

**“The Illegal Drug Industry, Violence, and the Colombian Economy: A Department Level
Analysis”**

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Previous research on the Colombian illegal drug trade, which is generally qualitative and focused at the national level, concludes that the drug industry harms the economy. By combining historical national level analysis with quantitative department analysis and by incorporating the effects of both paramilitary and guerrilla violence on the economy, a closer examination of the relationship between drugs and the economy is possible. The results reveal that paramilitary violence is positively related to exports and negatively to gross domestic product. FARC violence, however, appears to harm exports but, surprisingly, not gross domestic product. Contrary to the conventional wisdom, coca cultivation does not have independent effects on exports or GDP.

1. Introduction¹

According to many scholars, pundits and diplomats, the illegal drug industry harms the Colombian economy. For example, Thoumi (1995a) states ‘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.’ Concurrently, Colombia suffers from high rates of political violence and violent criminal activity, which may also have corrosive economic effects. As background for a department analysis, a brief overview of two key relationships at the national level is provided: drugs and the economy and violence and the economy. Contrary to previous research on the illegal drug trade, which is generally qualitative and focused at the national level,² this paper blends historical national level analysis with a quantitative department analysis. Analyzing relations at the department level allows a more precise differentiation of the effects of political violence and the illegal drug industry on the economy. In Colombia, both guerrillas and paramilitaries commit human rights violations. However, despite their similarity in means, guerrillas and paramilitaries are very different, with distinct political agendas and origins. By controlling for the distinct types of violence, a closer examination of the relationship between drugs and the economy is possible. The results reveal that paramilitary violence is positively related to exports and negatively to gross domestic product. FARC violence, however, appears to harm exports but, surprisingly, not gross domestic product. Contrary to the conventional wisdom, coca cultivation does not have independent effects on exports or GDP.

To properly understand the effects of the drug trade and violence on the Colombian

¹ Special thanks to the anonymous reviewers whose comments greatly improved the manuscript.

² For comprehensive studies on the illegal drug trade and the economy at the national level see Thoumi (2003), Vellinga (2004), Gootenberg (1999), and Camacho and Restrepo (2000).

economy, however, it is first necessary to assess general trends within the Colombian economy. Per capita GDP measured in constant dollars had been slowly increasing since the early 1970's; however, as of the mid to late 1990's it has been falling. By 1999, real GDP per capital has fallen back to 1992 levels. Overall, the economy has seen a dramatic fall in economic growth as measured by rate of growth of GDP. (See Figure 1) While the economy did grow in the early 1990's, the average growth rate was still only around four per cent. By 1994, the Colombian economy began a steady decline and has yet to recover. Thoumi states 'the rate of growth of Colombia's GNP during the cocaine era- from 1980-1997- was about 3.2 percent, while it averaged 5.5 percent during the thirty years before' (Thoumi 2003: 78). Trade liberalization, initiated by President Gaviria, resulted in a decline in domestic production. By 1998, the economy was in crisis.

Since the late 1990's, unemployment in Colombia has been consistently rising. This is disturbing since the 1990's were a decade of world strong growth. Unemployment increased to twenty per cent by 2000, the highest on record compared to seven and one half per cent in 1994, the lowest on record. Additionally labour participation fell in agriculture and industry as investment moved into the mining and financial sectors. Agriculture fell from almost twenty per cent in 1970 to just under fifteen per cent in 1999 and industry's share fell from seventeen per cent to thirteen and one half per cent (Paredes 2001).

The economic crisis of 1998-1999 was a result of trade and financial liberalization, the real estate bubble, and increased public spending precipitated by the discovery of oil and large influxes of foreign exchange (International Monetary Fund 2001). The political crisis under President Samper, weak supervisory practices at banks, and easy credit further contributed to the end of the growth. The overvalued Colombian peso had a negative impact on domestic

