

Plan Colombia: Illegal Drugs, Economic Development, and Counterinsurgency – An Econometric Analysis of Colombia’s Failed War

Abstract: This article examines the socioeconomic effects of the illegal drug industry on economic and social development in Colombia. It shows that illegal drugs have fostered violence and have had a negative effect on economic development. This article also shows that the anti-drug policy Plan Colombia has been a rather ineffective strategy to decrease drug production, generate economic development, and reduce violence. Since this study includes both, a statistical analysis of the effects violence and illegal drugs have on the economic growth of Colombia, as well as an enhanced evaluation of the policy programme Plan Colombia, it fills the gap between existing empirical studies about the Colombian illegal drug industry and analyses of Plan Colombia.

1. Introduction

In many Latin American countries there is an on-going discussion on how to tackle the economic, social and political problems that are caused not only by the illegal drug industry itself but much more by the policies that focus on repressing production and trafficking of illegal drugs. The need to reform international drug policy and change the strategy in the war on drugs was publicly emphasised by a report of the Latin American Commission on Drugs and Democracy (2009). Led by three former Latin American presidents and the Global Commission on Drugs and Democracy, the report recognised that the war on drugs in many Latin American countries has failed (Campero et al., 2013). However, while this argument of the failed war on drugs has gained popularity also throughout the academic literature, there is still insufficient analysis of 1) what socioeconomic effects the illegal drug industry has on Latin American economies; and 2) what effects anti-drug policies had on reducing the amount of produced and trafficked drugs as well as on the economic, political, and social development of a country. By analysing the Colombian drug industry and the policy strategy *Plan Colombia*, this article tries to fill the gap that exists in the academic literature.

Colombia has the largest illegal drug industry in the region (UNODC, 2014). Furthermore, a violent conflict in which the motivation of the different actors is not always clear has been swelling in Colombia for many decades. While the principal conflict between an insurgency movement of leftist guerrillas and several government-loyal paramilitary groups used to be about the political and economic orientation of the country, all actors have increasingly become involved in the illegal drug industry (see Chernick, 2012). This connection between violent actors and illegal drugs seems to have various consequences for Colombian development since the 1990s.

Even though the illegal drug industry has fostered violence in the country, some scholars find that it has helped the Colombian economy to grow at constant stable rates because of to the positive income effects of illegal drug dollars (Steiner, 1999). Other scholars contradict these results, finding that the drug industry has had negative effects on the economy in the long run, especially through fuelling an increase in violence (Thoumi, 2003). While it can be said that the Colombian civil conflict has not only been a humanitarian tragedy but also an obstruction to social and economic development (Holmes, et al., 2008), the links between the on-going violence, the illegal drug industry and economic performance of Colombia remain subject to academic discussions.

The rise in violence and production of illegal drugs in Colombia has implicated several policy decisions by the governments of Colombia and the United States of America. Issues of violence as well as questions of development in Colombia have always been of special importance to the U.S. The main rationale of the U.S. policy towards Colombia, however, remains the quelling of the illegal drug industry and trafficking of the illegal substances (Crandall, 2002). The most extensive and at the same time controversial anti-drug and anti-insurgency policy has been Plan Colombia. The policy programme, which was designed for the period between 2000 and 2006, was a US\$ 7.5 billion strategy to eliminate the production of illegal drugs, to end

violence and human rights violations, and to foster economic and social development (Plan Colombia, 1999).

While the Colombian Government under President Pastrana wanted Plan Colombia to be a ‘Marshal Plan for Colombia’, supported from the wider international community, the metrics and goals of the Plan changed from early on. Due to internal pressure from factions of the Colombian elite that opposed 1999 peace negotiations and demanded confrontational war against the guerrillas, and with rising pressure from the Clinton Administration, Plan Colombia became a military strategy for coca crops eradication and training of the Colombian military and national police in support of the fight against insurgency movements. With the election of far-right wing President Álvaro Uribe in 2002 (and with increased military spending of the U.S. after 9/11) Plan Colombia became even more militarised (Rosen, 2014)..

The U.S. and the Colombian governments have evaluated this militarised strategy as very successful in improving security and reducing drug-related violence (GAO, 2008; DNP, 2006). However, many critics claim that the military component of the policy programme was actually the reason for an *increase* of social and humanitarian crises in the country (Dion and Russler, 2008). Hence, the effectiveness of this policy has been put into question. Furthermore, while many have argued that Plan Colombia and President Uribe’s full on fight against insurgency movements has increased security, some also evaluate the Plan’s security outcomes as ambiguous (Bagley, 2012; Rosen, 2014).

While the policy response through Plan Colombia has been majorly influenced by findings that show how the illegal drug industry with its violent actors have corrupted the Colombian state and weakened the country’s economy substantially, a link between the empirical proof of how the industry influences the society and the evaluation of the effectiveness of the policy plan is missing from the academic literature. This study provides this link.

With recent advancements in the peace negotiations between the Santos Administration and the *Fuerzas Armadas Revolucionarias de Colombia* (Revolutionary Armed Forces of Colombia, FARC) in Havana, Cuba, a strategic revision of past policies is necessary. The evaluation of Plan Colombia is thus as relevant as ever, as it can help in identifying shortcomings of a military peace and drug-control strategy. This can be of value for future policy considerations in Colombia if an agreement is reached in Cuba.

After this introduction that provides a first outline of and insight in the topic, section two consists of an overview of the literature discussing the links between illegal drugs and socioeconomic development of Colombia, including an analysis of the different actors involved in the illegal drug industry. Furthermore, chapter two includes a discussion of the published literature that researches the effects of drug-related violence on Colombian economic development. The section will also review different strings of literature that evaluate the policy reform of Plan Colombia. Section three provides an overview of the methodology used in this analysis. The section also describes the somewhat ambiguous nature of the data and variables used. Section four will show the results of the empirical analysis, evaluating different data in order to thoroughly evaluate the policy programme and its different components. A discussion of the findings and of policy alternatives is given in section five. Section six concludes.

2. Overview and Background: Violence, Illegal Drugs, and Economic Development in Colombia

This section will shed some light on the development of the illegal drug industry and the violence present in Colombia, focusing particularly on the different actors involved in drug trafficking and in the country's violent conflict. The section also engages with the academic literature discussing theoretical and empirical implications of the illegal drug trade and its

effects on economic development. The section concludes with a review of literature that analyses anti-drug and crime prevention policies, where the focus lays on contributions discussing Plan Colombia.

2.1 Colombia – A History of Drugs and Violence

Among the many different illegal drugs industries of Latin America, the Colombian has the most diversified structure and still represents one of the largest worldwide (UNODC, 2014). According to a 2011 UNODC report, Colombia produces around 70% of the world's cocaine (UNODC, 2011). The Colombian drug industry, however, has not always been as 'dominant'. To fully understand the emergence of the drug industry and its development in recent years, it is advisable to have some background knowledge of the history of the violent civil conflict the country has been suffering from since the outbreak of *La Violencia*. It was during the period between 1948 and 1960, when the ruling government assassinated at least 200,000 opposition activists, which put Colombia in a constant state of civil war and led to widespread poverty and economic turbulences (Chomsky, 2000).

The offspring of the leftist guerrilla Revolutionary Armed Forces of Colombia (better known by the Spanish acronyms FARC¹) can be identified during the beginnings of this violent conflict (Livingstone, 2004). The guerrilla organisation originally stood for a socialist ideology and the "specific policies advocated by the FARC during the 1980s included land reform, guaranteed base price for agricultural products as well as the provision for agrarian credit, health care, and education for peasants" (Rochlin, 2003: 101). However, the FARC have often

¹ The *Fuerzas Armadas Revolucionarias de Colombia* (FARC) were not established until 1964. For simplicity reasons the acronym "FARC" will subsequently be used to explain the entire leftist guerrilla in Colombia, including other powerful organisations, such as the National Liberation Army (*Ejército de Liberación Nacional*, ELN). The FARC has been the largest and most influential peasant guerrilla group and can be seen as an amalgamation of many leftist rebel groups that arose during the Colombian civil war.

changed their rhetoric and tactics and are now more known to fund themselves with kidnappings and through controlling illegal drug businesses (Vélez, 2001; Shifter, 1999; Rosen, 2014).

