Land competition and monopsonistic monopoly: the role of the narco-insurgency in the colombian cocaine market

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Abstract

The main purpose of this paper is to model the role of the narco-insurgency in the structure and functioning of the colombian cocaine market. The narco-insurgency gets important profits from this market by controlling the land for producing coca-leaf, and the production of inputs for trading cocaine. These inputs could be paste or base of cocaine, or even cocaine before trading it to the final consumers. Those profits allow the narco-insurgency to configure and sustain such a market structure that guarantees it to obtain them permanently. We proceed by four steps. First, we model the land conflict between the narco-insurgency and the government. The output of this process is a valuation of the land for producing coca-leaf. The second stage concerns the farmers. By using violence, the narco-insurgency obligates the farmers to participate in the cocaine market as producers of coca-leaf. It charges them a tax for the coca-leaf production, and also it fixes them the coca-leaf price through its monopsonistic power. In the third stage, the narco-insurgency produces those inputs for trading cocaine and sell them monopolistically to cocaine traffickers, which compete each one in an oligopolistic market. The gap between the coca-leaf price and the price of inputs for trading cocaine explains the profits that narco-insurgency obtains from this illegal market.

Key words: narco-insurgency, land-competition, monopsonistic monopoly, coca-leaf, cocaine, oligopoly.

JEL classification: D43, J42, K42.

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1 Introduction

The colombian cocaine market is very complex. Characterizing its general structure requires some microeconomic assumptions about integration and competition. There are different actors, with fuzzy roles, sharing a common notion of obtaining profits. However, some of them have market power, allowing them to get more profits than others. These participants have a huge incentive to sustain the functioning of this market. Understanding this particular functioning, and those roles with their market power, is crucial for designing efficient policies to solve the problem.

According to the UNODC and Government of Colombia (2014), the market splits in coca-leaf, paste or base of cocaine or inputs for trading cocaine, and cocaine. First, there are farmers producing the coca-leaf crop; second, there are illegal groups controlling the inputs for trading cocaine; and, finally, traffickers which put the cocaine in the final market. Each stage has its own microeconomic structure which, according to Mejía and Rico (2010), it is not perfect competitive. We study this imperfection in the line of Arias-R. and Aza (2014) but now we explicitly assume the second stage is a monopsonistic monopoly.

The narco-insurgency is an important actor in the colombian cocaine market. It is a collection of illegal groups, such as *guerrilla-FARC* and *paramilitares-AUC*, which we model as producer or trader of those fundamental inputs for trading cocaine, which could be paste or base of cocaine or even cocaine. Additionally, it fights against the government searching for a portion of the territory to guarantee the production of coca-leaf. It does not produce directly the coca-leaf, but it does obligate the farmers to produce it by using violence. Without narco-insurgency, the government would control the territory and also the coca-leaf production.

We model the role of the narco-insurgency in tree assumptions. First, it values the land for producing coca-leaf. This is a tax the narco-insurgency puts to farmers for using that land they need to produce coca-leaf. Second, according to UNODC and Government of Colombia (2014), there is a monopsony in the market of coca-leaf. It puts a price sufficiently high to reward the farmers, but sufficiently low to reduce its own costs. Third, by using violence, it conforms a monopoly in the market of inputs for trading cocaine. We call it a monopsonistic monopoly. Its buyers are the cocaine traffickers which finally trade the cocaine in the final market.

The farmers have no any market power. We consider them as price-takers in an imperfect competitive environment. They have to produce the coca-leaf and also they have to accept its price from the narco-insurgency. They get some profits from the difference between the price of the coca-leaf and the price of legal agricultural commodities; however, they face a systematic risk of being captured for the government by trading illegal goods. These profits are not an incentive but a reward the narco-insurgency uses to sustain the base of the pyramid. The cocaine traffickers are a *Cournot* oligopoly as it is in Arias-R. and Aza (2014).

We organize this paper in the following way. First, we study the land competition between the narco-insurgency and the government. Second, we obtain the coca-leaf supply function from the farmers. Third, we derive a general rule for determining the coca-leaf price and the price of cocaine inputs from the narco-insurgency. Fourth, we estimate the price and volume of cocaine in an oligopolistic context. Finally, we find the equilibrium solution for the model.