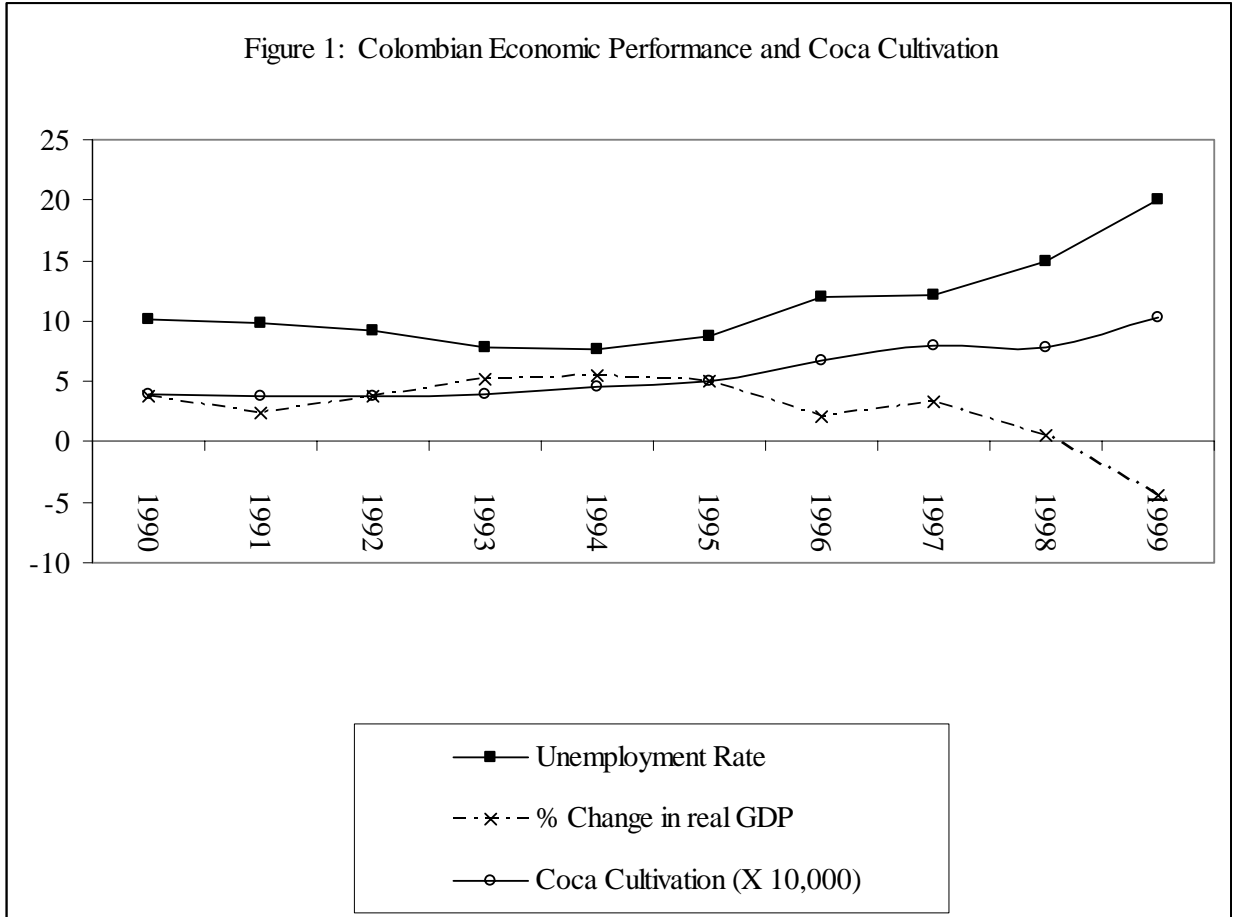
industries and the export sector and, consequently, gross domestic product (UNDCP 1998). Moreover, in general, bi-lateral and multi-lateral agricultural trade policies, including tariffs and agricultural subsidy programs both in the US and Europe, have hampered the growth of agricultural exports from third world countries.

Colombian government policies designed to ‘modernize’ the economy often leave the poor with few alternatives and perversely encourage the drug trade. The drug trade became an attractive alternative for Colombia, which has a natural international comparative advantage in the drug trade (NACLA 1997). Open financial markets and free trade policies in manufactured products create perfect avenues for repatriation of illegal drug profits. Simultaneously, world trade policies towards agricultural goods and overnight competition from manufactured imports drive up unemployment rates and poverty levels in Latin American countries.

2. ILLEGAL DRUGS AND THE ECONOMY IN COLOMBIA³

Most discussions of the illegal drug industry and the economy focus on employment, money laundering, land ownership, and income inequality.

³ Useful and detailed surveys of Colombian development at various phases of the process are provided by Hofman (2000), Franko (1999), Garcia Garcia and Montes Llamas (1988), Hallberg (1991), and Cohen and Gunter (1992).



Sources: CINEP, DANE, DNP

Figure one compares national trends of coca cultivation, unemployment and growth. At the national level, it appears that increases in coca cultivation negatively affect long run employment.⁴ Through the mid-1990s, coca production, GDP growth, and coca production were fairly stable. However, as coca production began to increase in the latter half of the decade, GDP growth slowed and unemployment increased.