As a result of the increasing influence and popularity of Marxist movements against the established power structures, paramilitary and counter-revolutionary groups were formed (Cubides, 2001). Until 1989 these paramilitary groups were legal and supported by the Colombian government to help in the war against the guerrilla groups (Holmes et al., 2008). The financing of the paramilitaries by different elite factions, however, continued in the 1990s and 2000s. The paramilitary group *Autodefensas Unidas de Colombia* (United Self-Defence Forces of Colombia, AUC) can be pointed out as the most prominent force, which despite its official demobilisation in 2006/08 continues to have large influence over Colombia's political and economic landscape (Ronderos, 2014).

While the FARC and the AUC were originally born out of political convictions and out of an opposition to certain political conditions in the country, both groups eventually became the two main actors of the entire Colombian drug industry (Gugliotta and Leen, 1990, Echandía Castilla, 2001). It was especially during the 1990s, after the dismantling of the main drug cartels of Medellín and Cali and the killing of Colombia's most influential figure of the illegal drug industry Pablo Escobar in December 1993, when both the FARC as well as the AUC got increasingly involved in the production of illegal drugs and in the international drug trade. The biggest rationale behind this was the funding of armoury and other equipment for their wars (Echandía Castilla, 2001).

Another actor to be mentioned when talking about the violent conflict is the Colombian Government, which in the beginning of the civil conflict was the main target of the FARC (Rochlin, 2003). The Colombian military plays a separate role in this conflict, as the main

emphasis of policy reform programmes has been the strengthening of the official armed forces in the war on guerrilla groups and illegal drug producers (Rochlin, 2003). The government of the United States has to be mentioned as well, since it was also in the 1980s when the U.S. became increasingly involved in the Colombian conflict. For the U.S., the above outlined “Narco-Guerrilla connection [...] provided the possibility to kill two birds with one stone, since it could link its antidrug policies with anticommunist policies in the region” (Thoumi, 1995: 195).

There is a big difference between the “old” violent civil conflict of the 1960s and the rather new phenomenon of drug-related violence. However, both conflicts are highly interconnected through the increased activities of both rebel groups in illegal drug activities (Mugge, 2004). Many different parallels can be identified between the two different stages of the conflict, so that some scholars and academic observers legitimately talk about “Colombia’s endless civil war” (Moore, 2003: 2).

2.2 Illegal Drugs and Development: A Conventional Wisdom?

The academic findings on the impact of illegal drugs on the economy are diverging. On one hand, some literature finds positive effects of the illegal drug industry on Colombia’s economic development. On the other hand, more recent contributions find rather negative economic impacts.

One of the first academic papers that economically examines income effects of the “underground economy of Colombia” is the article by Junguito and Caballero (1982). By calculating the income variables of all involved actors the authors estimate the gross income of illegal drugs to be between 16 and 28 billion US Dollar (using the 1978 dollar), in the period since the early 1960 until 1978. The authors come to the conclusion that Colombian drug

exports in 1978 made up 3.6% of total GDP². The Colombian economist Eduardo Sarmiento (1990) makes similar estimations for the years 1981–1988. Assuming that his calculations for the wholesale prices of cocaine in the U.S. are right, he estimates that drug-related income of Colombia during the observed time frame was between US\$ 900 million and US\$ 1.3 billion, which were equivalent to around 1.6% of GDP during that period (Sarmiento et al., 1990).

Rocha (1997) in his estimations of the Colombian net revenue from illegal drugs between 1980 and 1994 also finds positive economic effects of the drug industry. He shows that in the observed period the average income generated by illegal drugs was between US\$ 2.5 and 4 billion annually. This is equivalent to 1.2%–4.7% of total GDP (Rocha, 1997: 239-43; see table 1). Another important study that focuses on the positive income effects of the Colombian drug industry is the study of Steiner (1998). He estimates that the net dollar income of the total of illicit drugs from 1980 to 1983 in Colombia was around US\$ 2 billion a year (Steiner 1998: 1015-21; table 1).

Thoumi (2003) criticises these findings and identifies several measurement biases of positive effects of illegal drugs. Steiner (1998) and Rocha (1997), as well as Junguito and Caballero (1982) do not sufficiently take transportation costs into account that affect wholesale and retail prices in consumer markets. Since there is very little reliable data about transportation costs of trafficking routes through Central America and the Caribbean to the U.S., the actual domestic production price might be much lower than estimated, which would diminish the income effect of Colombian drug producers on the economy (Thoumi, 2003).

² Steiner (1998) evaluates the findings by Junguito and Caballero (1982) and finds that hat they used a GDP estimate of 1978 that was inaccurate. The actual GDP in 1978 was around US\$ 30 billion, Junguito and Caballero (1982) used a much smaller estimate, and so the figure of 3.6% is rather inaccurate.

A study by the International Narcotics Control Board (INCB) from 2002 finds further shortcomings in the positive literature. While neither Rocha (1997), nor Steiner (1998) look at potential long-term socioeconomic effects of the illegal drug industry, the INCB study explicitly stresses this shortcoming (INCB, 2002). Hence,

“contrary to the widespread perception that income generated from the illicit drug industry automatically fosters economic development, there are no indications that the expansion of illicit crop cultivation has led to an overall improvement in the economic situation or to the improvement of any broader development indicator at the national level. While there is evidence that sales of illicit drugs can foster economic development in the short term, the question remains whether that leads to a process of sustainable development in the long term”. (INCB, 2002: 4)

An examination of the impact of illegal drugs on Colombia’s social problems through the on-going violent conflict is missing in most academic literature that focuses on positive economic impacts of the Colombian drug industry.

The critical literature is largely in agreement over the fact that “the drug trade has in fact weakened the country’s economy by fostering violence and corruption, undermining legal activity, frightening off foreign investment, and all but destroying the social fabric” (Thoumi, 1995, cited in Holmes et al., 2008: 10). Thoumi (1995) concludes that the Colombian economy would be better off without the illegal drug industry, since negative effects outweigh the positive income effects. These negative effects are mainly found in the fact that the illegal drug industry

“has blocked government attempts to redistribute lands [...]; it has made macroeconomic policy more complex and government policy more uncertain; it has forced a redistribution of government expenditures from promoting growth to security

and arms; it has encouraged a ‘get rich quick’ mentality; and it makes investment choices based on the need to launder and hide capital”. (Thoumi, 1995: 294).

Furthermore, Thoumi (1995) recognises that the large influx of foreign exchange through narco dollars has led to the phenomena known as Dutch Disease³.

However, one of the biggest problems that challenge the results of Thoumi (1995) is that he mainly focuses on direct industry effects and too little on indirect socioeconomic consequences. This is mainly because of the fact that it is not until the late 1990s (when the divestiture of the Medellin and Cali Cartels created a power vacuum) that left-wing guerrillas and right-wing paramilitary organisations started to become increasingly involved in the Colombian illegal drug industry (see Seelke et al., 2011). This development was primarily accompanied by an increase in violence and crime (CINEP, 2008⁴). In recent research on economic effects of the drug industry scholars include this shift of drug influence and hence drug income in their calculation of *indirect* negative economic effects of the illegal drug industry.

Roldán (1999) finds that even though the illegal drugs industry can spur demand through increased employment, these effects are only positive in the short-run. Her detailed analysis of the Medellin Cartel and its leader Pablo Escobar shows that the Cartel mainly had negative effects by destabilising the state and sustainably changing the structure of power in Colombia. After the killing of Pablo Escobar the highly corrupt Colombian authorities with its weak institutions were not able to stabilise the political system (Roldán, 1999). Corruption in form of financing electoral campaigns through drug money prevailed as well as organised crime and

³ The “Dutch Disease” is an economic phenomenon that describes the effect a drastic increase of export demand for a specific good has on the currency (=currency overvaluation). Hence, other exports are less competitive and the competitiveness of foreign imports rises. This again can cause deindustrialization and slows down economic development.

⁴ This study categorise different human rights violations as “violence”, including all involved actors: FARC; AUC; Police, National Military, etc. (see CINEP, 2008)

insurgency, which discouraged growth-enhancing investment and sound macroeconomic decision-making (INCB, 2002). These indirect negative long-run effects of illegal drugs on the Colombian economy outweighed the positive short-term income gains from drug income (Roldán, 1999). Camacho and López (2000) make similar findings for the area of the Cauca valley and the post-Cali Cartel era. The INCB study of 2002 picks up on this analysed negative consequence and concludes that “the destabilization of the state is usually the most serious consequence of the existence of a large illicit drug industry in a country” (INCB, 2002: 5). This is particularly evident in Colombia, where the illegal drug industry has acted as a catalyst of power, which “has contributed to the country’s stagnation” (Thoumi, 2003: 191).