2 Land competition

Let $\overline{L}$ be the available land for producing coca-leaf in Colombia. Narco-insurgency (ni) fights against the government (g) for a portion of $\overline{L}$ for producing coca-leaf. Let (L_{ni}, L_g) be the land occupied for each part with $\overline{L} = L_{ni} + L_g$. Let $r(L_{ni}, L_d)$ be the reservation price for the land, from ni and g, with inverse demand function $r(L_{ni}, L_g) = a - b(L_{ni} + L_g)$ for $a, b > 0$.

The ni uses L_{ni} for having L_{cl}, which is the land for producing coca-leaf, with value p_{ni}. Let us assume $L_{cl} = L_{ni}$. On the other hand, g uses L_g for producing L_c, which is land for producing other agricultural commodities with value p_g, also assuming $L_c = L_g$. Let $p_{ni} - p_g = c$ be the difference of valuation from each one. If $c > 0$ we say ni inflates the value of land; in the other case, ni deflates it.

Definition 1 *The profit function for the agent $i = \{ni, g\}$ is given by the following expression:*

$$\pi_i(L_i) = p_i L_i - r(L_{ni}, L_g) L_i$$

Solving this initial state requires finding p_{ni} and p_g, and then L_{ni} and L_g. Government and narco-insurgency compete duopsonistically in the market of land. We solve it by calculating the demand reaction functions for each agent, and the market clearing condition for the land. That is in the following two propositions.

Proposition 1 *The valuation of the land is given by:*

$$p_{ni} = \frac{2a + c - 3b\overline{L}}{2}$$

$$p_g = \frac{2a - c - 3b\overline{L}}{2}$$

Proof : By maximizing the profit functions we have:

$$L = L_{ni} + L_g = \frac{a - (2p_{ni} - p_g)}{3b} + \frac{a - (2p_g - p_{ni})}{3b} = \frac{2a - (p_{ni} + p_g)}{3b} \tag{1}$$

Equalizing it to $\overline{L}$ and using $p_{ni} = p_g + c$ we arrive to the claimed result. □

Proposition 2 *The demand for land is given by:*

$$L_{ni} = \frac{1}{2}\left(\overline{L} - \frac{c}{b}\right)$$

$$L_g = \frac{1}{2}\left(\overline{L} + \frac{c}{b}\right)$$

Proof : Replace the values of p_{ni} and p_g in the system 1. □

The procedure for estimating these values is the following. The government fixes $\overline{p}_g$, the legal price of the land in Colombia. Then, the narco-insurgency fixes $\overline{c}$ for controlling p_{ni} or L_{ni}, according to its purposes: land valuation or land extension. If it puts $\overline{c} > 0$, then it gets a higher p_{ni} but a lower L_{ni}; on the contrary, a $\overline{c} < 0$ allows it to get a higher L_{ni} but a lower p_{ni}.

3 Coca-leaf production

The narco-insurgency has the portion $L_{ni}/\overline{L}$ for the production of coca-leaf (cl). The farmers, located in that region, are obligated for the narco-insurgency to produce cl. They use $L_{cl} = L_{ni}$ and other factors (f_{cl}), such as labor, capital and chemicals, as inputs for producing cl. Let A_{cl} be the technological factor, $0 < \beta < 1$ and $cl(L_{cl}, f_{cl})$ the production function defined by:

$$cl = A_{cl} L_{cl} f_{cl}^{\beta} \tag{2}$$

The government pursues the illegal production of coca-leaf. Let $\sigma_{cl} \in [0, 1]$ be the probability with which the government interdicts the proportion $\tau_{cl} \in [0, 1]$ of cl. Additionally, let p_{cl} be the price of cl, and w the price of f_{cl}. First, we define the cl-profit function and then the cl-supply function.