A survey of existing research demonstrates that in the short term increased drug incomes boosted the construction sector, creating jobs for the lower class. However, in the long run, there

⁴ Gootenberg (1999) provides a detailed analysis of the short run employment gains as a result of the illegal drug trade. For more on impact of the drug trade on Medellin see Gootenberg (1999), while 'Cali High' (1994) describes the impact in Cali.

is evidence of a collapse of asset and real estate values. Francisco Thoumi points out that ‘it is possible to launder real estate if the capital is used to fund real estate construction and recycled into new projects’ (Thoumi 2003: 186). The real estate boom, however, poses a threat to the economy as property values appreciate at increasingly unsustainable rates — eventually resulting in a collapse of assets (‘The Wages of Prohibition 1994: 25). Camacho and Lopez conclude that ‘since the narcotics traffic played such an important role in the Valley’s economy, the current recession is due to the economic void generated by the imprisonment of the leading members of the Cali Cartel’ (Camacho and Lopez 2000: 164). The rural impact extended beyond just real estate values as production of coca resulted in the displacement of legitimate agricultural crops, such as coffee.

For some Colombian farmers, the move from coffee production to drug crops can be attributed to the falling income and rising unemployment in the coffee growing regions a result of falling prices of primary commodities since the 1980’s (UNDCP 1994: 12) and high production costs. Vellinga purports that ‘the coca boom is also a result of developments on local, national, and international markets which have made the cultivation of alternative crops less profitable (Vellinga 2000: 123).’ Faced with competition from foreign lower cost producers and falling coffee prices, farmers are supplementing their incomes by growing drug crops (Wilson 2001) since in absolute terms the farmer is still better off than if he/she participates in the regular economy (NACLA 1997). Furthermore, coffee farms in Colombia generally lack the ability to switch production or diversify their crops. Therefore, they are more vulnerable to falling coffee prices. Coffee is planted on small farms, employing about one million people, while the illegal drug trade is dominated by a few and employs a relatively small number of people (Steiner and Corchuelo 1999). It is estimated that the illegal drug sector employs six

point seven per cent of agricultural workers while the main legal crop, coffee, employs twelve per cent. Although there may be short term wage gains for individual peasants, in the long run there are negative consequences since farmers have reduced incentives to work towards a modern and competitive agricultural sector (Steiner and Corchuelo 1999). Even if the price for illegal drugs is lower than coffee or other primary goods, illegal drugs are easier to plant, maintain, and transport, have longer storage life, and have access to a more developed distribution system (UNDCP 1994).⁵

There has been a clear reallocation of cropland into illegal drugs. Drugs are easily stored and are hardier than many legal crops. Because of this, further investments in product distribution and land improvements are not made, making it even more difficult for legal crops to be produced and sold. The United Nations Drug Control Programme (UNDCP) highlights the opportunity costs of the illegal drug trade, including the loss of investment in legitimate enterprises as farmers funnel their savings into drug cultivation and production, a loss of investment in human resources as children begin in the drug trade, and a loss as other productive investments are crowded out (UNDCP 1994). From 1995-2000 coca cultivation increased by 21.98 per cent, while production of other agricultural commodities decreased by a little over one per cent. This suggests the displacement of legal crops by illegal commodities (Alvarado *et al* 2002). Additionally, illicit crop eradication also affects productivity as the chemicals used to destroy illegal drug crops also make it difficult to grow legal crops.

The illegal drug trade has a secondary impact on employment through money laundering and its effects. The most common method of laundering money is by trafficking contraband. Drug traffickers purchase goods abroad using dirty money, smuggle the goods into Colombia,

⁵ For more on coca production relative to legitimate crops see Franko (1999) chapter ten.

and then sell them, often at a 'loss.' The sale of these items launders the money for the traffickers, but undercuts legitimate businesses because the drug traffickers are likely to sell for less, given they have already gained a profit before the sale. The main goal of the money laundering is the conversion of dollars to pesos through the importation of goods. Successful money laundering depends on high volume and quick turnover of product, reducing the incentive to sell at market price. The industrial and business sectors most affected by smuggling are household appliances, clothing, textiles, footwear, liquor, and cigarettes. 'Since 1985, the liberalization of imports has brought major problems for the textile and clothing industry of Medellin, a situation made worse by the tendency for drug traffickers to bring in very cheap imported goods as a means of laundering drug monies' (Gilbert 2004: 113). Moreover, the more typically trafficked items displace products of the labour intensive and non-specialized economic sectors in which Colombian products should have a comparative advantage, further undermining employment (Steiner and Corchuelo 1999). For instance, when 'the main purpose of investment is to launder drug money, the effect is often to crowd out legal businesses. Loss-making firms from fruit canning plants to furniture stores may have caused legal rivals to fail' ('The Wages of Prohibition' 1994: 25). It impacts both the manufacturing and retail sectors.

