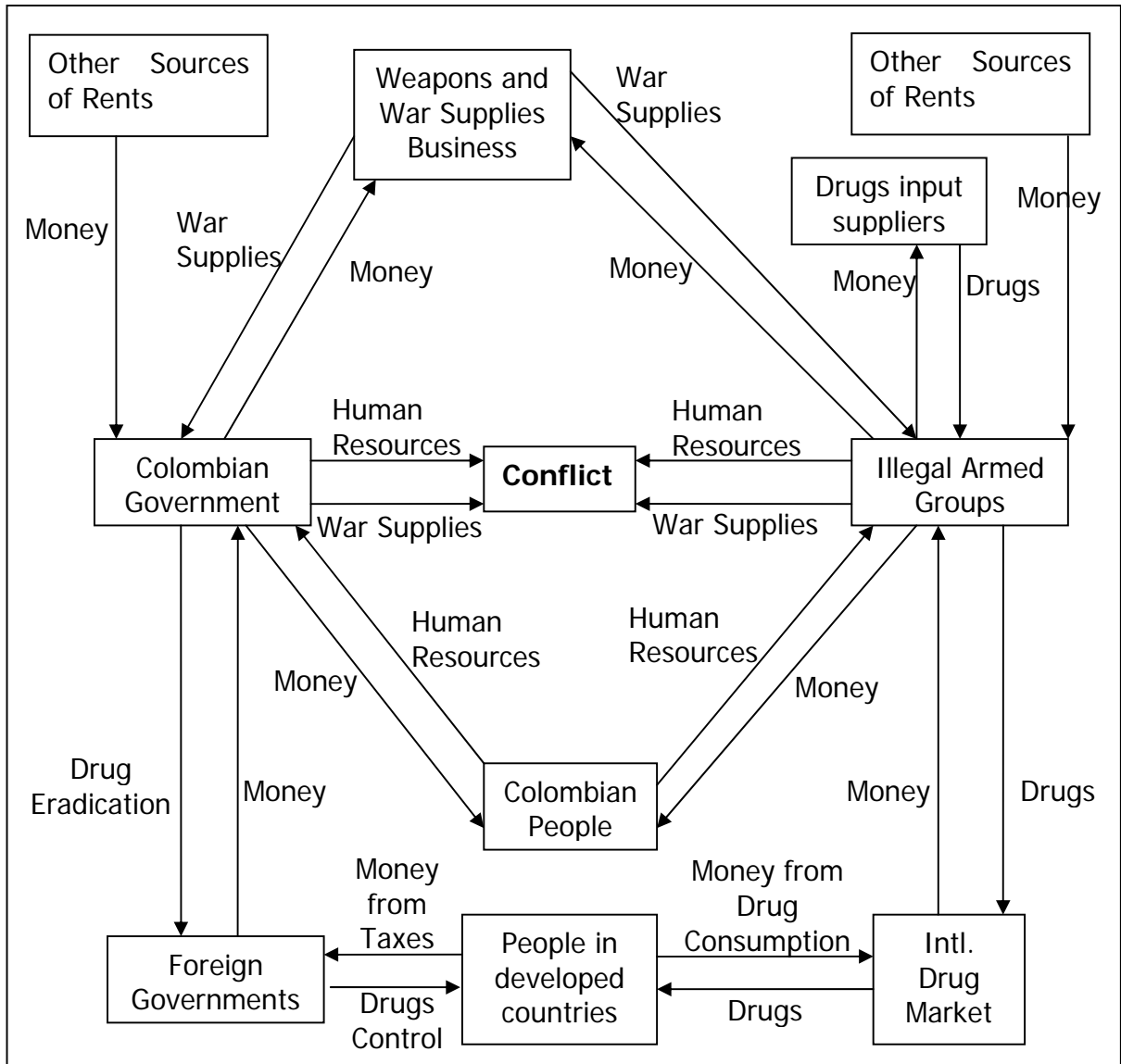
- To keep illegal structures working and also to keep running the drug business, war supplies are bought on the international market. Also people are hired to be part of the illegal armies or structures to combat the state in Colombia and to reach those groups objectives.
- To combat the illegal structures the Colombian state buy war supplies on the international market or receive those as transfers from the Governments in drug consuming countries. As part of the strategy Colombian people are hired to be part of the national army or state structures to combat the drug business in Colombia.
- The result of the drug business cycle money in Colombia is a reinforcement of the Colombian internal conflict. Without the presence of that money the Colombian conflict would have been finance by the other sources of rents presented on the chapter 3 on the illegal side and by the taxes that are already spent on the war against illegal armed groups.

The big picture of the market and its consequences for Colombia are: Colombia has a conflict supported on the government side by resources¹⁶ coming from foreign governments on high income countries. The objective of that money is to reduce drug supply by reducing the drug production and traffic. On the other side the conflict is also financed by money coming from drug consumers on high income countries to satisfy

¹⁶ Resources are offered in many different kinds: money, military training, social support, trade benefits and last but not the least weapons and military tools.

their drugs demand. That money serves to maintain a supply of drug crops, reinforcing the power of drug producers to reach their objectives and their drug producing structures. At the end a large amount of the money used on the war against drugs goes back to developed countries to buy war supplies and the rest stays in Colombia to finance armies on both sides.

Figure 1: Colombian Conflict from the Drug Business Perspective



4.3. Alternatives to stop the drug business cycle and its impact

To stop the illegal drug business cycle there are four options:

- 1) Reduction of drug demand on high income countries
- 2) Reduction of drug supply on low income countries
- 3) A combination of the last two options

4) Drug business legalization

Scientific literature and politic decisions still keep a debate on what is the best way to achieve those policy objectives. The discussion turns around using repression over an illegal drug market versus legalizing and regulating it. Interestingly, opposing answers come from different arenas: the political answer to the question has been repression but the scientific answer is legalization.

The puzzle has been cleverly resolved on a paper from Becker et al. (2004) where the authors illustrate why policy makers believe more on some particular kinds of repression than on a legalization process.

The argument on the paper basically states that drugs legalization is difficult on the political arena. Drugs legalization represents an increase on drugs consumption on middle and high income people, which is not in their interest as high income persons with power to be policy decision makers. The authors go further and explain that on the case of penalties to drugs business policy makers are more flexible and soft with consumers than traffickers and producers. The article argues that the consumers group is composed by both rich and poor people but producers and traffickers are mainly poor people. Since rich people are more influent on policy design they tend to be more benevolent when determining the policies that punish their practices (Becker et. al. 2004).

Nevertheless, it is not clear why a legalization policy is not implemented in countries like Colombia, where high income people also incur in high costs by the strengthening of the illegal armed groups; costs such as increase of kidnappings, extortion, and the direct and indirect effects of the different kinds of rent extraction. The question is even more

relevant if it is acknowledge that drug business causes more costs to Colombia than the rents that are driven to the country (Steiner and Corchuelo 2000).

The last questioning leads to the main question of this thesis which is: why does not Colombia legalize the drug business to reduce the magnitude of the internal conflict? On this thesis it will be argued that the answer to that question can be found by analyzing and understanding the international political stance towards drugs that Colombia has been assuming.

The next chapter provides a game theoretic approach to solve the mentioned question. After the mentioned analysis this paper will analyze the actual international stance assumed by Colombia and will present some plausible paths to reduce the importance of the drugs market in the Colombian conflict.

5. Drug policy an International Game: Background and Insight

On a general framework Akerlof (1997) notes that social interaction theory explains why social decisions are not simple choices based primarily on individual considerations. Particular examples of this reasoning are several of Becker's and Akerlof's (1997) articles. Those studies have shown how every day life involves decisions with power to influence other people's decisions¹⁷. Analogously it is possible to understand countries as individual units that make decisions on national politics with repercussions on the national politics of foreign countries (i.e. International politics).