Holmes and Gutiérrez de Piñeres (2006) as well as by Holmes et al. (2006; 2008) provide a series of very extensive studies on the Colombian illegal drug industry and its effects on violence and economic development. While most other previously discussed studies generally focus on the effects of the drug trade on the national economy, Holmes et al. (2006; 2008) provide a quantitative analysis of the economic effects on the local level. They come to the conclusion that while “drug production fuels violence in Colombia” (2006: 157) it “does not have independent effects on exports or GDP” (Holmes and Gutiérrez de Piñeres, 2006: 104, emphasis added). Their results suggest “that Colombia’s economic problems stem more from political violence than from the drug trade in itself” (Holmes and Gutiérrez de Piñeres, 2006: 1).

However, even though it can be concluded that the negative and sometimes indirect economic effects of the illegal drug trade in the long-run outweigh the short-term positive income effects (Roldán, 1999), the recent academic literature only shows these negative effects without analysing potential or already implemented policies that have followed the acknowledgement of the harmfulness of the illegal drug industry.

The next section discusses the literature that analyses such policies, with a particular emphasis on Plan Colombia. However, the literature discussing policy implications often implicitly assumes that the illegal drug industry and its violence have negative effects on the country's development without further discussing whether this fact is relevant to the discussed policy. This study tries to link both strands of literature together.

2.3 Anti-Drug and Crime Prevention Policies in Colombia

With Colombia being the largest producer of cocaine in the world and the United States being the largest consumer of this psychoactive substance (UNODC, 2014), the US-Colombian relations have been highly affected by the state of the cooperation between the two countries in implementing anti-drug policies (Murillo, 2004). The strategy in the war on drugs has been constantly evolving and reached its climax when the so-called Plan Colombia was introduced in 1999 (Nagle, 2002).

Steiner (1999) focuses on the evolution of U.S. policies towards Colombia since the 1970s. and on how the “quiet and reserved diplomacy” (Tokatlian and Botero, 1990, cited in Steiner, 1999: 161) of the Nixon administration and the administration of Colombia's President Julio César Turbay was the starting point of anti-drug cooperation. However, the Colombian-U.S. relations soon became ‘narcotised’ and evolved to the point where anti-drug policies were the main rationale behind any development and economic aid efforts from the U.S. towards the Latin American country.

Crandall (2002) makes similar conclusions about U.S.-Colombian relations. He evaluates them as highly “militarized” and after 1994, when Ernesto Samper was elected President, even as “hypernarcotized” (Crandall, 2002: 45). However, Crandall (2002) concludes that all the efforts of the U.S. in curtailing drug-production and preventing trafficking of illegal drugs have been ineffective. The increased militarisation of U.S.-Colombian relations, eradication

strategies, and extradition agreements were ultimately “not achieving the desired effect of reducing the amount of drugs flooding into the United States” (Crandall, 2002: 45).

The administration of Andrés Pastrana, who was elected President in 1998, wanted to change the government’s approach to violence and the drug economy entirely. Pastrana’s double strategy included peace negotiations with the FARC on one hand, and a “big-push” policy to mitigate direct and indirect socioeconomic effects of the drug industry (Rosen, 2014). The primary focus was to achieve peace and development, through a “Marshall Plan’ for Colombia, which would allow investments into social development” (Pastrana, 2005: 50-1). Anti-drug and anti-insurgency targets were only a secondary issue for Pastrana’s original policy proposal (Rosen, 2014). However, and due internal pressure and external influence of the Clinton Administration the policy formula changed and became highly militarised (Crandall, 2002).

In 1999 the U.S. gave the Colombian government an “aid” package of US\$ 1.3 billion, which mainly consisted of military-related equipment and armour (Schneider, 2003). This military the beginning of Plan Colombia. The policy plan, designed for the period between 2000 and 2006, was a more frontal strategy against guerrilla, paramilitary and other drug-producing and trafficking groups to reduce violence in the country (Schneider, 2003; Plan Colombia, 1999). In addition to the military component of Plan Colombia, the policy was laid out to provide an intensified aerial spraying of crops of coca bushes and poppy plants. While aerial spraying for eradication efforts had already been going on during the 1980s – mainly to confine the growing of marijuana plants (Crandall, 2002; Steiner, 1999) –the agenda of this new Plan included a dramatic increase of sprayings. The militarisation and “vietnamising” of Colombia (Steiner, 1999: 162) were reasons for the European Union not to give support to Plan Colombia, making the policy an exclusive initiative of the U.S. – other than Pastrana’s original plan of getting support from the wider international community (Pastrana, 2005).

The objectives of this joint policy strategy were threefold: first, the eradication efforts should help to reduce illicit coca crops and poppy plants by 50% in six years; second, economic and social justice should be promoted; and third, violence should be reduced to help the economy to develop (Mejía et al., 2011; DNP, 2006). In the period between 2000 and 2006, the governments of the United States and Colombia together spent an average amount of US\$ 1.2 billion annually on the military part of Plan Colombia, which is similar to about 1.5% of the Colombia's GDP per capita per year. This militarisation of Plan Colombia could lead to the perception that the war on drugs was mainly about interests of the Clinton Administration to support the U.S. military industry and to wipe out the FARC, which after all is the longest-running active Marxist guerrilla in Latin America.

After 9/11 and the victory of Álvaro Uribe in the 2002 Presidential elections the metrics and goals of the Plan changed further as the policy became even more militarised (Rosen, 2014). Uribe, who has had direct links to paramilitary leaders (Ospina, 2013; Semana, 2015), expanded military operations linked to Plan Colombia as part of his “democratic security policy” launched in 2003 (Romero, 2007). The further militarisation, however, exclusively targeted the FARC (for example. through the 2003 *Plan Patriota*). The paramilitary had beneficiary treatment: ex paramilitary leaders and combatants were offered short prison sentences and support in their reintegration with the Demobilization, Disarmament and Reintegration Programme (DD&R) that started in 2004. At the same time, the Uribe administration continued to institutionally support active paramilitary members with intelligence and finance for the fight against the FARC (Romero, 2007; Ospina, 2013). There was thus a clear qualitative distinction made by the government between FARC violence and paramilitary violence. This is also why this study fundamentally disagrees with analyses that fail to recognise a differentiation between the different types of violence and fail to include a

discussion of government or government-induced violence (see for example DeShazo et al., 2007, 2009; GOA, 2008).

The literature relevant to our discussion on the war on drugs and U.S. development policies towards Colombia all focus on the economic, environmental, and social consequences of Plan Colombia (e.g. Hylton, 2010; Mejía et al., 2011; Mejía and Restrepo, 2008; Moreno-Sanchez et al., 2003; Dion and Russler, 2008; Stokes, 2001). While different scholars have different approaches to evaluate the effectiveness and the socioeconomic impact of the Plan, most come to the conclusion that it is just another milestone in the instrumentalisation of U.S. aid policies towards Latin America.

Hylton (2010: 111) mainly discusses how the counterinsurgency of the U.S. through Plan Colombia has caused “astonishing cost in human lives and livelihoods”. He finds evidence that Plan Colombia has failed in achieving most of its goals, mainly because substantial mistakes have been made in terms of building functioning institutions. He furthermore finds results that “under Plan Colombia, narco-paramilitary mafias assumed the role of, and overlapped with, the state in most frontier regions” (Hylton, 2010: 108). Through the intensified aerial sprayings of rural land to prevent the cultivation of new coca crops, which had negative external effects on productive land for the licit agriculture (Mugge, 2004).