Additionally, the drug trade has significantly affected landownership. During the 'land counter reform' of the 1980s, the narcotraffickers bought large parcels of land as legal investments, increased land ownership concentration (Thoumi 2003: 181), and introduced labour saving technology (Steiner and Corchuelo 1999). Sarmiento and Morena (1990) estimate between eight and 23 per cent of revenues repatriated by illegal drugs has been used to purchase approximately five per cent of the arable land in Cauca, Antioquia, Meta, and the Caribbean Coast. Most of this land is then used for cattle and horse ranches, which have low labour

intensity and low productivity. Estimates place drug cartel ownership at approximately one third of the country's agricultural land ('The Wages of Prohibition' 1994: 25). 'These purchases frequently took place in areas of strong guerrilla activity where drug entrepreneurs contributed to the creation of self-defence paramilitary groups that fought the guerrillas raising land values' (Thoumi 2003: 186). As a result, even more peasants were pushed into guerrilla groups or into coca cultivation (UNDCP 1998: 20). Additionally, 'many rural areas have suffered badly since 1990 and currently as much as 40 percent of Colombia's total area is effectively beyond the control of the state' (Gilbert 2004: 113).

The effect of coca production on land ownership exacerbates an already unequal distribution of income in Colombia. The IMF (2001) reports that the highest twenty per cent of households earned 60 per cent of the income while the lowest twenty per cent only earned two per cent of the income in Colombia in 1995. 'In Medellin, income inequality had increased to such a degree that the distribution of wealth was worse in 1989 than it had been in 1967' (Gootenberg 1999: 172). Farmers in the lowest quintile tend not to benefit from illegal drugs, since they 'operate under conditions of competition so their profit margins are minimal' (UNDCP 1998: 25). The illegal drug trade, while providing short-term financial relief to peasants, in the long run further distorts the inequalities in Colombia. In the late 1980's and early 1990's, approximately 30 per cent of the country's wealth was in the hands of the cartels (UNDCP 1998). Thoumi concludes that 'any estimate of the size and profits of the illegal drug industry, no matter how conservative, highlights the capacity of the illegal drug industry to change the economic power structure of the country' (Vellinga 2004: 77).

The illegal drug trade has been theorized to have other serious consequences for the Colombian economy, in terms of the macro economy, the environment, and the effects of

contraband. Macroeconomic imbalances resulted from an overvalued peso and influx of foreign exchange. The large influx of foreign exchange resulted in the phenomena known as ‘Dutch Disease,’⁶ and may have precipitated the economic crisis of the late 1990’s. The environmental impact of drug cultivation and eradication are also substantial.⁷ The environmental impact is wide spread as the effects extend to the destruction of primary tropical forest, contamination of water supplies, biodiversity of plant and animal life in the tropics, and health hazards due to aerial spraying (Thoumi 2003: 196-198; Camacho and Lopez 2000: 160). Steiner and Corchuelo (1999: 1) claim, ‘Any objective evaluation of this topic must conclude that, aside from a few short-term economic benefits, Colombia is perhaps the main victim of the illegal drug trade.’⁸ Legal imports and exports are constrained by contraband. Customs officials spend significant resources and time in the search of contraband, resulting in delays and higher costs in processing trade shipments. ‘Dirty capital begins to replace clean capital and dirty capital is much less efficient and productive as drug related violence increases and legitimate businesses liquidate and leave’ (UNDCP 1998: 28). The general consensus among Colombian economists is that the impact of the illegal drug industry on the economy has been negative. It remains, however, to test this conclusion using disaggregated data and controlling for violence.

3. VIOLENCE AND THE COLOMBIAN ECONOMY

Because of the pervasive violence, Colombia faces special challenges. Macario et al. (2002) explain that in addition to the common liquidity and infrastructure constraints that Latin

⁶ Dutch Disease is an economic term used to describe the following phenomena. If the demand for an exported resource increases dramatically, resulting in an overvalued currency, then other exports are made less competitive in the world market and foreign imports are more competitive domestically. This can cause a deindustrialization of the domestic economy.

⁷ For more information on the issues regarding the environmental costs see Bernal Conteras, Hector Hernando, ‘Impacto Ambiental Ocasionado por las sustancias quimicas, los cultivos ilicitos y las actividades conexas’ in *Problematica de las drogas en Colombia:Memorias del Seminario* edited by Merchan Benavides, Gabriel, Direccion Nacional de Estupefacientes, Bogotá, Colombia, 2002 and *Economic and Social Consequences of Drug Use and Illicit Trafficking* Number 6 UNDCP. Technical Series, 1998.