¹⁷ Becker 1971, 1973, 1974, 1977.

This is particularly true in the case of countries that work closely on some interests, cooperating when establishing policy guidelines. The political relation between Colombia and U.S. on the specific case of drug policy has a twenty years tradition of cooperation and policy alignment against drug production, traffic and consumption. This tie has been reinforced more than ever on the last years, when terrorism acts and drug business have been understood as closely related. As it was presented above, the “Plan Colombia” is today the explicit manifestation of cooperation between the two countries. This aid package implies a policy alignment from Colombia to U.S.’ decisions in order to receive help on the “war against drugs and terror”, as it has been manifested to be on the U.S. politicians’ interests.

This section, parallel to the model in Akerlof (1997) on social decisions; analyze the effects of political decisions made by basic agents named politicians deciding on several different countries.

The model is considered appropriate for this analysis since political links between countries creates economic relations between politicians. They end up determining the political stance assumed on its own country and therefore affecting decisions on foreign countries too.

In this particular case drug prohibition by the United States creates a threat of retaliation for drug producing countries such as Colombia if they do not aligned their national policies with U.S. policy (i.e. either by facing aid reduction programs, strict economic controls on trade, reduction of trade benefits, immigration barriers, investment reduction, etc...). Hence a legalization policy could affect the political career of candidates on their

countries by the means of a retaliation policy implemented by the U.S.

From the U.S. politicians perspective a misalignment on drug policies from a foreign country that has received funds for drug eradication programs could be perceived by voters as a waste of resources and a political failure on the policy implementation process. Moreover, a step towards drug legalization has been shown by Becker et al. 2004 not to be on the U.S. policy makers' interests.

By this argument is pretended to point out why politicians on both countries are interested in doing their best effort to reach the policy objectives of a particular stance (i.e. drug prohibition) when implemented.

5.1. Drug Policy an International Game: The Story Behind the Model

Among others, Becker et al. 2004 show that drug legalization is an optimal policy according to the theory and evidence used on their article. Nevertheless, this policy is rarely implemented; all the more, perhaps the furthest policy stances to legalization are assumed on the countries that have the largest stakes on the drug market (for instance, U.S. as demand side and Colombia as supplier). On this paper, it will be shown how when countries set the suboptimal policy of drug prohibition it could constitute a stable suboptimal equilibrium on the international policy arena.

The first part of the model presents the choice that a single country would make on the drug legalization issue when such decision has to be taken without being influenced by any other country. That choice is the optimal policy for the country, which in this case is assumed to be legalization.

The next step incorporates to the model a foreign country which affects the drug policy definition of the initial country. The model will show how under certain conditions, once politicians set an initial suboptimal policy stance, then the result of the game will be also a suboptimal choice of drug policy stance for both countries. The initial position set by politicians is one of the determinants of the suboptimal policy result, which is also a drug prohibition policy.

The model also gives a central role to the economic benefits received by each side during the political process of policy definition. Those are present in the case of Colombia, on the huge amount of resources transferred to the country from the U.S. on the war against drugs and terror. In the case of the U.S. there are also established benefits for U.S. politicians by implementing such a policy. The situation makes Colombian politicians more likely to align their country policies with the U.S. rather than with other countries that are more politically distant (i.e. Netherlands) in terms of cooperation¹⁸. This happens because a change on the political stance becomes costly for Colombian politicians, as it will be proved. On the other hand, a change on the political stance from the U.S. regarding drugs could cause an increase on the amount of drugs received by that country. This is interpreted as a cost in terms of the interests of the policy makers affecting the political exchange. A move towards drug legalization has been shown by Becker et al. 2004 not to be on the U.S. policy makers' interests.

¹⁸ Eventually the links to U.S. constitute an obstacle to create cooperative policies with countries under similar circumstances.

5.2. Drug Policy an International Game: Theoretical Settings¹⁹

The model presented in this article is based on the broadly used gravity model originally designed by Feynman (1963)²⁰ and implemented in economics by Krugman as quoted on Akerlof (1997), whom also uses the gravity model and whom designed the version adapted here.

The utility function on the model is the indirect utility function of the policy makers on each country on the game. The payoffs are determined by an intrinsic value of the decision and a value that is affected by the decisions made by politicians on a different country.

The objective of the politicians is to maximize their utility function by incorporating decisions made by politicians in other countries. It is assumed that the utility of the politicians represent an economic value for them.

Following the set-up presented by Akerlof (1997), it is assumed that there are two players, one on each country; U.S. and Colombia. Each player sets its policy maximizing its utility, knowing what foreign country policy makers did on their last policy definition regarding drugs, and being aware of their preferences on the subject. Both politicians must form expectations about the policy stance on the other country and, taking into account that policies towards drugs in U.S. and Colombia have been stable for a long

¹⁹ This section uses most of the explanations given by Akerlof (1997) since his model is the one adopted here.

²⁰ Quoted in Akerlof (1997).

time, both will assume that on the future the other country policy stance will remain the same²¹.

Based on the outline on games presented by Mas-Colell et. al. (1995) it is possible to define the game by a set of two players, $PL = \{COL, US\}$, where *Col* represents Colombian politicians and policy makers, and *US* United States of America politicians and policy makers. The information for both players is the same: each knows the last move of the other player, represented by a policy stance, but they can not observe the actual decision of the other player. Both players decide the policy stance regarding drugs at the same time. All players have preferences defined by the indirect utility function represented by the expression:

$$U_i = \sum_{j \neq i} \frac{e}{j} [(f + d_{0,ij})(g + d_{1,ij}^e)] + (-ax_{li}^2 + bx_{li} + c) \quad (0)$$

In (0) the d functions represent the political distance between two countries on a particular time (i.e. 0 or 1). The sub indexes i and j represent each county where politicians making decisions were designated. The super index e is attached to a distance function which indicates that its correspondent value is an expectation formed by politicians on country i at the time zero over the behavior of politicians of country j at the time 1. The variables f and g represent the political mass of each country on the economic exchange (e) determined by the policy decisions. Finally the concave function at the end

²¹ In this model it is assumed that politicians on each country want to set the optimal policy for their countries. Even if politicians face a conflict of interests, here it is assumed they always prefer the best for their country people. This assumption helps to show that even if politicians were benevolent decisions makers, their decisions under certain conditions, could lead to implement a suboptimal equilibrium policy.

of the expression represents the intrinsic value for a politician of the country i of a particular policy implementation.

The utility function represented by (0) can be more explicitly denoted by:

$$U_i = \sum_{j \neq i} e^{\left[\left(f + |x_{0i} - x_{0j}| \right) \left(g + |x_{1i} - x_{1j}^e| \right) \right]} + (-ax_{1i}^2 + bx_{1i} + c) \quad (1)$$

As in Akerlof 1997 the problem confronting each player i is to choose x_{1i} depending on its initial position x_{0i} and the expected initial position x_{1j} of the other player. In order to make this decision the player must form expectations about the actual position of her potential “trading partner” in drug policy definition. Many outcomes are possible depending upon how these expectations are formed. The simplest assumption is static expectations that the acquired drug policy stance of all other players will coincide with their initial position; this means that $x_{1j}^e = x_{0j}$ ²².

It is also important to note that in (1) the variable x_{ij} plays the role as a political stance but it also represents an economic value for the politicians. The policy stance determines an intrinsic voters attitude or political party attitude that represent an intrinsic economic value for the politicians, in this case represented by: $(-ax_{1i}^2 + bx_{1i} + c)$.