Dion and Russler (2008) put these eradication efforts of Plan Colombia in form of aerial spraying at the centre of their analysis. Using an OLS model the authors calculate the relationships between aerial eradication, the cultivation of coca crops, and social factors, such as displacement of residents living in eradication areas. The eradicating efforts between 2000 and 2006 have had a rather small and statistically insignificant impact on the overall coca cultivation (Dion and Russler, 2008). However, the aerial sprayings have significant impacts on the levels of forced displacement. Plan Colombia is causing “unintended human and

economic costs, [which] should be explicitly considered and addressed by policy makers” (Dion and Russler, 2008: 418). These costs are identified in the increase of unemployment and poverty in agricultural regions, where the aerial sprayings have been carried out (Dion and Russler, 2008). This increase in poverty in rural areas has furthermore caused a vicious cycle. The evidence suggests that there are more incentives to engage in illegal drug-producing activities “in economically underdeveloped, agricultural regions where residents [...] lack access to legal markets due to poor public infrastructure and a weak state presence” (Dion and Russler, 2008: 419).

Mejía and Restrepo (2008) in their evaluation of Plan Colombia criticise that even though some of the intended goals of coca eradication had been successful, the potential drug production in Colombia has actually only decreased by around 14% from the time of the implementation of the policy until the scheduled end of the Plan in 2006 (UNODC, 2008). Mejía and Restrepo (2008) conclude that Plan Colombia has led to suboptimal usage of resources by the U.S. and the Colombian governments. Their analysis ends with the conclusion that due to an increase of per hectare coca productivity the Plan failed to reduce the actual produced amount of cocaine in Colombia. Furthermore, the authors find that the eradication efforts have led to a “balloon effect”, which describes a geographical shift of coca cultivation to Peru and Bolivia following interdiction in Colombia (Mejía and Restrepo 2008).

A link to the negative long-run effects of the drug industry and the violence on Colombia’s economic development is largely missing from the literature discussing past and present policies. This is also due to the fact that it is often implicitly assumed that the drug industry causes harmful effects for economic growth and development. The next section introduces the methodology and data with which this study analyses socioeconomic effects the drug industry has, as well as policy responses with Plan Colombia.

3 Methods and Data

The following two sections engage with a discussion about the methodology and data used in this study. We use data from a variety of different sources and run different regressions using the econometric OLS model.

3.1 Methodology

To analyse the effects of the Colombian illegal drug industry on the country's economy it is necessary to look at direct and indirect costs (Cardenas, 2007). In a first analysis we will identify the logical connections between the illegal drug industry and economic issues of Colombia. After this, the study will follow the approach of Holmes et al. (2008) and Dion and Russler (2008) who use an ordinary least squares fixed-effects model (OLS) and visual statistical graphics analysis to measure the economic effects of illegal drugs and drug-related violence in Colombia. By using aggregated data at the national level this study analyses and estimates the relationships between violence, cocaine and coca production, and economic development. Equation (1) describes the principle form of the OLS regression:

$$Y_{it} = \alpha_i + \beta_1 X_{1it} + \dots + \beta_n X_{nit} + \mu_{it} \quad [1]$$

Where Y_{it} is the dependent variable, i is entity (Colombia), t equals time, X explains the different independent variables, β_{1n} is the coefficient of each independent variable, $\alpha_i (i=1 \dots n)$ represents unknown constant for each entity (n entity-specific intercepts), and u is the error term.

This OLS model is used since it is commonly recognised that unobservable heterogeneity biases are reduced through OLS estimations (Stock and Watson, 2007). The estimated OLS model will be done with heteroscedastic panel corrected standard errors accounts (HAC standard error) for panel heteroscedasticity.

The empirical analysis and the application of equation [1] will be split between two periods. Firstly, an analysis of the period prior the introduction of Plan Colombia will show whether we can find empirical evidence of a statistical relationship between cocaine production, violence, and economic growth, which would justify the policy programme. Secondly, an analysis of the period after Plan Colombia will show whether Plan Colombia has been effective in reaching its goals. This before-and-after analysis helps to identify to some extent whether the policy programme was effective.

The time variable for the period before the implementation of Plan Colombia is $T=7$ for the years 1993-1999. Results will be obtained by firstly analysing the question whether cocaine production is harmful for economic growth or if it brings benefits for the Colombian economy. In this analysis, the dependent variable is the lagged value of GDP per capita. After this analysis of the pre-Plan Colombia period, a graphical analysis will show how effective Plan Colombia has been in terms of reducing violence and cocaine production as well as the eradication efforts of the Colombian and U.S. governments. Furthermore, we will conduct several regressions analysing the effects of military spending through Plan Colombia on the amount of cocaine produced in the country. A similar analysis will show whether the spending was effectively used to reduce violence. We use the same OLS model shown in equation [1] to estimate the effectiveness of the expenditure of the Colombian and U.S. governments towards economic development and growth. Another regression will show the relationship between the eradication efforts of the Plan in form of aerial spraying and the phenomenon of forced internal displacement. The time period for this analysis will be the years of Plan Colombia's original implementation time between 2000 and 2006 ($T=7$).

In all cases there is a relatively short time period of the data. This is deliberate, as it allows us to ignore any year fixed effects (Ashenfelter, et al., 2003). However, it is necessary to make

the assumption that there are no unobservable time specific variables affecting the outcome of the regression (Holmes et al., 2006).

3.2 Data

The data used for obtaining statistically significant results consists of a unique set of Colombian data from the country's government, the Colombian non-governmental human rights organisation *Centro de Investigación y Educación Popular* (Centre for Research and Popular Education, CINEP) and the United Nations. The economic indicators such as GDP, export, unemployment and poverty are provided by the *Departamento Administrativo Nacional de Estadística* (National Administrative Department of Statistics, DANE). The variables for paramilitary and FARC violence, as well as the data for violence of the public forces are drawn from the CINEP data bank⁵. The variable of "violence" always describes the total human rights violations of the respective actor and does not include civilian casualties in fighting actions between the several different legal and illegal armed forces. Violent crimes such as executions, threats, kidnappings and torture are included. Numbers for the homicide rate for the time series are taken from the Colombian Vice President's office.

The data about the harnessing and eradication of coca crops as well as the data for cocaine production are from different World Drug Reports of the United Nations Office on Drugs and Crime (UNODC) and its satellite imagery program in Colombia (SIMSI), which operates since 1999 (UNODC, 2010). Until 1999 the Colombian police provided the estimations of coca production. The data for the production of the final product cocaine is provided by calculations

⁵ The data from CINEP has been criticised and challenged by some observers, especially by U.S. embassy officials. For example, the editor of the Wall Street Journal O'Grady writes that the U.S. embassy and U.S. officials have criticised CINEP, as its "methodology creates a heavy bias against the Colombian government" (O'Grady, 2004, cited from Holmes et al., 2006: 178). However, as CINEP's data often does not vary from official numbers given by Colombian officials, its data is relatively accurate (Holmes, et al. 2006). Furthermore, since this study will only use violence data from CINEP, it has, if any, a bias that is consistent throughout time.

of UNODC. Other than in previous studies, such as Holmes et al. (2006; 2008), the data for the harnessing of coca crops and cocaine production will be distinguished, since there is a huge divergence between the development of coca crops production and the production of the actual end product cocaine (see in the following section). The UN Refugee Agency (UNHCR) provides an extensive dataset for the internal refugees in Colombia. The data variables used in the regressions are consistent over the two observed time periods (1993-1999 and 2000-2006). This makes it appropriate to compare the results.

It has to be recognised that concerns and doubts about some of the data are legitimate. While the data about economic variables, social factors and political violence are rather exact the illegal nature of the Colombian drug industry makes it extremely difficult to make precise estimations of actual quantitative numbers. The analysis of this study does not claim that the numbers of the transacted products or the estimations of illegal harnessing of coca crops are 100% accurate. Even though the satellite-based system of the UNODC is more precise than the former estimations by the National Police, it remains doubtful that all coca crops can be identified, since many coca fields are located in jungle areas and remain undetected. Thoumi (2005: 186) also points out, that politicians, journalists or even the whole government misuse the data of the drug industry “to buttress preconceived and personal agendas”. Furthermore, “the emotional and ideological charge carried by most data users leads to widespread data misuse.” (Thoumi, 2005: 186). These measurement biases have to be kept in mind when estimating the economic cost and analysing the social effects of the Colombian drug industry.

4 Findings

The above presented literature analysis has shown that the illegal drug industry has affected the Colombian society in a substantial way. However, some questions remain to be answered

empirically. Does a high percentage of coca crops and cocaine production really have a statistically significant impact on the economic performance of Colombia? Is there correlation between the production of illegal drugs and violence? Is there a relationship between violence and the economic performance of Colombia? Is there a difference between the effects of violence caused by paramilitary groups and the leftist guerrilla? Is the policy of Plan Colombia effective in reducing the production of illegal drugs and of drug related violence? And has the Plan affected the numbers of forced displaced people in Colombia? The next sections try to answer these questions empirically.