⁸ For more on the negative sociological impact of the violence and displacement see Castro 2001.

American exporters face, the Colombian situation is complicated by violence. The strife is extensive. In 2002 alone, there were many victims of the violence: 373,020 people displaced within Colombia, 2,986 kidnapped, more than 500 people ‘disappeared,’ and 4,000 civilians killed (See Red de Solidaridad, Pais Libre, and Amnesty International). Additionally, international consultants fear to work in Colombia, which further undermines the economy.

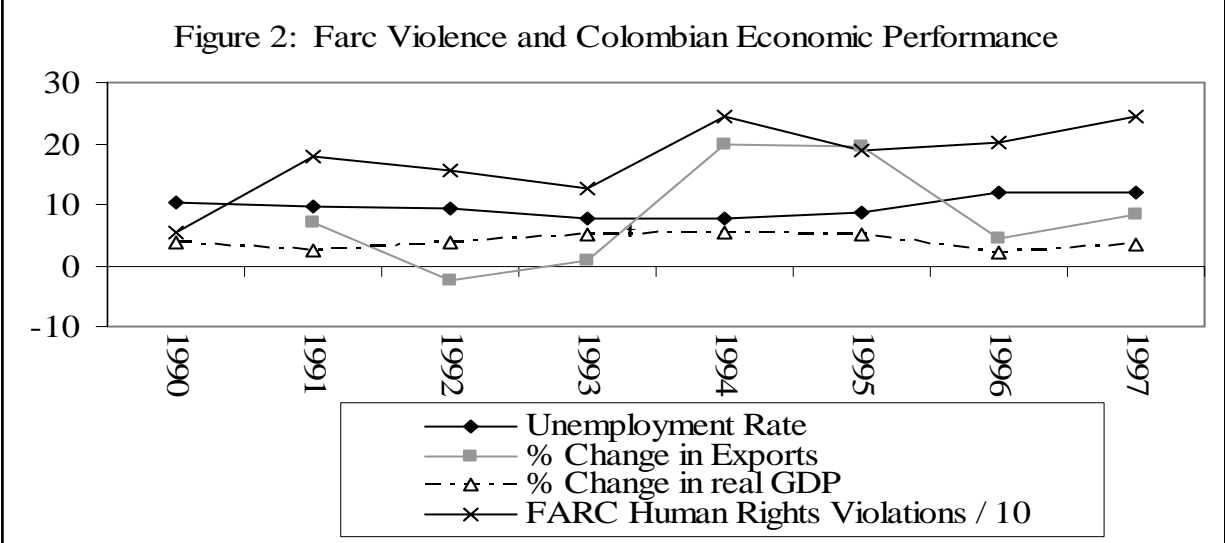
The main guerrilla group in Colombia is the FARC, the Armed Forces of the Colombian Revolution. This Marxist group insurgent group, the largest such group in Colombia, has approximately 17,000 members and funds its operations with extortion of both licit and illicit businesses in areas under its control and kidnapping (Shifter 1999). The FARC has been active since the mid 1960’s (although it has roots in La Violencia) and is dominant in much of rural Colombia. More recently, it has expanded its presence in the main cities (Petras 2000). The FARC demands land reform, price supports for agricultural products, and credit assistance, health care and improved education for peasants (Rochlin 2003). Since its inception, the FARC has grown considerably, changed its strategy, and modified its rhetoric (Pecaut 1997, Vélez 2000). To communicate their contemporary goals, the FARC created a political wing, the Movimiento Bolivariano, in 2000 in order to fight against “state terrorism, the injustices, inequalities, unemployment, and the humiliation before US imperialism” (FARC 2000).

The other main violent actors are the paramilitaries. Beginning in the 1960’s, these groups were legal and encouraged to form and operate by the government to fight leftist guerrillas. Many landowners, and later many drug lords, formed such groups to privately confront guerrillas and to support the army in counterinsurgency efforts. As paramilitary violence increased in the 1980’s, the government declared them illegal in 1989, although human rights groups allege that some in the military and government continue to support these groups