5.2.1. The Economic Decision: One Party

This part shows how a country will choose the economic optimum decision towards a particular issue if its policy choice is not affected by decisions made in any other country.

²² As noted before, the assumption does not seem to be too strong since U.S. and Colombia drug policies have been aligned for a long time.

For this case it is assumed there is only one country (player) in the game. The politicians in that country have a utility represented by the indirect utility function shown in (1) but adapted to the case of one player. The utility function implemented for the case looks slightly different to (1), but after a careful glimpse it becomes clear that the terms removed just make sense in the two countries case. Therefore, the objective utility function can be represented as:

$$U_1 = -ax_{1Col}^2 + bx_{1Col} + c \quad (1a)$$

The optimization problem is:

$$\underset{x_{1Col}}{\text{Max}} U_1(x_{1Col}) = -ax_{1Col}^2 + bx_{1Col} + c$$

$$\frac{\partial U_1}{\partial x_{1Col}} : -2ax_{1Col} + b = 0$$

$$\frac{\partial U_1}{\partial x_{1Col}} : x_{1Col} = \frac{b}{2a}$$

The maximum is represented by $x_{1Col} = b/2a$ which, as mentioned, is assumed to be drug legalization and is the optimal economic decision made by politicians under the described circumstances.

5.2.2. The Economic Decision: Two Parties

This game is defined as a two country; for each country the following segment will show how optimizing politicians will choose to locate their policy stance at the initial position of a foreign country. The requirements for that outcome are that both countries have implemented similar policies regarding drugs and that they have a strong linkage on both

the political and economic arena.

At the end of the game Colombia locates its policy stance at the initial position of the U.S. (United States of America) (x_{0us}) and the U.S. chooses to locate its policy stance at the initial position of country Col (x_{0Col}). This happens even under the possibility of choosing a different position from the economic optimum value.

The mathematical maximization of the indirect utility function represented by (1) requires the preservation of the absolute values. For this reason the function is defined by parts, changing the sign of the quantity ($x_{1Col}-x_{0us}$) from positive to negative as needed. Consequently the function can be defined for the interval $x_{1Col} < x_{0us}$ as:

$$U_1 = \left\{ e^{\left[f + (x_{0US} - x_{0Col}) \right]} \right\} \left\{ \frac{1}{\left[g - (x_{1Col} - x_{0US}) \right]} \right\} - ax_{1Col}^2 + bx_{1Col} + c \quad (3)$$

Note that quantity ($x_{1Col}-x_{0us}$) is negative in this range since $x_{1Col} < x_{0us}$. The derivative of (3) for the range $x_{1Col} < x_{0us}$ is

$$\frac{\partial U_1}{\partial x_{1Col}} = \left\{ e^{\left[f + (x_{0US} - x_{0Col}) \right]} \right\} \left\{ \frac{1}{\left[g - (x_{1Col} - x_{0US}) \right]^2} \right\} + (-2ax_{1Col} + b) \quad (3a)$$

Note that the first term is a constant, in this case for simplicity on the argument it is assumed that $x_{0Col} < x_{0us}$, which makes the whole first term positive. The part $\left[g - (x_{1Col} - x_{0US}) \right]$ on the second term never changes its sign because on this range it is always true that $x_{1Col} < x_{0us}$, which guarantees that the key-bracketed term is not only positive, but that it never shows a peak. The last term is assumed to be positive ($-2ax_{1Col} + b > 0$) because it represents an intrinsic value for the politicians.

In consequence, $x_{1Col} \geq x_{0US}$ must be true because otherwise the optimum could not be reached since (1) is a concave function.

For the interval $x_{0us} < x_{1Col} < b/2a$, the function U_I is:

$$U_I = \left\{ \frac{e}{f + (x_{0US} - x_{0Col})} \right\} \left\{ \frac{1}{g + (x_{1Col} - x_{0US})} \right\} - ax_{1Col}^2 + bx_{1Col} + c \quad (4)$$

The derivative for the mentioned range is:

$$\frac{\partial U_I}{\partial x_{1Col}} = - \left\{ \frac{e}{f + (x_{0US} - x_{0Col})} \right\} \left\{ \frac{1}{[g + (x_{1Col} - x_{0US})]^2} \right\} + (-2ax_{1Col} + b) \quad (4a)$$

Reader may recall that derivatives are not well defined when the original function changes its direction abruptly creating a discontinuity on the derivative function. This kind of discontinuity can be observed on the function U_I when $x_{1Col} = x_{0us}$, where right hand derivative and left hand derivative have different magnitude. This fact alone does not guarantee immediately that this point is the optimum value of x_{1Col} for country Col , but the optimality could be guaranteed if some conditions are fulfilled. It is required that: Distance between $b/2a$ and x_{1Col} is sufficiently large and the intrinsic value of x is small relative to the exchange value (e).

Finally, in the range $x_{1Col} > b/2a$, the value of U_I is the same as (4) and the derivative remains the same as (4a). In this case under the mentioned conditions the derivative does not change its sign. This concludes the proof and shows how under certain conditions it is possible to find that x_{1Col} will be chosen on the initial value of x_{0us} because U_I reaches its maximum value at that point. A similar proof can be made to show that the same outcome holds true for X_{IUS} .

5.3. Drug Policy an International Game: Policy Implications

This game has shown how a suboptimal drug policy leads under some circumstances to a suboptimal equilibrium on drug policy decisions. One of the most important parameters in the model is the exchange value (e); if that value is large enough the equilibrium policy would remain suboptimal.

In the case of exchange value Plan Colombia could be mentioned as an example as it represents a large amount of transfers from the U.S. Government to the Colombian government. This policy generates a very strong linkage between Colombian policy and U.S. policy decisions. It is also important to mention that for the U.S. politicians the amount of resources transferred to Colombia represent a commitment to the initial policy stances towards drugs (prohibition) represented by (X_{0us}). The amount of resources transferred by the U.S. to Colombia and the amount of resources spent internally²³ in the U.S. to control drug business increases the value of the political exchange (e) and consequently the potential cost of a policy misalignment. That argument can be understood as the utility reduction for the politicians in the U.S. that could be created if a deviation on the policy stance is adopted by the Colombian government. A policy choice of that kind represents a utility reduction by an increase on the political stance distance of the two countries.

²³ A summary of the resources spent by the US society by drug abuse are presented on **Appendix 3: Drug Price, Users and Expenditure on Table 7 and Table 8.**

Therefore the model shows the relevance of the political exchange programs between U.S. and Colombia, which creates a strong link and constitutes an obstacle to reach the optimal policy objective for both countries.

An implication from the analysis is that Colombia could open its access to a broader spectrum of policies by strengthening the political links with other countries²⁴. To reach that policy it is important to design a negotiation process that can change the incentives established on the actual policy stance permitting the change to the new policy objective.

6. The Negotiation Process

From the Colombian government perspective the best outcome is to terminate the rent transfers from drug business to illegal violent groups (i.e. Drug cartels, Guerrillas or whatever comes in the future).

To reach that objective Colombia has different possible ways. As it was shown, drug prohibition and extermination is the way that has been experimented, and it has been implemented together with some efforts to increase the life standard and therefore make more expensive the illegality attached to the drug business. As argued above this policy is suboptimal and might not be on the best interests of the Colombian society.