Definition 2 *The profit function of a cl-producer is given by:*

$$\pi_{cl} = p_{cl} A_{cl} L_{cl} f_{cl}^{\beta}(1 - \tau_{cl}\sigma_{cl}) - p_{ni} L_{cl} - w f_{cl}$$

Proposition 3 *The optimal demand for other factors is given by:*

$$f_{cl}(p_{cl}) = \left[\frac{\beta A_{cl} p_{cl}(1 - \tau_{cl}\sigma_{cl})}{2w}\left(\overline{L} - \frac{\overline{c}}{b}\right)\right]^{\frac{1}{1-\beta}}$$

Proof : Maximize the profit function of Definition 2 in terms of f_{cl}. □

Proposition 4 *The supply function of $cl(p_{cl})$ is given by:*

$$cl(p_{cl}) = \left[\frac{A_{cl}}{2}\left(\overline{L} - \frac{\overline{c}}{b}\right)\left(\frac{\beta p_{cl}(1 - \tau_{cl}\sigma_{cl})}{w}\right)^{\beta}\right]^{\frac{1}{1-\beta}}$$

Proof : Replace Proposition 3 in the cl-production function, equation 2. □

Given the L_{cl}, the farmers are able to increase the cl-production by incorporating new technologies, not only in the production, but the commercialization of cl. In one case, they develop some techniques with workers and chemicals for increasing the production of cl; in the other case, they produce and commercialize the cl in some areas where there is ineffective presence of the government.

Proposition 5 *The price elasticity of the supply of cl is given by:*

$$\varepsilon_{cl,p_{cl}} = \frac{\beta}{1 - \beta}$$

Proof : Apply definition $\varepsilon_{cl,p_{cl}} = \frac{\partial cl}{\partial p_{cl}} \frac{p_{cl}}{cl}$ to cl-supply function of Proposition 4. □

If the farmers are obligated for the narco-insurgency to produce cl, one would expect the cl-supply function would be inelastic to any p_{cl}. That affects the process of estimating p_{cl}. The narco-insurgency uses p_{cl} in two sides: one, it is sufficiently high, relative to legal goods, to reward farmers for producing cl; second, it is sufficiently low to reduce its own cost, because it is the only one able to buy cl.

4 Monopsonistic monopoly

The narco-insurgency is an intermediary between the coca-leaf and cocaine markets. It is the only one able to buy the coca-leaf production and to produce the inputs for trading cocaine (ic). It fixes p_{cl} monopsonistically and it also fixes p_{ic}, price of the inputs, monopolistically. Let us suppose an inverse demand function $p_{ic}(ic) = ic^{-\alpha}$ with $\alpha \in \mathbb{R}$, and a constant returns to scale production function $ic = cl$.

The prices $p_{ic}(ic)$ and $p_{cl}(cl)$ are inverse demand functions because of the narco-insurgency market power. The government could interdict the proportion $\tau_{ic} \in [0, 1]$ of ic-production with probability $\sigma_{ic} \in [0, 1]$. We expect the narco-insurgency to put a low $p_{cl}(cl)$ minimizing its costs and a high $p_{ic}(ic)$ maximizing its returns, and getting really important profits from the difference.

Definition 3 *The profits of producing ic are given by:*

$$\pi_{ic} = p_{ic}(ic)ic(1 - \tau_{ic}\sigma_{ic}) - p_{cl}(cl)cl$$

First, we search for a general rule to estimate p_{cl}.

Theorem 1 *The narco-insurgency fixes $p_{cl}(cl)$ with the following rule:*

$$p_{cl} = \beta(1 - \alpha)(1 - \tau_{ic}\sigma_{ic})cl^{-\alpha}$$

Proof : Using $\pi_{ic} = cl^{-\alpha}cl(1 - \tau_{ic}\sigma_{ic}) - p_{cl}(cl)cl$ for calculating $\frac{\partial \pi_{ic}}{\partial cl} = 0$:

$$cl^{-\alpha}(1 - \alpha)(1 - \tau_{ic}\sigma_{ic}) = p_{cl}\left[1 + \frac{cl}{p_{cl}}\frac{\partial p_{cl}}{\partial cl}\right]$$

$$\frac{(1 - \alpha)(1 - \tau_{ic}\sigma_{ic})}{1 + \frac{1}{\varepsilon_{cl,p_{cl}}}}cl^{-\alpha} = p_{cl}$$

Using Proposition 5 we arrived to the claimed result. $\square$

Second, we search for a general rule to estimate p_{ic}.