(Cubides 2001). The dominant contemporary group, the AUC, is an umbrella organization of paramilitary groups. AUC founder, Carlos Castaño, created the ACCU (Autodefensas Campesinas de Córdoba y Urabá or Peasant Self Defense Groups of Córdoba y Urabá) in the 1980's after the kidnapping and murder of his father by the FARC (Romero 2000). In the view of the AUC, they are a legitimate group, founded to defeat the Colombian leftist insurgents. They view themselves as patriots serving to defend the country. In a 2003 letter, they state, 'the historic military role assumed by the self defence forces has been a necessary and determinant factor that has allowed Colombia to sustain its fragile and threatened democracy and to develop its budding economic capacities in the context of the indecision and incongruence of the political system' (author translation. Mancuso and Carlos Castaño, 2003). According to human rights groups such as CINEP, Amnesty International, and Human Rights Watch, the paramilitaries have been responsible for over eighty percent of the human rights violations in Colombia. Beginning in 2001, the AUC has reorganized with the goal of participating in government peace talks. In December 2002, a ceasefire between the AUC and the government was secured. Peace talks and demobilization are currently ongoing, although the AUC appears to be fracturing, after the disappearance and probable murder of Castaño and the assassination of another politically motivated paramilitary leader, Rodrigo Franco, both in 2004.

Because of the extensive violence, instead of infrastructure being created it is a victim of civil tensions. In addition to the direct effects of violence, there are significant indirect effects. The government diverts resources that could be used for social or economic development to suppress violence and the drug trade. Uncertainty about security increases the importance of the short term, decreasing the attractiveness of long term investments. Macario (2002) concludes that while Colombia was once in the forefront of nontraditional export promotion, unless it

resolves its internal conflict, Colombia will be unable to capitalize on its strong human capital and conducive institutional environment to return to a position of regional leadership in manufactured and nontraditional exports.



Source: CINEP, DANE, DNP

Figure two compares economic trends with the violence of the main leftist guerrilla group, the FARC. In general, trends are difficult to discern, as the 1991 and 1994 increases in FARC activity do not appear to affect unemployment or growth. The trends of FARC violence to exports suggests a negative relationship.

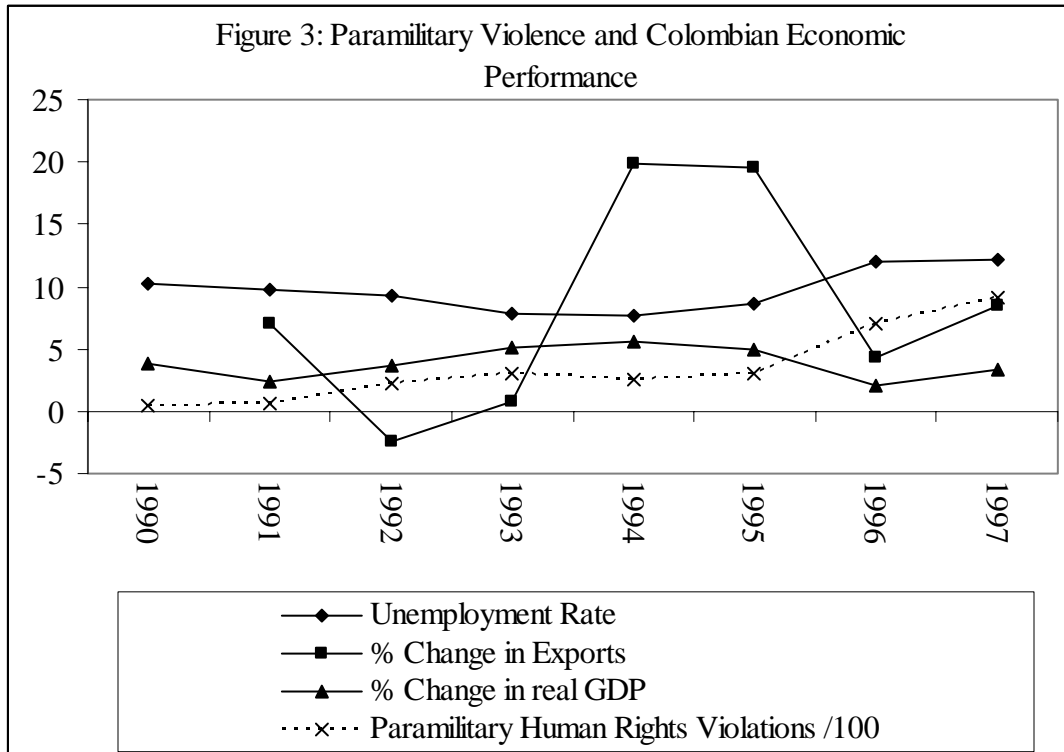


Figure three examines the same economic trends, but this time compared to paramilitary violence. Again, these short time spans are difficult to interpret. The relationship to exports is unclear in the national trends, while a negative relationship between GDP and paramilitary violence may be suggested.