On the other hand, the existence of a possibility to start a legalization process (pursuing legalization as the optimal policy) creates an alternative path to reduce the magnitude of

²⁴ This consequence does not come directly from the model presented above but it is possible to argue that under a three country game with another player located near to the economically optimal policy it will be possible for Colombia to start building links with the new player (i.e. Netherlands) and finally move towards the optimal policy. The proof of that fact can be obtained from the original paper by Akerlof 1997 or by a replication of his proof made on the

the internal conflict. Under this option the government should try to either change the actual stance of other parties interested to terminate the problems caused by the illegal drug business rents (or drugs production) or to look out for new allies on a legalization policy. Those alternatives will reinforce the negotiation power of the country increasing the possibility of success on the task.

To understand the Colombian government situation as well as the other parties' interests on drug business

Table 1 is presented. To read the table correctly keep in mind that drug business owners are some of the most important illegal violent actors on the internal conflict in the present. A brief explanation of each party's interest is offered below. There are maximum two parameters on each cell of the table, the first one is the magnitude of interest and the second is the direction of the interest.

Table 1: Interests on Drug Business: Colombia, Owners and U.S.

Players	Interests	Drugs Production	Drugs rents to Colombian Conflict	Colombian Conflict
Colombian Government		Low (Against)	High (Against)	High (On objectives*)
Drug Business Owners		None**	High (For)	High (On objectives*)
U.S. Government		High (Against)	High (Against)	Low (keep safe its interests)

* Each party has different interests on the Colombian conflict, but both are interested on the outcome, especially on reaching their particular objectives as persons and groups.

** Drug business owners do not care about the drugs by it self; their interests are on the monetary rents they can earn from that business.

6.1. The parties interests

For the U.S. government the whole chain of the drug business has been manifested to be a problem. Politicians argue that it creates a social cost and illegal rent extraction²⁵.

The argument presented by the politicians and policy makers is that drug production represents a cost for the U.S. society because their high drugs consumption.

As motioned before for Colombia the most important problems are the drug rents and the internal conflict, more than drug production, since drug consumption is not as expensive to the country as the other problems. Nevertheless, drug production could imply a large exposure of the population to drug consumption which could cause productivity reductions and other costs (i.e. as the problems observed on the U.S. population).

From the drug business owner's perspective, drug production is not an objective per se. Their objectives are to obtain rents to keep fighting the government or to benefit themselves or both depending on groups and persons²⁶.

After exposing the incentives of each party with interests on the drug business in Colombia, it should be interesting to analyze the policy that had been implemented in the

²⁵ However Becker et al. 2004 has shown that legalization is better for the whole U.S. society and his paper also has shown that the story behind the position of U.S. politicians and policy makers is that they do not have personal incentives to legalize the drug business. Moreover, this paper has shown that their attitude it is committed to be stuck on that policy.

²⁶ Generalizations such as drug traffickers, terrorists, bandits, guerrilla or any classifications are avoided here; that is because all adjectives are at some level true depending on individuals and groups.

U.S. on this issue. It is also important to understand the conflict of interests between Colombia and the U.S. on drug policy and what political alternatives are open to Colombian policy makers to pursue the best interest of the country.

6.2. Conflict of interests and strategies

The war on drugs as actually conceived, and its subscribed cooperation programs between U.S. and drug producing countries like Colombia have increased the political barriers to move out of the drug illegality as a suboptimal policy. This situation results on the protection of U.S. politicians and policy makers' interests.

Colombian politicians have a commitment with the U.S. policies created by the huge support given by the U.S. politicians and policy makers to fight on the internal conflict. This is especially true on the issues where Colombian interests and U.S. politicians and policy makers' interests are aligned. Nevertheless, it is important to notice that the U.S. aid for the conflict has not been committed to a comprehensive solution for the Colombian problems²⁷.

By this exposition it is clear that Colombia and the U.S. decision makers' interests are not aligned on the comprehensiveness and the focus of the problem. Each side has different interests and each one should try to reach the best policy to address its own problems.

A strong linkage of the Colombian internal drug policy agenda with the U.S. policy will not help Colombia to solve its conflict. Moreover, an active participation on cooperation

²⁷ For more on that issue see the composition of the US aid to Colombia on the **Table 3**. It is clear that just the 20% has been transferred to social programs. Those policies do not show a commitment to change the social problems faced in Colombia that are the motor of the internal conflict.

programs that support the repressive war on drugs will maintain Colombia attached to the U.S. interests leading the national policies to be stuck on a suboptimal choice.

As proposed on the previous chapter of this thesis, Colombia should search to strengthen its links to countries with a policy stance that could match better the optimal policy of drug legalization. With such a change on the political links Colombia may be able to change its own incentives and move towards drugs legalization.

Another possibility explored here for Colombia is to promote a change on the policy stance of countries that have similar interests to the ones held by Colombia. As presented on the following table some Latin-American countries may share those interests.

Table 2: Interests on Drug Business: Colombia, Owners and Other Parties

Players	Interests	Drugs Production	Drugs rents to Colombian Conflict	Colombian Conflict
Colombian Government		Low (Against)	High (Against)	High (On objectives)
Drug Business Owners		None	High (For)	High (On objectives)
Latin-American Governments		Low (Against)	High (Against)	High (Stop spillovers)
Governments close to legalization		Low (Against)	None	Low
U.S. Government		High (Against)	High (Against)	Low (keep safe its interests)

6.3. Potential Colombian allies on a legalization policy

The countries added to the table are the ones closer to legalization such as the

Netherlands. The Netherlands have one of the most liberal drug policy stances in the world. Their policy tries to reach the optimal drug policy by reducing drug consumption by preventing, rather than repressing, the users.

Nonetheless, Colombia has very little links to the Netherlands and the interests on the Colombian conflict are not necessary aligned between the countries. The drug production is as usual not approved by the Netherlands. The Colombian internal conflict by itself does not seem to represent a major concern for the Netherlands' government. Colombia is geographically and politically far and does not affect much the Netherlands interests²⁸.

On the other hand, the Latin-American (L.A.) countries were also included in the **Table 2**. It is important to mention that the closest the L.A. countries are to Colombia, the more affected them are by the Colombian conflict. This means that if there are more rents on the drug business more weapons traffic and drug traffic is going thru their countries. When the conflict is rough they have been affected by invasions to their lands and by external displacement. Furthermore, Peru and Bolivia also produce large amounts of drugs, and countries such as Mexico and Brazil serve as corridors for the drug traffic and are affected by internal cartels. Finally, Colombia has more links to Latin-America than it has to any country outside the region.

As a conclusion it could be argued that the best solution to reduce the drug impact by implementing a legalization process in Colombia should come from a strengthening of the links that tie the Latin-American countries. Moving together towards drug

²⁸ It is still important to remember that a strengthening of the links that Colombia has with Netherlands could lead to a better perspective of the drug market legalization.

legalization could reduce the impact of the drug business rents on each country's internal problems.

7. Conclusions

From the Colombian history review it is possible to determine that drugs in Colombia are sources of rents and violence but are not necessarily linked to a particular guerrilla. Proof of that is the experience from the 80's when drugs were mainly linked to a different kind of illegal and violent groups such as the drug cartels²⁹. This is a symptom that has shown how if drugs business keeps guaranteeing its large profits its illegal character will remain as a source of violence for the country, no matter who is the violent actor in control of the business.

Moreover, the internal conflict seen as the confrontation between illegal armed groups and the state will keep its highly violent nature if the drug is illegal. The guerrillas will keep getting resources out of the drug business to fight against the state and the Colombian government will keep getting resources from the U.S government perpetuating³⁰ the Colombian internal conflict cycle described on the **Figure 1**.

From this perspective the legalization process appears as an alternative exit to the violent and traditional way of facing the problem. Certainly, to guarantee the success of the policy Colombia should turn its external policy to the creation of new links that support a legalization process and to generate alternatives to the dependence on the U.S.