Theorem 2 *The narco-insurgency fixes $p_{ic}(ic)$ with the following rule:*

$$p_{ic} = \frac{p_{cl}(cl)}{(1 - \alpha)(1 - \tau_{ic}\sigma_{ic})}$$

Proof : Using $\pi_{ic} = ic^{-\alpha}ic(1 - \tau_{ic}\sigma_{ic}) - p_{cl}(cl)ic$ for calculating $\frac{\partial \pi_{ic}}{\partial ic} = 0$:

$$ic^{-\alpha}(1 - \alpha)(1 - \tau_{ic}\sigma_{ic}) = p_{cl}(cl)$$

From $p_{ic}(ic) = ic^{-\alpha}$ the result follows. $\square$

The p_{cl} increases with $\tau_{cl}\sigma_{cl}$. We expect the narco-insurgency to pay enough to cl-producers to cover not only the marginal cost but also the associated risk. However, p_{cl} decreases with $\tau_{ic}\sigma_{ic}$ due to a lower demand of cl. On the other hand, p_{ic} covers both $\tau_{cl}\sigma_{cl}$ and $\tau_{ic}\sigma_{ic}$. We deduce that the risk of producing and commercializing cl and ic increases importantly the narco-insurgency profits.

5 Cocaine traffickers

Suppose there are n cocaine traffickers. Let $c_i = (1/n)ic$ the cocaine production function for the trafficker $i \in \{1, 2, ..., n\}$. They have not any market power in the ic-market but they are an oligopoly in the cocaine market. Its marginal cost is $p_{ic}(ic) + \mu$, being μ a transactional cost. The government could interdict the proportion $\tau_c \in [0, 1]$ of c_i with probability $\sigma_c \in [0, 1]$.

Let $p_c(c) = \eta c^{-\theta}$ be the inverse demand function of cocaine, being $\theta > 0$ the inverse of the price-elasticity of demand, $\eta > 0$ an exogenous parameter of preference and $c = \sum_{i=1}^{n} c_i$ the total quantity of cocaine traded in the market. The cocaine traffickers have market power by determining the quantity traded and letting the market to define $p_c(c)$.

Definition 4 *The profits of producing c_i are given by:*

$$\pi_{c_i} = p_c(c)c_i(1 - \tau_c\sigma_c) - p_{ic}(ic)c_i - \mu c_i$$

The cocaine traffickers compete each one through quantities. They split the market equally among them through Cournot-Nash competition, and they put an homogeneous price $p_c(c)$ to the final production. The higher n, the higher c but the lower c_i, reducing the market power of each trafficker. However, the higher n the lower $p_c(c)$ closing it to the perfect competitive case.

Theorem 3 *The total quantity of cocaine traded in the market is given by:*

$$c = \left(\frac{\eta(1 - \tau_c\sigma_c)}{\mu + p_{ic}(ic)} \left(\frac{n - \theta}{n} \right) \right)^{\frac{1}{\theta}}$$

Proof : Calculating the n-FOC's $\frac{\partial \pi_{c_i}}{\partial c_i} = 0$ for each i, we have $c = nc_i$. The i's FOC is given by:

$$\eta(1 - \tau_c\sigma_c)((nc_i)^{-\theta} - \theta c_i(nc_i)^{-\theta-1}) = \mu + p_{ic}(ic) \tag{3}$$

Calculating c_i from (3) we arrive to:

$$c_i = \frac{1}{n} \left(\frac{\eta(1 - \tau_c\sigma_c)}{\mu + p_{ic}(ic)} \left(\frac{n - \theta}{n} \right) \right)^{\frac{1}{\theta}}$$

From $c = nc_i$ we have the claimed result. □

Theorem 4 *The cocaine traffickers fix $p_c(c)$ with the following rule:*

$$p_c = \frac{\mu + p_{ic}(ic)}{1 - \tau_c\sigma_c} \left(\frac{n}{n - \theta} \right)$$

Proof : Replace Theorem 3 in $p_c(c) = \eta c^{-\theta}$. □

The $p_c(c)$ is significantly higher than the $p_{ic}(pc)$. That is because μ and the associated risk, which is aggregated from the cl-production to c-production. Additionally, $p_c(c)$ also grows with the inelasticity of the demand for c. The more inelastic demand for c, that is a higher θ, the higher $p_c(c)$, but the lower c_i and c. However, the reduction is compensated by the increment, so there could be more profits.