The existing literature theorizes a negative effect of the drug trade and violence on the economy. The national level trends over this short time span suggest a negative impact of both violence and drugs on the economy. However, do these results hold to explain differences within Colombia? There are significant differences of amount of violence, type of violence, coca cultivation and economic performance among the Colombian departments. The next section of the paper examines trends within Colombia to see if they are the same as the national trends suggested in the literature.

4. A Department Level Analysis

Instead of looking at the entire nation through time, analysis at the department level focuses on differences within the country, while controlling for changes through time. A subnational analysis provides the opportunity to look at the relationships in a larger sample size. To test the robustness of the national level findings, a department level fixed effects model is used. This analysis, based on thirty-two cases within Colombia, provides a more rigorous examination of the relationships. Moreover, in this case, certain potentially important variables, such as unemployment or underemployment, are not included because estimates are not available for each year.⁹ However, the fixed effects model captures unmeasured differences among cases (departments), in the intercept.

The focus of this study is on 1991-1997 since the methodology of measuring drug production changed in 1998 and 1999. In 1998, the estimate used a different methodology than previous years. A new, satellite based system provides estimates beginning in 1999, but these numbers are not comparable with previous years because of the different methodology of estimating coca production.

Using fixed effects, two models are tested: one with exports as the dependent variable and the other with gross domestic product in constant dollars. FARC human rights violations are differentiated from paramilitary human rights violations since the respective underlying motivation and targets differ. Criminal violence, measured as homicides, is also included.¹⁰

⁹ Unemployment numbers are not particularly useful measures since they fail to reveal meaningful information given that unemployment in developing countries is a luxury only the rich can afford. Underemployment numbers and statistics on the informal sector which would be better indicators of the labour market are not readily available. Typically, as unemployment increases, informal sector employment increases. The process is counter-cyclical, largely due to lack of unemployment benefits. For example, unemployment increased between 1984-1988, fell between 1992-1996 and increased again between 1996-1998 while the informal sector grew (Henao et al 1999).

¹⁰ CINEP tallies human rights violations among both state and non-state actors and differentiates between human rights violations committed by different actors, ranging from the FARC to the police. At times, CINEP includes incidents in multiple categories, however, this issue is not relevant for this analysis since only one category is employed in this study. As with any dataset, the potential for bias exists. However, we believe any bias is consistent throughout time in this study, since the included data were generated directly from CINEP's Base de

State presence is approximated by looking at the relative size of total department level government spending, compared to the amount spent by all department level governments. The proportion of social spending to total spending in each department is also included. In these models, the link between coca production and two leading indicators of economic stability (gross domestic product and exports) is examined. Gross domestic product measures the general overall health of the economy since it captures all output produced nationally. Exports, on the other hand, are a measure of foreign exchange income streams. By examining both the impact on exports and gross domestic product it is possible to differentiate the impact of coca production on the national and international economic factors.

Table I reveals no relationship between coca cultivation and exports; yet, suggests a positive relationship between exports and paramilitary violence and a negative weak relationship between exports and FARC violence. This result should not be

Datos using consistent categories. Especially in politically sensitive areas such as violence statistics, it is prudent to compare non-government and government numbers since different groups may have incentives to over or under report, respectively. Because of this possibility and the controversy surrounding CINEP figures, we have compared official government data on terrorism with CINEP figures. In general, one would not expect the government to include tallies of government human rights abuses or atrocities in its tallies of terrorism. However, we ran a correlation of all of the main CINEP violence categories with government figures (terrorism). The correlations among the leftist guerrilla violence in general is high, ranging from a .6483 with the FARC violations to a .7682 for guerrilla groups other than the FARC or the ELN. Not surprisingly, the government statistics are not highly correlated with political social violence, in which attributions of responsibility cannot be made, or with government forces human rights violations. A comparison of terrorism incidents with human rights violations is not a direct comparison of exact same phenomenon, but the relatively high correlation provides confidence in CINEP numbers. Moreover, the CINEP database differentiates attribution of responsibility, which is essential when analyzing the violence of distinct groups with different goals.