²⁹ Drug business is still linked to drug traffic bands different to guerrillas

³⁰ At least the conflict would last for an unknown period of time as mentioned by Echeverry 2004.

This process has been shown would be possible if made with countries that have policies close to legalization or by aligning interests with countries that share similar interests of Colombia.

Nevertheless, as long as Colombia stays strongly linked to the United States (i.e. aid programs or other means that make the country highly dependent on the U.S.) the internal drug policy will remain linked to the prohibitive and confrontational approach set by the U.S. internal policy; at least until the U.S. policy changes its drug policy stance legalizing the drugs market.

Finally it should be reminded that it is not granted that Colombian conflict would be solved if the illegal drugs business rents are either legalized or extirpated from Colombia. Colombia has experienced internal conflicts for more than forty years now and rents are only one more source financing the conflict. However, the causes of the problem are still making people work on illegal business and wars. The intensity of the conflict may be decreased by reducing the illegal drugs business rents; but all the causes of the conflict should be well identified and kept as a policy target to reach a comprehensive and lasting solution for the Colombian internal conflict.

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9. Appendixes

9.1. Appendix 1: Literature Review

Through the following literature review will be offered a concise recount of conclusions found on studies about the Colombian conflict. Even though, the main focus will be offered on the part devote to the drug policies evaluation because it is the main interest of this work.

The presentation starts with a background of the conflict moving towards a second part where is referred a recent picture of the conflict by summarizing the case studies on players incentives. A third part accounts for the literature on consequences of the conflict to terminate summarizing studies on the conflict resolution and mentioning comparative studies.

Before starting it should be noticed that the most comprehensive analysis of the Colombian conflict is the book “A cul-de-sac with ways out”, by U.N.D.P. (2003). The mentioned study is composed of more than a theoretical or empirical analysis; it is a project to promote the conflict resolution in Colombia. Nevertheless, it analyzes and presents most of the areas involved in the Colombian conflict.

9.1.1. Conflict Background

On this area a panoramic presentation is offered by U.N.D.P. (2003); other works offer detailed explanations depending on interests. Bushnell (1993); presents an overview of the Colombian history. It covers from the very beginning of the Colombian history until the early 90's. Detailed presentations are offered on different aspects on: Sánchez, Díaz and Formisano (2003) made a review of the conflict history on their first chapter,

García Durán (1992) present a recount on several peace processes held in Colombia, Rubio (2003) offers a detailed historic explanation of the kidnappings practice in Colombia. Some facts are offered also on most of the studies but not all show a historical review (see References on chapter 8).

9.1.2. Behavior and incentives of the actual participants

Ofstein (2002) analyzes the private rent extraction in the conflict based on the oil pipelines attacks he finds a rent seekers behavior (i.e. by means of extortion) on some groups in conflict.

The U.N.D.P. (2003) project shows the different perspectives of the players in the conflict and present list of explicit objectives but tries also to analyze the implicit causes of the actions. They have been working on the project by collecting internal examples of conflict handling in particular regions of Colombia.

Bottía (2003) found guerrilla to be a rent seeker focused on extraction of private rents or as an illegal business operator. She also found a contagious behavior that shows the guerrilla is more likely to expand its activities to territories near their control areas.

Sánchez, Díaz and Formisano (2003) show how the guerrillas create a violent environment on the Colombian territory. They found a statistic link between the presence of illegal armed groups and the leading violence trends in Colombia. Moreover, they found that violence creates room to more violent activities spreading out the violent behavior in a region and making it time persistent.

Duncan (2004) presents a quantitative analysis of the Colombian conflict seen as a

dispute for the control of the state on the local level.

Díaz and Sánchez (2004) found a rent creation by the illegal armed groups. They found those groups to be linked to an extensive drug production in Colombia.

9.1.3. Effects of the conflict:

Although, the Colombian conflict influence different spheres of the society, the way of measuring its impact has being mainly recount by its economic or social effects. Both are referred here:

Economic: Steiner and Corchuelo (2000) recount the costs of the drug traffic to the Colombian society. Pshisvha and Suárez (2004) evaluate the effects of the kidnappings on the firm investments.

Social: U.N.D.P. (2003) evaluates regional and national consequences of the war to society. Pécaut (2001) contextualizes and characterizes the main historic trends and actual actors focusing his study on the effects of the war on the society.

9.1.4. Conflict resolution

Maybe the most notorious work on the field is the one made by U.N.D.P. (2003). The work is comprehensive on the national and international policies that must be taken into account. It states guidelines to address the national conflict main problems without losing of sense of reality and the conciseness of the international community roles.

9.1.4.1. Drug Policies evaluation

Moreno-Sanchez et al., (2003) found empirical evidence that show how crop substitution

might be better than coca eradication. Tabares and Rosales (2005) show broadly the same findings as Moreno-Sanchez et al., 2003. Naranjo (2004) evaluates the effects of interdiction and involuntary crop eradication concluding that interdiction is more effective than involuntary crop eradication. Díaz and Sánchez (2004) found that crop eradication via aerial spraying has not been an efficient tool in the fight against coca production in the country.

Echeverry (2004) found that war on drugs makes sense only in the long run because it depends on the price elasticity demand on the U.S.

On the international policies the most relevant paper on drug policies for this work is Becker et al. (2004). That study offers a literature review showing the state of the art on theoretical drug policy. It also develop and evaluates a model of drug policy effects concluding that that fighting a war on drugs by legalizing drug use and taxing consumption may be more effective than continuing to prohibit the legal use of drugs.

9.1.4.2. Comparative studies

Richani (2002) present on his last chapter presents a comparative analysis of the Colombian conflict to internal problems that happened on Italy, Lebanon and Angola. He argues that other countries have also passed thru struggles similar to the Colombian one. Those situations may offer keys to resolve the Colombian internal conflict.

9.2. Appendix 2: Plan Colombia

Table 3: U.S. Aid to Colombia Since 2000: Summary Tables

Military and Police Assistance Programs							
(millions of dollars; numbers <i>underlined and italicized</i> are estimates taken by averaging previous two years)							
	2000	2001	2002	2003	2004	2005, estimate	2006, requested
International Narcotics Control (INC, also known as "Andean Counterdrug Initiative)							
State Department-managed counter-drug arms transfers, training, and services	688.1	46.4	254.2	431	324.6	321.8	331.9
Foreign Military Financing (FMF)							
Grants for defense articles, training and services	0	4.5	0	17.1	98.5	99.2	90
International Military Education and Training (IMET)							
Training, usually not counter-drug	0.9	1	1.2	1.2	1.7	1.7	1.7
Emergency Drawdowns							
Presidential authority to grant counter-drug equipment from U.S. arsenal	0	0	0	0	<u>0</u>	<u>0</u>	<u>0</u>
"Section 1004"							
Authority to use the defense budget for some types of counter-drug aid	68.7	190.2	119.1	165	122	200	<u>161</u>
"Section 1033"							
Authority to use the defense budget to provide riverine counter-drug aid to Colombia	7.2						
							Included with above
Antiterrorism Assistance (ATA)	0	?	25	3.3	0	3.9	<u>2</u>

Grants for anti-terrorism defense articles, training and services

[Excess Defense Articles \(EDA\)](#)

Authority to transfer "excess" equipment	0.4	0.5	2.4	3.4	<u>2.9</u>	<u>2.9</u>	<u>2.9</u>
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[Discretionary Funds from the Office of National Drug Control](#)

Policy	0	0	0	0	<u>0</u>	<u>0</u>	<u>0</u>
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Subtotal	765	242.6	401.9	621	549.7	629.5	589.5
Percentage of total	78%	98%	77%	81%	79%	81%	80%