4.1 GDP and cocaine production: 1993-1999

While Colombia's economy grew during the 1970s and '80s, the increase in illicit coca bush cultivation and cocaine production in the 1990s did not lead to an acceleration of this growth (DANE, 2005). Looking at the time period just before Plan Colombia was implemented the Colombian economy actually witnessed a massive decline in GDP per capita. While GDP growth rates in the first half of the 1990s were at a constant rate around 4.5%, it started to decline from 1997 and hit rock bottom in 1999, with a negative growth rate of minus 4.2% (figure 1). Simultaneously, the amount of the produced cocaine in Colombia increased by over 6% and reached its peak in 1999 with more than 160,000 hectares of cultivated coca plants (UNODC, 2008). Figure 1 shows the relationship between the economic performance of Colombia and the amount of cultivated coca leaves in Colombia.

With this graphical analysis, however, it remains unclear whether there is a statistically significant impact of cocaine production on GDP growth. Applying the OLS regression, we find that the production of cocaine is statistically negative associated with GDP per capita growth, which may be evidence for a causal relationship. This result is in line with the findings of Thoumi (2003), Roldán, 1999 and Camacho and López (2000). The findings are, however,

inconsistent with the analysis of Holmes et al. (2006; 2008), who do not find *direct* negative effects of the coca production on the economic growth. This divergence can be caused by the fact that Holmes et al. (2006; 2008) analyse growth effects on the local level and that they use a different data set. Holmes et al. (2006; 2008) use data for the production of *coca*; the independent variable used in this analysis, however, is the amount of produced *cocaine*. However, these findings should be analysed with caution, as they may accrue from a simultaneous effect of other policies or variables that are not included in the regression.

4.2 Illegal Drugs and Violence: 1993-1999

For both violence and coca cultivation there was a steady increase throughout the 1990s. Figure 2 provides an overview of the annual national trends in violence and cocaine cultivation from the period prior to the implementation of Plan Colombia. Human rights violations committed by the governmental forces (police, army and other official armed forces) have been fairly stable over time. A slight increase can be seen from 1997 until 1999 (CINEP, 2011). The human rights violations by the FARC rebels were at constant low levels, peaking in 1992 and 1994. A drastic increase in FARC violence can be seen in 1999. Paramilitary violence on the other hand spiked in 1996 at a rather high value before it increased in 1999. The amount of hectares of cultivated coca has in general followed the violence trends during the years 1990-1999, peaking in 1999 (see figure 2).

To see which kind of violence is caused by the illegal drug industry, this subsection follows the approach of Mejía and Restrepo (2011), who use OLS estimations to prove whether or not the illegal drug industry has a direct effect on violence. For a detailed analysis disaggregated descriptive statistical data is needed. On table 2 we see some of the disaggregated data for the years 1994 until 2008 used by Mejía and Restrepo (2011) that are also used for the OLS estimations applied here. After controlling for the presence of the two main illegal armed

groups (FARC and paramilitary), the results show that there is a positive and statistically significant relationship between homicides and the value of coca (table 3). Hence, the activities of the Colombian cocaine market have a positive and significant relationship with the homicide rate. In locations with high presence of illegal armed groups the correlation between coca value and homicide is higher, which implies that coca production fuels violence in form of an increase in homicides committed by the illegal armed groups (table 3).

Furthermore and more important, the coefficient of the value of coca remains at a very high statistical significance of 99%. These results are not surprising, as they are in line with the results of most academic scholars (see for example Mejía and Restrepo, 2011; Holmes et al., 2008). Violence and human rights violations of the illegal armed forces are therefore to some extent generated by their illegal activities in the drug market. As a result, we can say that paramilitary and FARC violence as well as the homicide rate in general are fuelled by an increase in the value of the cocaine market in Colombia.

4.3 Violence and Economic Development: 1993-1999

To empirically prove the link between the violence caused by the illegal armed forces and the economic development of Colombia we use OLS estimations in form of the model given in equation [1]. Using the lagged value of FARC and paramilitary human rights violations as independent variables we test the statistical correlation these variables have with GDP per capita. The data only include variables from the period between 1993 and 1999.

Figure 2 shows that FARC human rights violations constantly increased from 1993 until 1999. Our OLS results furthermore suggest that negative growth rates contribute to FARC violence in a statistically significant way. A decrease in economic activity could contribute in the increase of the pool of potential fighters for the FARC as it facilitates the recruitment of unemployed for the peasant army. Paramilitary violence is positively correlated with FARC

human rights violations. This result, which is consistent with the findings of Holmes et al. (2008), can be explained by the fact that the FARC respond with an increased insurgent violence to increased paramilitary presence. The relationship between FARC violence and government human rights violation is significantly negative, which shows that an increase in violence by the government forces decreases FARC violence (Table 4).

The findings made for paramilitary violence are somewhat divergent to the findings made for the FARC. Hence, even though paramilitary violence was also increasing in the 1990s, with the exception of 1992 and 1997 (figure 2), a *positive* relationship is found between human rights violations of the paramilitary and GDP (table 5). This result is consistent with the findings of Holmes et al. (2008). They explain this positive relationship with the fact that some paramilitary groups emerged to protect investments and hence, with the decrease in economic growth in the 1990s there was a decrease in illegal paramilitary activity. There were simply not many investments left to protect.

FARC violence and paramilitary violence are positively and significantly related. A rise in FARC human rights violations is answered by an increase in paramilitary violence. Contrasting, an increase in human rights violations of the official armed forces is *positively* related to paramilitary violence (table 5). This result may be explained by the fact that many government forces are often linked with the likely minded paramilitary (Tate, 2001). The statistical analysis furthermore shows that FARC violence is inversely related to GDP in a statistically significant way and is therefore harmful for economic growth – or that increased paramilitary violence, which rises with economic growth, diminishes violence of the FARC. Paramilitary violence, on the other hand has a statistically positive impact on GDP per capita, which is in line “with the theory that paramilitary groups protect resources” (Holmes et al., 2008: 131).

All the above-presented findings give some explanation of the rationales that were behind the introduction of Plan Colombia and the form in which it was realised. One major goal of Plan Colombia was the reduction of the production and distribution of cocaine, which was seen as a fuel of violence and economic underperformance (Plan Colombia, 1999). The results given above support this view and also give an explanation to why the main emphasis of the military component of Plan Colombia was the fighting of FARC rebels. However, the results also suggest that in order to reduce violence and cocaine production, it is crucial for the Colombian economy to develop. Hence, it is necessary to work from both directions, to reduce the cocaine production and to foster economic development.

4.4 Plan Colombia: Cocaine Production

One of the main goals set out by Plan Colombia was the containment of cocaine production (Plan Colombia, 1999). To achieve this goal military expenditure of Colombia as well as U.S. aid to Colombian military and police increased dramatically with Plan Colombia. During the period between 2000 and 2006 the U.S. government spent over 540 million US\$ annually on the military component of Plan Colombia (GAO, 2008), out of which almost 70% were allocated to eradicate coca plants (see tables 6 and 7 for details). And indeed, the results were somewhat positive, as the amount of cultivated coca in Colombia decreased by over 50%, from 160,000 hectares in 2000 to 74,000 hectares in 2006 (figure 3). However, the UNODC reports that the potential cocaine production decreased by only 5.3% (UNODC, 2011; figure 3). The divergence is attributed to the fact that the Colombian drug producing cartels and illegal armed groups seem to have adjusted to the reduction of the cultivated coca crops, as they have increased the productivity of coca per hectare⁶ (Mejía, 2009; figure 4).

⁶ This increase can also be the consequence of improved production techniques and methods. Larger and more powerful coca plants are cultivated, which again increases the density of coca plants per hectare (UNODC, 2011).

Looking at the results from figures 3 and 4 we can say that it does not seem that Plan Colombia was very effective in reducing the amount of cocaine produced in Colombia. This result is also found applying an OLS regression with the lagged value for cocaine production as dependent variable, and eradication efforts (aggregated data of manual and aerial eradication), U.S. assistance allocated to Plan Colombia, as well as the military expenditure of the Colombian government as the independent variables. We find no statistical significance for either of the independent variables (Table 8). The results show that while Plan Colombia has been effective in eradication of coca plants, it did not have any significant effects on the overall potential cocaine production in Colombia. Even though the total amount of cultivated coca plants decreased with Plan Colombia, the goal of “eliminating large-scale drug production” (Plan Colombia, 1999) has failed.