Table 1: Exports OLS Fixed Effects Models

Independent Variables	Model 1 β (s.e.)	Model 2 β (s.e.)	Model 3 β (s.e.)
FARC Human Rights Violations	-23947.59* (10419.3)	-18582.91+ (10416.76)	-13915.82 (10315.98)
Paramilitary Human Rights Violations	4922.70* (2205.20)	8067.72** (2453.44)	8683.59** (2391.59)
Coca Cultivation	-2.59 (24.21)	-4.50 (23.77)	10.64 (24.14)
GDP (Constant 1975 Pesos)	22.14+ (13.01)	57.94** (18.32)	60.19** (17.72)
Proportion of Total Department Spending	-2052008 (3043434)	-2551590 (2993459)	-1817440 (2874646)
Social spending	-55503.89 (361275.7)	192881.9 (366205.5)	571946.6 (362999.4)
Homicides	59.981 (511.93)	-160.20 (509.03)	-178.90 (493.64)
Population		-4.57** (1.68)	-4.31** (1.97)
1991			323167 (229385.7)
1992			587937.6** (211482.8)
1993			742011** (199652.9)
1994			527412** (191711.8)
1995			615239.6** (182718.7)
1996			624994.4** (170956.7)
Constant	1524629 (3.86)	5523723** (1518171)	4555421** (1912714)
sigma_u	2772895.3	6251015.6	5887942
sigma_e	682926.26	670450.8	638243.93
Rho	.94281189	.98862726	.98838624
R-sq: within	0.0804	0.1189	
Between	0.6142	0.5215	
Overall	0.5491	0.4911	
N	208	208	
N groups	30	30	

+ = $p < 0.10$ * = $p < 0.05$ ** = $p < 0.01$

Table II: GDP in constant 1975 pesos OLS Fixed Effects Models

Independent Variables	Model 1 β (s.e.)	Model 2 β (s.e.)
FARC Human Rights Violations	-49.28 (42.60)	-60.31 (43.94)
Paramilitary Human Rights Violations	-30.09** (10.03)	-33.95** (10.25)
Coca Cultivation	.0417 (.0967)	.0780 (.1027)
Exports	.0009589** (.0003032)	.0011** (.000322)
Proportion of Total Department Spending	950.51 (12202.95)	2700.23 (12260.02)
Social Spending	-2052.35 (1482.58)	-2408.86 (1546.76)
Homicides	1.69 (2.07)	1.88 (2.09)
Population	.0664 (.00476)	.0739** (.0063)
1992		-868.60 (724.94)
1993		-1595.42* (761.11)
1994		1698.09* (777.95)
1995		-1618.96 (835.59)
1996		-1904.62* (888.89)
1997		1344.62 (977.53)
Constant	-49276** (5179.54)	-56118.87 (6432.22)
sigma_u	47724.93	56081.95
sigma_e	2727.34	2719.13
Rho	.9967	.9977
R-sq: within	0.6031	0.6194
Between	0.9150	0.9153
Overall	0.9048	0.9046
N	208	208
N groups	30	30

+ = $p < 0.10$ * = $p < 0.05$ ** = $p < 0.01$

surprising given that guerrilla violence is usually associated with resource extortion while paramilitary violence is an example of the extensive privatization of security in Colombia.

Table II also reveals no relationship between coca cultivation and GDP; however, paramilitary violence is negatively related to gross domestic product. This could be capturing the negative overall effect of violence on the economy. No relationship between FARC violence and gross domestic product is apparent. This could be due to fact that FARC violence is concentrated in areas of low development and production.

Tables I and II both show a positive relationship between exports and gross domestic product.¹¹ These results indicate a bi-directional relationship between exports and growth. We do not focus on the issue of the export-led growth hypothesis in this paper.¹² An interesting aspect of these results is that given the positive relationship between exports and growth, the impact of violence further hinders Colombia's potential growth given that paramilitary violence has a negative impact on GDP while FARC violence is negatively related to exports.

4. Conclusion

We examine the impact of coca production on the Colombian economy, both in terms of exports and gross domestic product, controlling for violence. The department level analysis provides new insight. In neither regression is coca cultivation significant. Paramilitary violence is positively related to exports and negatively to gross domestic product. FARC violence appears to harms exports but, surprisingly, not gross domestic product. These contrary findings

¹¹ To better differentiate between the effects of large and small departments we use real export and real gross domestic product in levels rather than growth rates.

¹² The empirical evidence examining the 'causation' between developing-country exports and growth across countries is substantial. For a broad review of the literature see Edwards, 1993 and for more on export-led growth see Bahmani-Oskooee and Alse (1993), Yaghmaian (1994), Jung and Marshall (1985), Hutchison and Singh (1992), Esfahani (1991), Amin Gutiérrez de Piñeres and Ferrantino (2000).

emphasize the need to separate Colombian political violence by actors, who have distinct origins and goals. The FARC has a leftist political agenda while the paramilitaries are many times funded by either large landowners or drug traffickers. Our results suggest Colombia's economic problems are more related to political violence than coca production.

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