Economic and Social Assistance Programs

(millions of dollars)

	2000	2001	2002	2003	2004	2005, estimate	2006, requested
Economic Support Funds (ESF)							
Transfers to the recipient government	4	0	0	0	0	0	0
Development Assistance (DA)							
Funds for development projects	0	0	0	0	0	0	0
 International Narcotics Control (INC, also known as "Andean Counterdrug Initiative")							
State Department managed funding for counter-drug economic and social aid	208	5.7	120.3	149.2	149.3	152.1	152.2
Subtotal	212	5.7	120.3	149.2	149.3	152.1	152.2
Percentage of total	22%	2%	23%	19%	21%	19%	20%
Grand Total	977.3	248.3	522.2	770.2	699	781.6	741.7

Sources: <http://www.ciponline.org/colombia/aidtable.htm>

International Narcotics Control:

1997: United States, Department of State, Bureau of International Narcotics and Law Enforcement Affairs, Fiscal Year 1999 Budget Congressional Presentation (Washington: Department of State: March 1998): 32.
1998: United States, Department of State, Bureau of International Narcotics and Law Enforcement Affairs, Fiscal Year 2000 Budget Congressional Presentation (Washington: Department of State: March 1999): 27.
1999: United States, Department of State, Bureau of International Narcotics and Law Enforcement Affairs, Fiscal Year 2001 Budget Congressional Presentation (Washington: Department of State: March 2000): 34 <http://www.state.gov/www/global/narcotics_law/fy2001_budget/latin_america.html>.
2000: United States, Department of State, Bureau of International Narcotics and Law Enforcement Affairs, Fiscal Year 2002 Budget Congressional Justification (Washington: Department of State: April 2001): 30 <<http://www.state.gov/g/inl/rls/rpt/cbj/fy2002/index.cfm?docid=3701>>.
United States Congress, Conference Report 106-701 on H.R. 3908, June 29, 2000 <<http://ciponline.org/colombia/confrept.pdf>>.
2001: United States, Department of State, Bureau of International Narcotics and Law Enforcement Affairs, Fiscal Year 2003 Budget Congressional Justification (Washington: Department of State: April 2002) <<http://www.state.gov/g/inl/rls/rpt/cbj/fy2003/>>.
2002: United States, Department of State, Bureau of International Narcotics and Law Enforcement Affairs, Fiscal Year 2004 Budget Congressional Justification (Washington: Department of State: June 2003) <<http://www.state.gov/g/inl/rls/rpt/cbj/fy2004/>>.
2003-2005: United States, Department of State, FY 2005 Congressional Budget Justification for Foreign Operations (Washington, DC: Department of State, February 2003) <<http://www.state.gov/m/rm/rls/cbj/2005/>>.

Foreign Military Financing:

1997: United States, General Accounting Office, "Drug Control: U.S. Counternarcotics Efforts in Colombia Face Continuing Challenges," GAO/NSIAD-98-60 (Washington: GAO, February 12, 1998) <<http://frwebgate.access.gpo.gov/cgi-bin/useftp.cgi?IPaddress=waisback.access.gpo.gov&filename=ns98060.txt&directory=/diskb/wais/data/gao/>>.
1999: United States, Department of Defense, Department of State, Foreign Military Training and DoD Engagement Activities of Interest in Fiscal Years 1999 and 2000: A Report to Congress (Washington: March 2000) <<http://www.state.gov/www/global/arms/fmtrain/toc.html>>.
2000: United States, Department of State, Department of Defense, Foreign Military Training and DoD Engagement Activities of Interest In Fiscal years 2000 and 2001, Volume I (Washington: March 2001) <<http://www.state.gov/t/pm/rls/rpt/2001/fmtrpt/>>.
2002: United States, Department of State, FY 2004 Congressional Budget Justification for Foreign Operations (Washington, DC: Department of State, February 2003) <<http://www.state.gov/m/rm/rls/cbj/2004/>>.
2003 supplemental: Statement of Jess T. Ford, Director, International Affairs and Trade, General Accounting Office, United States Congress, Financial and Management Challenges Continue to Complicate Efforts to Reduce Illicit Drug Activities in Colombia, GAO-03-820T (Washington: GAO, June 3, 2003) <<http://www.gao.gov/docdb/lite/getrpt.php?rptno=GAO-03-820T>>.
2003-2005: United States, Department of State, FY 2005 Congressional Budget Justification for Foreign Operations (Washington, DC: Department of State, February 2003) <<http://www.state.gov/m/rm/rls/cbj/2005/>>.

International Military Education and Training:

1997: United States, Department of State, Office of Resources, Plans and Policy, Congressional Presentation for Foreign Operations, Fiscal Year 1999 (Washington: March 1998): 1013.
1998: United States, Department of State, Office of Resources, Plans and Policy, Congressional Presentation for Foreign Operations, Fiscal Year 2000 (Washington: March 1999): 1106-9.
1999: United States, Department of State, Office of Resources, Plans and Policy, Congressional Presentation for Foreign Operations, Fiscal Year 2001 (Washington: March 2000). <http://www.state.gov/www/budget/fy2001/fm150/forops_full/150fy01_fo_military-asst.html>.
2000: United States, Department of State, Office of Resources, Plans and Policy, Congressional Presentation for Foreign Operations, Fiscal Year 2002 (Washington: April 2001) <<http://www.state.gov/documents/organization/3961.pdf>>.
2001: United States, Department of State, FY 2003 Congressional Budget Justification for Foreign Operations (Washington, DC: Department of State, April 15, 2002) <<http://www.state.gov/m/rm/rls/cbj/2003/>>.
2002: United States, Department of State, FY 2004 Congressional Budget Justification for Foreign Operations (Washington, DC: Department of State, February 2003) <<http://www.state.gov/m/rm/rls/cbj/2004/>>.
2003-2005: United States, Department of State, FY 2005 Congressional Budget Justification for Foreign Operations (Washington, DC: Department of State, February 2003) <<http://www.state.gov/m/rm/rls/cbj/2005/>>.

Emergency Drawdowns:

1997: United States, Department of State, "Summary Sheet," fax document, September 16, 1997.
1998: United States, Department of State, "Memorandum of Justification for use of Section 506(a)(2) special authority to draw down articles, services, and military education and training," September

15, 1998.

1999: United States, White House, "Draft Working Document: FY99 506(a)(2) Drawdown List Requested Items," Memorandum, September 30, 1999.

"Section 1004":

1997: H. Allen Holmes, coordinator for drug enforcement policy and support, United States Department of Defense, letter in response to congressional inquiry, Jan. 23, 1998.

1998: Ana Maria Salazar, deputy assistant secretary of defense for drug enforcement policy and support, United States Department of Defense, letter in response to congressional inquiry, Mar. 19, 1999.

1999: United States, Department of Defense, Office of the Deputy Assistant Secretary of Defense for Drug Enforcement Policy and Support, correspondence with authors, September 21, 2000.

2000: United States, Department of Defense, "Report on Department of Defense Expenditures To Support Foreign Counterdrug Activities", Washington, December 29, 2000.

United States Congress, Conference Report 106-701 on H.R. 3908, June 29, 2000 <<http://ciponline.org/colombia/confrept.pdf>>.

2001-2005: Congressional Research Service, "Andean Counterdrug Initiative (ACI) and Related Funding Programs: FY2005 Assistance," Washington, December 9, 2004

<<http://ciponline.org/colombia/041209crs.pdf>>.

"Section 1033":

1998-2002: same as "Section 1004" above.