Originally, the goals of Plan Colombia were to reduce cultivation, production, and trafficking by 50%. In this sense, Plan Colombia failed greatly. The concentration of the Plan on the elimination of coca cultivation has furthermore fuelled prices of coca, incentivising farmers who have not many other alternatives to clandestinely continue with growing of the illegal crop. Another fact that has to be considered when talking about coca cultivation and cocaine production in Colombia is what Mejía and Posada (2010) describe as “ballooning effect”, where coca cultivation has simply shifted to the neighbouring countries of Bolivia and Peru. The ballooning effect has also contributed to an increase of imports of raw coca to Colombia, where violent actors (including the state) still control the production and the distribution of the final product cocaine. Consequently, Bagley (2012) evaluates Plan Colombia’s effort in reducing cocaine production only ‘partially victorious’. He finds that despite all the efforts, “as of 2010 Colombia remained a principal source of coca leaf and refined cocaine in the Andes,

and drug-related violence and criminality appeared to be once again on the rise” (Bagley, 2012: 5). The next section will explicitly look at these violence trends following the introduction of Plan Colombia.

4.5 Plan Colombia: Violence Trends

Another major goal of Plan Colombia was “to end large-scale violence and lawlessness by organized armed group, promote respect for human rights and break the link between armed groups and their narcotics industry support” (Plan Colombia, 1999). Table 9 provides an overview of the violence trends after Plan Colombia was implemented. The human rights violations of the FARC rebels increased shortly after the policy plan came into effect, as the guerrilla group was uprising against an imperialist invasion by the “North American hawks, hardliners and military generals” (FARC, 2011). However, since 2001 a dramatic decrease of FARC violence can be noted. Similar observations can be made for paramilitary violence. The decrease in paramilitary violence after 2003 can be explained by the launch of the DD&R programme, in which ex-combatants of paramilitary forces were offered short prison sentences and support in their reintegration in exchange for disarmament (Koth, 2005).

These decreases in human rights violations by the illegal armed groups since 2000, as well as dramatic decreases in some of the main violence indicators, such as the homicide rate (43% decrease), the number of kidnappings (95% decrease) and the number of massacres (71.4% decrease) are arguments for the Colombian and the U.S. government to call Plan Colombia a success in reducing violence (DNP, 2006a; DeShazo et al., 2007; Table 9). The United States Government Accountability Office (GOA) in its 2008 report on Plan Colombia recognises that “(w)hile Plan Colombia’s drug reduction goals were not fully met, U.S. assistance has helped stabilize Colombia’s internal security situation by weakening the power of illegal armed groups” (GOA, 2008: 70). DeShazo et al. (2007; 2009) also find that U.S. assistance for Plan

Colombia resulted in increased security for the country, despite the policy's overall ambiguous outcomes.

However, this positive evaluation of Plan Colombia by some scholars and the U.S. government has severe flaws. Political motivations and researchers' biases towards U.S. foreign policy weaken these findings beyond their short-sightedness of looking at the Colombian conflict in a one-dimensional way of. "good" vs. "bad" (i.e. Government vs. FARC). This impedes analyses of the wider story of human rights violations. For example, during the implementation of the Plan a huge surge in human rights violations of the public armed forces can be noted (Table 9). These violent acts of the public forces take form in the execution of civilians to increase the body count of allegedly killed guerrilla soldiers. Between 2004 and 2008 more than 3,000 civilians were extrajudicially executed in this "false positive" scandal⁷, where official army forces killed peasants, framers and other mostly poor people and dressed them in FARC uniforms to claim they were killed in battle (OHCHR, 2012). Furthermore, the violence acts of the FARC and the paramilitary continue, as thousands of people are killed each year in the conflict and even more are displaced from their communities (Bagley, 2012; Tickner, 2007). According to a recent report by Internal Displacement Monitoring Centre (IDMC) Colombia has 6,044,200 internally displaced people – an equivalent to 15.83% of the national population – making Colombia the second country with the largest numbers in internal refugees worldwide (IDMC, 2015).

In line with Hylton (2010), Ibáñez and Vélez (2008), and Dion and Russler (2008) and applying an OLS time-series model to our data set we also find that between 2000 and 2006 the aerial eradication efforts implemented through Plan Colombia only had marginal effects on cocaine production but had much more a positive effect on forced displacement, causing unintended

⁷ For further reading about the false positive scandal see Human Rights Watch (2011).

economic, human, and social costs. The results of these findings suggest that the eradication strategy of Plan Colombia has failed to consider negative externalities. The statistics of the Colombian Ministry of Defence of a decrease in homicides in Colombia by 43%, a drop in kidnappings by 95% and a decline in terrorist attacks by 47% between 2000 and 2013, need to be looked at with caution (see Ministerio de Defensa de Colombia, 2013).

The results of our multidimensional analysis of the factors of violence are in line with Isacson (2010: 1) who finds that Colombia is “not a model” as security gains are “partial...and weighed down by ‘collateral damage.’” Colombia’s homicide rate is still above 30 per 100,000, as both guerrillas and “new” paramilitary groups (so-called *Bandas Criminales*, BACRIMs) continue to extort businesses and to engage in drug trafficking, land piracy, and illegal gold mining (Haugaard et al., 2011; Porch and Rasmussen, 2008). However, and as Bagley (2012: 8) rightly points out, for the Colombian state “such organizations are far less threatening because they do not have the capacity to threaten state security directly.”

The above analysis shows that Plan Colombia had ambiguous effects on violence trends in the country. While a decrease in FARC and paramilitary violence can be noted, the reforms have brought a non-trivial increase in human rights violations by government forces. Overall, violence trends in Colombia question whether the country has actually become safer after the implementation of Plan Colombia (see Rosen, 2014).

5 Discussion

This article has brought together findings about the socioeconomic effects of Colombia’s illegal drug industry to argue in favour of needing a policy response of some sort. Combining these findings with the analysis of the effectiveness of Plan Colombia this study has shown that while there was a need to intervene in the negative development of the country’s economy with

a targeted policy, Plan Colombia has failed to reach the goal to effectively combat illegal drug production and to foster economic development. Since this study includes both, a statistical analysis of the effects of violence and illegal drugs on Colombia's economic growth, as well as an enhanced evaluation of the policy programme Plan Colombia, it has filled the gap between the existing empirical studies about the illegal drug industry and analyses of Plan Colombia.

Looking at the findings of this study, the question arises what can be learned from the experience from Plan Colombia. While it is difficult to analyse possible counterfactual outcomes of what would have happened to the development of Colombia if Plan Colombia had not existed, there is a clear need to focus on new strategic development programmes and alternative policies. The emphasis of such new policies need to be placed on economic, political, and environmental issues of the Colombian conflict and on social issues, such as the reintegration of former paramilitary *and* guerrilla activists into the Colombian society. Since it is mostly in rural and underdeveloped regions and economically weak periods where cocaine production still seems to be the only viable alternative for the agricultural population in Colombia, it is necessary to consider new policy approaches that focus on establishing local state capabilities that support institutional strategies of productive and sustainable development. Furthermore, policies that focus on providing access to legal market through urban and rural infrastructure would particularly help to curb cocaine production in economically underdeveloped areas. The current peace negotiations between the FARC and the Santos Administration give hope that more inclusive policies follow if the opposing sides reach an agreement. The peace process has been the most progressive and elaborate in Colombian history and includes explicit targets that aim to mitigate the social and economic consequences of the conflict in general and the drug economy in particular. Next to items such as agrarian reforms, political participation of the FARC, victim recognition and reconciliation,

the peace agreement aims to explicitly end the conflict and find solutions to the problems of illegal drugs (including a decriminalisation of cultivating farmers). The exact outcomes of the peace negotiations are yet to be awaited for, but the agreements that have already been reached in the dialogue have achieved more for the country than Plan Colombia ever has.

6 Conclusion

The main findings of this study are twofold. On one hand, this article helped a great deal to understand the economic and social problems the violent-prone Colombian illegal drug industry has brought onto the country's society. The national level analysis of the influence of the illegal drug industry on the economic development has shown that cocaine production is a direct explanatory factor for the economic misfortune of Colombia in the 1990s. This illegal drug market breeds violence, which again is directly correlated to a decrease in economic activity. This indirect influence of the illegal drug industry has harmed the Colombian economy and the development of the country in a significant way.

On the other hand, the extensive quantitative analysis of this study has helped to conclusively evaluate the policy programme of Plan Colombia. The analysis suggests that Plan Colombia was effective in reducing the amount of cultivated coca plants, but it was rather ineffective in reducing cocaine production. Violence and human rights violations of the illegal armed groups could be reduced. However, human rights violations of the official government forces surged during the implementation period, which can be associated with the increased militarisation of the Colombian conflict. Plan Colombia directly led to an intensification of the humanitarian problem of forced internal displacement in Colombia. The results of these findings show that the aerial eradication strategy of Plan Colombia has failed to consider social and humanitarian externalities.

The findings of this study suggest that future research is needed in analysing developments of alternative policy initiatives that focus on decriminalisation and regulation instead of repression of illegal drugs. The lessons provided by the Colombian experience should be considered in future analyses of possible counternarcotic policies, including policy considerations for Colombia itself, if the peace negotiations conclude successfully.

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Table 1: Net Total Income in Colombia from Illegal Drugs (in millions U.S. Dollar)

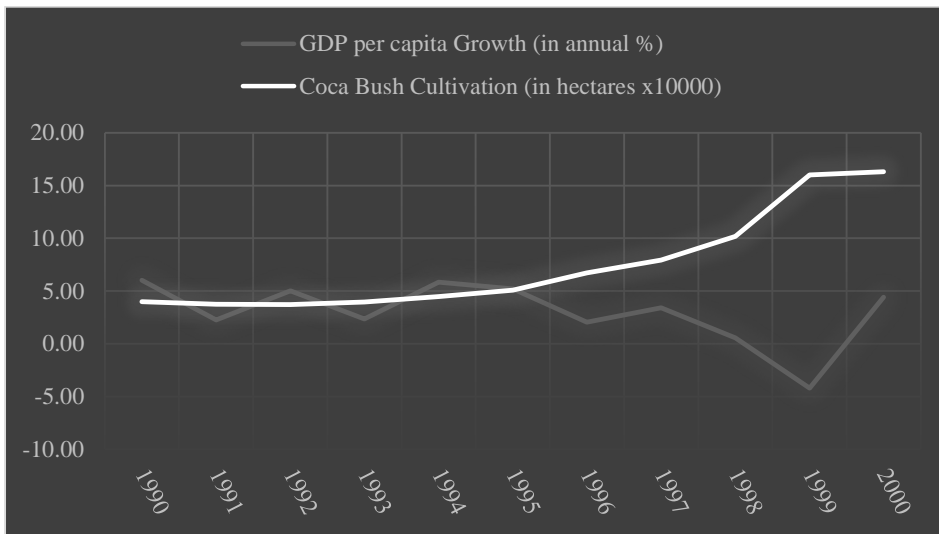
Year	<i>Rocha (1997)</i>				<i>Steiner (1998)</i>					
	<i>Cocaine (min&max)</i>	<i>Heroin</i>	<i>Marijuana</i>	<i>Total (min&max)</i>	<i>Percentage of GDP</i>	<i>Cocaine</i>	<i>Heroin</i>	<i>Marijuana</i>	<i>Total</i>	<i>Percentage of GDP</i>
1980						1386			1386	2.5%
1981	1358			1358	2.4%	1933		137	2070	3.7%
1982	2484		133	2617	4.7%	1819		65	1884	3.4%
1983	1294		133	1427	2.5%	1868		79	1947	3.4%
1984	671		83	754	1.2%	4093		79	4172	7.0%
1985	947-3817		26	973-3843	1.5%-6.3%	2933		20	2953	4.9%
1986	845-3340		21	866-3361	1.3%-4.9%	939		34	973	1.5%
1987	493-2386		57	550-2443	0.8%-3.6%	1311		152	1463	2.2%
1988	533-3658		49	582-3707	0.8%-5.2%	1395		290	1685	2.4%
1989	677-6677		22	699-6699	1%-9.2%	2485		94	2579	3.6%
1990	503-6435		20	523-6455	0.7%-8.3%	2341		48	2389	3.1%



1991	161-3965	27	45	233-4037	0.3%-5.1%	1400	750	83	2233	2.8%
1992	331-3323	163	53	547-3539	0.6%-4.3%	1822	750	89	2661	3.2%
1993	357-2999	270	140	767-3409	0.9%-4.0%	1363	750	386	2481	2.9%
1994	194-2625	424	182	801-3232	0.9%-3.6%	1176	750	329	2255	2.5%
1995						1446	750	333	2529	2.7%

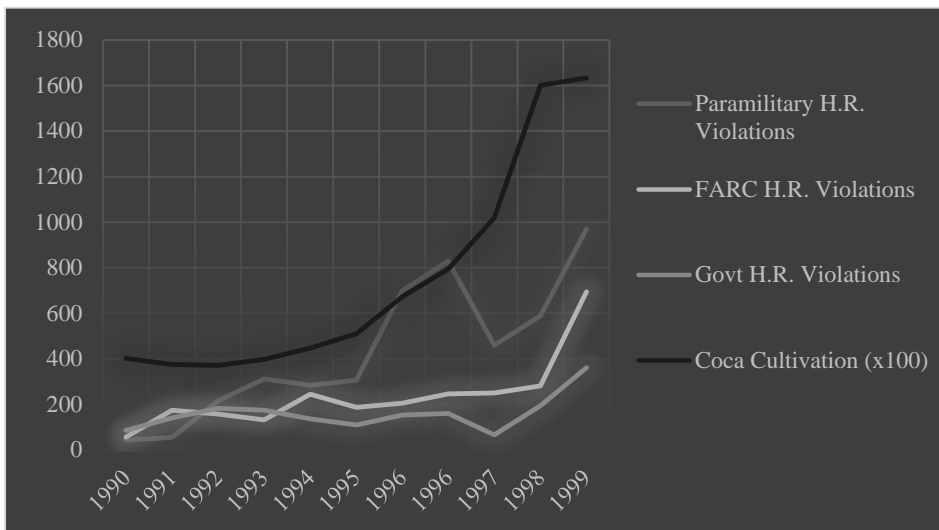
Sources: Rocha (1997); Steiner (1998)

Figure 1: Economic Performance of Colombia and Coca Bush Cultivation



Sources: DANE, 2005; UNODC, 2008.

Figure 2: Violence Trends and Coca Cultivation 1990-1999 (H.R.: human rights)



Sources: CINEP, UNODC

Table 2: Descriptive Statistics for Illegal Drugs and Violence

	<i>Mean</i>	<i>Standard Deviation</i>	<i>Observations</i>
<i>Homicide</i>	49.03	60.15	12298
<i>Crimes</i>	92.73	614.54	12237

<i>n</i>			
<i>H</i>			
<i>e</i>			
<i>c</i>			
<i>t</i>			
<i>a</i>			
<i>r</i>			
<i>e</i>			
<i>s</i>			
<i>C</i>	527.05	3231.32	12237
<i>o</i>			
<i>c</i>			
<i>a</i>			
<i>i</i>			
<i>n</i>			
<i>e</i>			
<i>P</i>			
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<i>d</i>			
<i>u</i>			
<i>c</i>			
<i>t</i>			
<i>o</i>			
<i>n</i>			

<i>C</i>	944.54	5674.86	12237
<i>o</i>			
<i>c</i>			
<i>a</i>			
<i>P</i>			
<i>r</i>			
<i>o</i>			
<i>d</i>			
<i>u</i>			
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<i>ti</i>			
<i>o</i>			
<i>n</i>			
<i>V</i>			
<i>a</i>			
<i>l</i>			
<i>u</i>			
<i>e</i>			
<i>F</i>	0.38	0.48	12276
<i>A</i>			
<i>R</i>			
<i>C</i>			
<i>P</i>			
<i>r</i>			
<i>e</i>			