Anti-Terrorism Assistance:

United States, White House, Office of Management and Budget, "Technical Language" for supplemental appropriations request (Washington: March 21, 2002): 80

<http://ciponline.org/colombia/02supp_technicallanguage.pdf>.

2003-2005: United States, Department of State, FY 2005 Congressional Budget Justification for Foreign Operations (Washington, DC: Department of State, February 2003)

<<http://www.state.gov/m/rm/rls/cbj/2005/>>.

Excess Defense Articles:

United States, Department of Defense, Defense Security Cooperation Agency, Excess Defense Articles online database <http://www.dsca.osd.mil/home/excess_defense_articles_bbs.htm>.

2003: United States, Department of State, FY 2005 Congressional Budget Justification for Foreign Operations (Washington, DC: Department of State, February 2003)

<<http://www.state.gov/m/rm/rls/cbj/2005/>>.

ONDCP Discretionary Funds:

United States, Executive Office of the President, Office of National Drug Control Policy, memo in response to congressional inquiry, February 1998.

Economic and Social Assistance:

1997-2003: Same as "International Narcotics Control" above.

9.3. Appendix 3: Drug Price, Users and Expenditure

Table 4: Price of One Pure Gram of Powder Cocaine

Year	<2 grams Average	2 to 10 grams Average	10 to 50 grams Average	> 50 grams Average
1981	544.59	345.64	280.55	201.18
1982	590.86	337.46	267.12	186.54
1983	471.87	311.02	215.06	158.2
1984	400.69	252.74	170.08	136.53
1985	389.6	239.24	170.56	135.34
1986	296.94	186.06	130.5	100.19
1987	250.55	145.78	98.63	74.56
1988	223.55	126.83	73.79	56.95
1989	189.92	109.54	67.02	52.98
1990	234.94	133.17	84.74	71.6
1991	198.34	99.18	67.19	55.79
1992	153.96	97.27	62.19	52.28
1993	156.18	95.57	63.58	49.68
1994	147.43	86.42	55.45	43.55
1995	181.58	87.64	57.68	48.68
1996	150.13	84.13	50.67	42.59
1997	145.72	80.21	52.07	45.75
1998	132.09	78.71	47.02	38.59
1999	135.51	82.39	50.16	43.52
2000	161.28	99.4	55.26	48.02
2001	168.29	81.38	53.98	44.87
2002	124.54	74.36	47.27	41.59
2003*	106.54	70.52	44.17	37.96

* 2003 Prices are based on information from only the first two quarters of the year, and thus are likely to be updated in future reports. All prices are adjusted for inflation and reported in 2002 dollars. Estimates to the penny are provided to facilitate replication/confirmation and not intended to be meaningful interpreted given how broad the uncertainty bands are.

Source: System to Retrieve Information on Drug Evidence (STRIDE)

Prepared by: RAND Corporation 2/04

Quoted in: The price and purity of illicit drugs: 1981 through the second quarter of 2003. Executive Office of the President. Office on National Drug Policy. Washington, D.C., 2004.

Table 5: Total U.S. Expenditures on Illicit Drugs, 1988-2000 (\$Billions)

Year	Cocaine	Total**	Cocaine/Total
1988	107.0	154	69.5%
1989	88.4	132	67.0%
1990	69.9	115	60.8%
1991	57.1	97	58.9%
1992	49.9	88	56.7%
1993	45.0	77	58.4%
1994	42.8	78	54.9%
1995	40.0	75	53.3%
1996	39.2	74	53.0%
1997	34.7	68	51.0%
1998	34.9	67	52.1%
1999	35.6	65	54.8%
2000*	35.3	64	55.2%

Note: Amounts are in constant 2000 dollars

* Estimates for 2000 are projections

** Total includes: Cocaine, Heroin, Marijuana, Meth-amphetamine and other drugs

Source: Office of national Drug Control Policy, What America's users Spend on Illegal Drugs, 1988-2000 (December 2001).

Quoted in: National Drug Control Strategy. Data supplement. The White House, 2004.

Table 6: Estimated Number of users of Cocaine and Other Illegal Drugs

(Thousands)

Ages of 12 and older

Year	Current use of any illegal drug	Current cocaine use	Occasional cocaine use
1979	25,400	4,700	-
1982	-	4,500	-
1985	23,300	5,700	7,100
1988	15,000	3,100	5,100
1990	13,500	1,700	3,700
1991	13,400	2,000	3,800
1992	12,000	1,400	3,000
1993	12,300	1,400	2,700
1994	12,600	1,400	2,400
1995	12,800	1,500	2,500
1996	13,000	1,700	2,600
1997	13,900	1,500	2,600
1998	13,600	1,800	2,400
1999	13,829	1,552	1,926
2000	14,027	1,213	1,732
2001	15,910	1,676	1,995
2002	19,522	2,020	3,073

Note: "Any illicit drug use" includes use of marijuana, cocaine, hallucinogens, inhalants (except 1982), heroine, or non-medical use of sedatives, tranquilizers, stimulants, or analgesics. The exclusion of inhalants in 1982 is believed to have resulted in underestimates of any illicit use for that year, especially for adolescents.

- Data not available

¹ In 1999, the survey methodology changed from a paper-and-pencil interview (PAPI) to a computer-assisted (CAI). Estimates based on the new CAI methodology are not directly comparable to previous years. In 2002, the survey was renamed to the National survey on Drug use and Health and methodological changes were implemented that significantly affected reported prevalence rates. Therefore, estimates for 2002 are not directly comparable to previous years.

² Data for past-month (current) use.

³ used on 1 to 11 days in the past 12 months.

Sources: National Institute on Drug Abuse (1979-1991), and Substance Abuse and Mental Health Services Administration (1992-2001), National Household Survey on Drug Abuse; Substance Abuse and Mental Health Services Administration (2002), National Survey on Drug use and Health.

Quoted in: National Drug Control Strategy. Data supplement. The White House, 2004.

Table 7: Estimated Direct¹ of Drug Abuse Costs to Society, 1992-2002

(\$2002 Millions)

Year	Health Care Costs	Other Costs	Total Direct Costs
1992	13,719	24,909	38,629
1993	14,736	24,662	39,398
1994	14,761	25,892	40,653
1995	14,087	28,091	42,178
1996	13,249	28,325	41,574
1997	13,337	29,905	43,242
1998	13,569	31,334	44,903
1999	13,873	33,572	47,445
2000	13,974	35,280	49,254
2001	14,700	35,118	49,818
2002	15,675	36,363	52,038

¹ Direct costs include health care costs attributable to drug abuse and other costs which include the costs of goods and services lost to crime and social welfare costs.

Source: Office of National Drug Control Policy . The economic costs of Drug Abuse in the United States, 1992-2002 (2004).

Quoted in: National drug control strategy. Data supplement. The White House 2004.

Table 8: Estimated Indirect¹ of Drug Abuse Costs to Society, 1992-2002 (2002\$, Millions)

Year	Premature Death	Drug Abuse related Illness	Institutionalization/hospitalization	Productivity loss of victims of crime	Incarceration	Crime careers	Total
1992	28,961	18,214	1,894	2,640	22,961	24,617	99,287
1993	27,877	17,138	1,870	3,098	24,110	24,595	98,688
1994	28,034	19,234	2,043	3,100	25,607	23,796	101,814
1995	28,406	20,938	2,210	2,806	27,130	23,812	105,302
1996	23,745	23,241	1,758	2,674	28,473	27,241	107,132
1997	19,901	22,323	1,863	2,570	30,511	29,824	106,992
1998	19,323	25,542	1,971	2,279	33,257	27,180	109,552
1999	22,535	26,995	1,873	2,111	35,399	26,952	115,865
2000	23,045	28,654	1,782	1,930	36,244	26,836	118,491
2001	23,686	30,681	1,870	1,835	36,869	26,957	121,898
2002	24,646	33,452	1,996	1,797	39,095	27,576	128,562

¹ Indirect costs are productivity losses attributable to drug abuse

Source: Office of National Drug Control Policy . The economic costs of Drug Abuse in the United States, 1992-2002 (2004).