<i>s</i>			
<i>e</i>			
<i>n</i>			
<i>c</i>			
<i>e</i>			
A	0.16	0.37	12276
<i>U</i>			
<i>C</i>			
<i>P</i>			
<i>r</i>			
<i>e</i>			
<i>s</i>			
<i>e</i>			
<i>n</i>			
<i>c</i>			
<i>e</i>			

Sources: Mejía and Restrepo (2011); CINEP; UNODC (2012)

Table 3: Impact of Coca value on homicide rates controlled by armed group

Independent variable	β
Coca Value	0.089*** (0.028)
FARC	0.485*** (0.056)

Paramilitary	0.465*** (0.055)
R²	0.301

*** p< 0.01

Sources: Mejía and Restrepo (2011); CINEP; UNODC (2012)

Table 4: National Level Fixed Effects Model of FARC HR Violations (lagged) 1993-1999

(T=7)

Independent Variable	β
GDP per Capita	-5.90269** (1.40847)
Paramilitary HR Violations	0.260987** (.0585797)
Government HR Violations	-0.256825** (.0682946)
Constant	57.0994 (12.6853)**
R2	0.587298

** p< 0.05

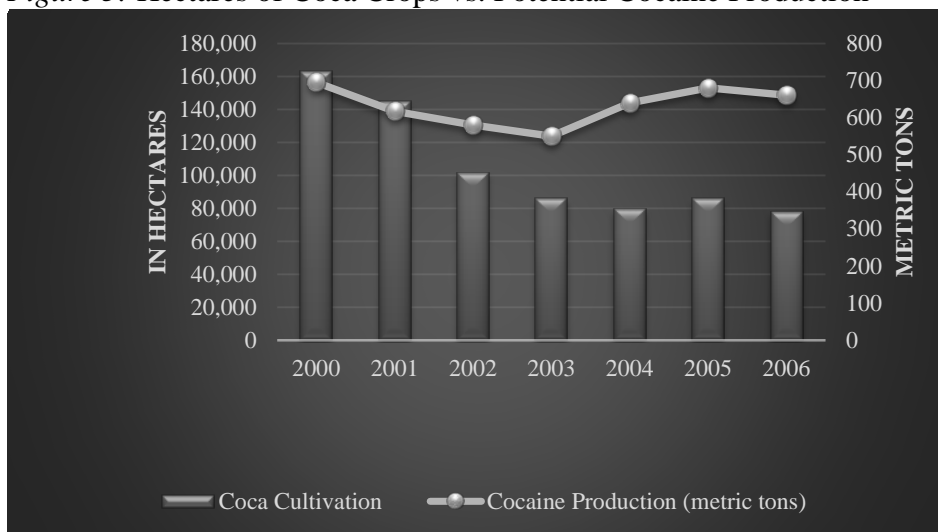
Table 5: National Level Fixed Effects Model of Paramilitary HR Violations (lagged) 1993-1999

Independent Variable	β
GDP per Capita	15.3500** 4.65548

FARC HR	1.59507*
Violations	0.605725
Government	0.880315**
HR	0.246399
Violations	
Constant	-142.056**
	43.9993
R²	0.711103

*p < 0.10; ** p < 0.05;

Figure 3: Hectares of Coca Crops vs. Potential Cocaine Production



Source: UNODC (2008)

Figure 4: The Productivity of Coca per Hectare

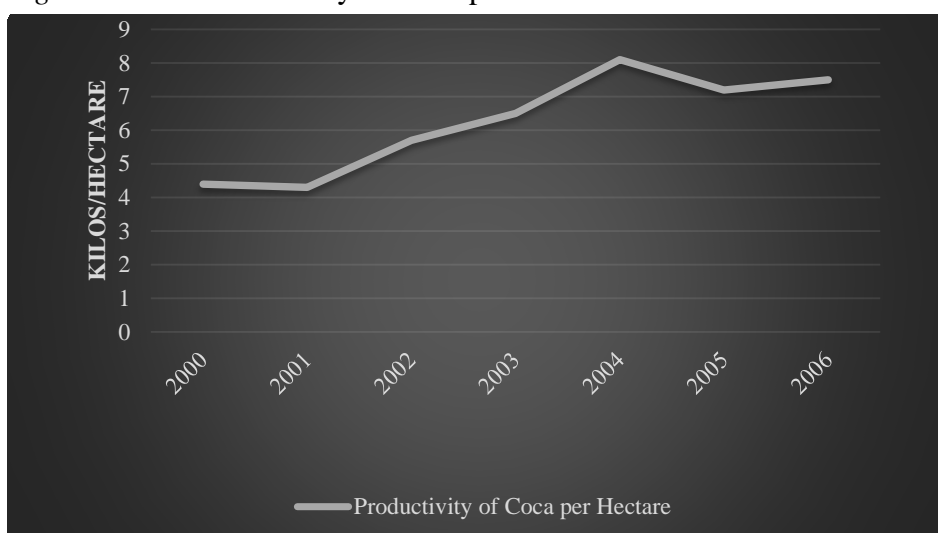


Table 6: U.S. Assistance to Plan Colombia 2000-2006 (in millions of US\$)

Programme Objective/ fiscal year	2000	2001	2002	2003	2004	2005	2006
Reduce Illicit Narcotics and improve Security	817.8	232.8	395.9	607.9	617.7	585.6	587.3
Promote Social and Economic Justice	80	0.5	109.9	125.7	126.5	124.7	130.4
Promote Rule of Law	121.1	0.9	15.8	27.0	9.0	7.3	10.5
Total	1,018.9	234.2	521.6	760.6	753.2	717.6	728.2

Sources: GAO (2008); DNP (2006)

Table 7: Assistance provided to the Colombian Military and National Police 2000-2006 (in millions of US\$)

Service/ fiscal year	2000	2001	2002	2003	2004	2005	2006
Colombian Military	683.5	192.8	257.1	443.4	445.5	394.7	382.8
Army Aviation	*	*	78.0	140.8	155.2	127.5	143.2
Army Ground Forces	*	*	9.7	6.3	18.1	13.4	22.2
Infrastructure Security	*	*	6.0	93.0	4.0	4.0	4.0
Air Interdiction ^a	No program	No program	14.0	8.0	7.1	0.0	4.6
Coastal and River Interdiction	*	*	0.0	0.0	26.2	11.8	19.1
Other ^b	134.9	190.9	149.4	195.4	234.8	238.1	189.7
Not allocated*	548.6	1.9	0.0	0.0	0.0	0.0	0.0
Colombian National Police	134.3	40.0	138.8	164.5	172.2	190.9	204.5
Eradication	*	*	37.4	63.7	44.2	82.5	81.7
Air Service	*	*	67.5	62.3	71.2	70.0	70.5
Interdiction	*	*	24.3	21.0	41.0	16.9	16.5
Police Presence in Conflict Zones	No program	No program	4.8	15.5	13.8	20.1	19.4

Other^c	18.7	0.0	4.9	2.0	2.0	1.4	16.4
Not Allocated*	115.6	40.0	0.0	0.0	0.0	0.0	0.0
Total	817.8	232.8	395.9	607.9	617.7	585.6	587.3

*State could not allocate appropriations by program category in fiscal years 2000 and 2001.

a This category addresses State's Air Bridge Denial program

b Includes Defense counternarcotics funding

c Includes other major expenses such as a portion of State's Critical Flight Safety Program.

Source: GOA (2008)

Table 8: National Level Fixed Effects Model on Cocaine Production 2000-2006 (T=7)

Independent Variable	β
Eradication (lagged)	0.0229684 0.0197252
U.S. Assistance to Plan Colombia (lagged)	0.0490166 0.0373099
Colombian Expenditure on defence and security (lagged)	-0.289435 0.169559
Constant	6.25600*** 0.468576
R ²	0.323416

*** p < 0.01

Table 9: Main Indicators for violence in Colombia 2000-2006

Indicator	2000	2001	2002	2003	2004	2005	2006
Homicide rate per	62.7	64.7	65.9	53.2	44.0	39.1	37.5

100,000 inhabitants							
No. of Kidnappings	3,572	2,917	2,882	2,121	1,441	800	687
No. of Massacres*	236	185	115	94	46	48	37
FARC Violence	489	1,092	362	296	204	125	168
Paramilitary Violence	1,191	875	1,144	849	649	258	510
Public Force Violence	270	470	379	580	752	686	758

* defined by the government as killings of four or more persons.

Sources: DNP; CINEP; National Ministry of Defence (MDN)