Quoted in: National drug control strategy. Data supplement. The White House, 2004.

9.4. Appendix 4: The Economic Decision: Three Parties³¹

On this appendix will be proved as in Akerlof (1997) that when in the model introduced on the chapter 5 are reached some appropriate conditions then the introduction of a third player will not alter the suboptimal equilibrium even if the new player is located near the optimal equilibrium policy (drug legalization).

The model variables and parameters interpretations given on the 5th chapter also apply in this case.

Proof

This game is defined as a three country; for one country (Colombia) the following segment will show how under certain condition optimizing politicians will locate their policy stance at the initial position of the nearest foreign country. This means that Colombia will locate its policy stance at the initial position of the U.S. (United States of America) (x_{0us}) and could be proved by a similar argument that U.S. will choose to locate its policy stance at the initial position of country Col (x_{0Col}). This happens even under the possibility of choosing a to locate the policy stance on a different position closer to the country “*other*” which is located near the economic optimum value (x_{0othl}).

To maximize the indirect utility function of a Colombian politician represented by (1) preserving the absolute values, it is required to define the function by parts, changing the

³¹ This proof is entirely taken (adapted) from Akerlof (1997) and does not show or pretends to show any major difference to the proof in his paper. The only purpose of the proof is to be clear on the scope of the analytical framework for the case of drugs that is analyzed here.

sign of the quantity $(x_{1Col}-x_{0us})$ from positive to negative as required. This means the general equation (1) can be defined for the interval $x_{1Col} < x_{0us}$ as:

$$U_1 = \left\{ \frac{e}{f + (x_{0US} - x_{0Col})} \right\} \left\{ \frac{1}{g - (x_{1Col} - x_{0US})} \right\} \left\{ \frac{e}{f + (x_{0Oth} - x_{0Col})} \right\} \left\{ \frac{1}{g - (x_{1Col} - x_{0Oth})} \right\} - ax_{1Col}^2 + bx_{1Col} + c \quad (5)$$

Note that the quantities $x_{1Col}-x_{0us}$ and $x_{1Col}-x_{0Oth}$ are both negative in this range, since $x_{1Col} < x_{0us}$ and $x_{1Col} < x_{0Oth}$.

Differentiating (5) in the range $x_{1Col} < x_{0us}$ the result is:

$$\frac{\partial U_1}{\partial x_{11}} = \left\{ \frac{e}{f + (x_{0US} - x_{0Col})} \right\} \left\{ \frac{1}{[g - (x_{1Col} - x_{0US})]^2} \right\} + \left\{ \frac{e}{f + (x_{0Oth} - x_{0Col})} \right\} \left\{ \frac{1}{[g - (x_{1Col} - x_{0Oth})]^2} \right\} - [2ax_{1Col} + b] \quad (6)$$

In this range the first and third terms are constant; moreover it is assumed that $x_{0Col} < x_{0US}$ and $x_{0Col} < x_{0Oth}$, what makes the first and third terms positive. On the second and third terms the parts $[g - (x_{1Col} - x_{0US})]$ and $[g - (x_{1Col} - x_{0Oth})]$ never changes its sign because on this range it is always true that $x_{1Col} < x_{0US}$ and $x_{1Col} < x_{0Oth}$, which guarantees that the terms are not only positive, but never show a change on their direction (none of them exhibit peaks).

The last term is positive $-2ax_{1Col} + b > 0$ because it represents an intrinsic value for the politicians.

In consequence, $x_{1Col} \geq x_{0US}$ must be true because otherwise the optimum could not be reached since (6) is a concave function.

For the interval $x_{0US} < x_{1Col} < x_{1Oth}$, the function U_1 is:

$$\begin{aligned}
U_1 = & \left\{ \frac{e}{f + (x_{0US} - x_{0Col})} \right\} \left\{ \frac{1}{g + (x_{1Col} - x_{0US})} \right\} \\
& \left\{ \frac{e}{f + (x_{0Oth} - x_{0Col})} \right\} \left\{ \frac{1}{g - (x_{1Col} - x_{0Oth})} \right\} - ax_{1Col}^2 + bx_{1Col} + c
\end{aligned} \tag{7}$$

And in this range,

$$\begin{aligned}
\frac{\partial U_1}{\partial x_{11}} = & - \left\{ \frac{e}{f + (x_{0US} - x_{0Col})} \right\} \left\{ \frac{1}{[g + (x_{1Col} - x_{0US})]^2} \right\} \\
& + \left\{ \frac{e}{f + (x_{0Oth} - x_{0Col})} \right\} \left\{ \frac{1}{[g - (x_{1Col} - x_{0Oth})]^2} \right\} - [2ax_{1Col} + b]
\end{aligned} \tag{8}$$

Reader may recall that derivatives are not well defined when the function changes its direction abruptly creating a discontinuity on the derivative function. This discontinuity can be observed on the function U_1 when $x_{1Col} = x_{0us}$, where right hand derivative and left hand derivative have different magnitude (the function shows a peak). This fact alone does not guarantee immediately that this point is the optimum value of x_{1Col} for country Col , but the optimality could be guaranteed if some conditions are fulfilled: The distance between x_{1Col} and x_{0Oth} should be sufficiently large but sufficiently small between x_{1Col} and x_{0us} and the intrinsic value of x should be small relative to the exchange value (e).

Finally, in the range $x_{1Col} > x_{0Oth}$, the value of U_1 is:

$$\begin{aligned}
U_1 = & \left\{ \frac{e}{f + (x_{0US} - x_{0Col})} \right\} \left\{ \frac{1}{g + (x_{1Col} - x_{0US})} \right\} \\
& \left\{ \frac{e}{f + (x_{0Oth} - x_{0Col})} \right\} \left\{ \frac{1}{g + (x_{1Col} - x_{0Oth})} \right\} - ax_{1Col}^2 + bx_{1Col} + c
\end{aligned} \tag{9}$$

and in this range,

$$\frac{\partial U_1}{\partial x_{11}} = - \left\{ \frac{e}{f + (x_{0US} - x_{0Col})} \right\} \left\{ \frac{1}{[g + (x_{1Col} - x_{0US})]^2} \right\} - \left\{ \frac{e}{f + (x_{0Oth} - x_{0Col})} \right\} \left\{ \frac{1}{[g + (x_{1Col} - x_{0Oth})]^2} \right\} - [2ax_{1Col} + b] \quad (10)$$

There is no guarantee that $\frac{\partial U_1}{\partial x_{11}}$ is negative in this entire range since $x_{1Col} < x_{0Oth}$ when it is negative for $x_{0US} < x_{1Col} < x_{0Oth}$; nevertheless, if the marginal value of intrinsic utility, $-2ax_{1Col} + b$, is sufficiently small, $\frac{\partial U_1}{\partial x_{11}}$ will be negative throughout this region. Thus it has been shown if the intrinsic value of x_{1Col} is sufficiently small relative to the value of social exchange, and if *Col* and *US* are sufficiently distant from *Oth* and also from $b/2a$, the optimal value of x_{1Col} will be x_{0US} .

A similar proof will show that under these same conditions the optimal value of x_{0US} will be x_{1Col} , and x_{1Oth} will be chosen close to $b/2a$.