6 Equilibrium solution

We analyse the vertically integrated structure through backward and forward inductions. First, we analyse the sensibility of the prices for each step. The behaviour of the cocaine market explains the behaviour of the intermediate market, and the later explains the behaviour of the coca-leaf market. Second, we estimate the value functions of the market: prices and quantities for each step. The price and quantities of the coca-leaf market explain those variables from the inputs for trading cocaine market, and the later those variables from the cocaine market.

6.1 Backward induction

Let us consider the effect of changes in p_c on p_{ic} and p_{cl}. It allows us to understand the effect of demand on production. We use p_{cl} and p_{ic} to explain p_c, however, it is determined by transportation costs, the associated risks and the willingness to pay from consumers. There are practical reasons for thinking in c as a source of ic and cl, linking them through the distribution of profits.

First, we analyse the impact of p_c on p_{ic}:

Corollary 1 *The marginal change of p_{ic} as a consequence of a marginal change in p_c is given by:*

$$\frac{\partial p_{ic}}{\partial p_c} = (1 - \tau_c \sigma_c)\left(\frac{n-\theta}{n}\right)$$

Proof : Write $p_{ic} = f(p_c)$ from Theorem 4 as

$$p_{ic} = p_c(1 - \tau_c \sigma_c)\left(\frac{n-\theta}{n}\right) - \mu \tag{4}$$

The result follows. □

We have $\frac{\partial p_{ic}}{\partial p_c} \geq 0$. However, it depends on three parameters. First, the risk of trading cocaine. If the enforcement is effective, it reduces the volume of commercialization and it also reduces the impact of p_c over p_{ic}. Second, the price-elasticity of the demand of c. An inelastic cocaine demand curve (a high θ) allows the cocaine traffickers to get a high p_c increasing marginally the use of inputs for trading cocaine and its price. Finally, the more cocaine traffickers, the more inputs for trading cocaine, and it increases its price.

Second, we analyse the impact of p_c on p_{cl}:

Corollary 2 *The marginal change of p_{cl} as a consequence of a marginal change in p_c is given by:*

$$\frac{\partial p_{cl}}{\partial p_c} = (1-\alpha)(1 - \tau_c \sigma_c)(1 - \tau_{ic}\sigma_{ic})\left(\frac{n-\theta}{n}\right)$$

Proof : Replace p_{ic} from (4) in $p_{cl} = f(p_{ic})$ from Theorem 2 to have:

$$p_{cl} = \left[p_c(1 - \tau_c \sigma_c)\left(\frac{n-\theta}{n}\right) - \mu\right](1-\alpha)(1 - \tau_{ic}\sigma_{ic})$$

The result follows. □

We have $\frac{\partial p_{cl}}{\partial p_c} \geq 0$. The risk of trading both cocaine and inputs for trading cocaine reduces the impact of p_c on p_{cl}. The volume of the market of cocaine and its price-elasticity of demand have a similar role as it is in the later case. Additionally, an inelastic inputs demand curve (a high α) allows the narco-insurgency to get a high p_{ic}, increasing marginally the use of coca-leaf and its price. The changes in p_c have a more important impact over p_{ic} than it is over p_{cl}, so the narco-insurgency is particularly interested in the cocaine market if p_c is growing.

Corollary 3 *The marginal change of p_{cl} as a consequence of a marginal change in p_{ic} is given by:*

$$\frac{\partial p_{cl}}{\partial p_{ic}} = (1-\alpha)(1-\tau_{ic}\sigma_{ic})$$

Proof : Use $p_{cl} = f(p_{ic})$ from Theorem 2. □

We have $\frac{\partial p_{cl}}{\partial p_{ic}} \geq 0$. It is because of the increment in the *cl*-demand from a more profitable *ic*-market. The magnitude of this effect depends inversely on the risk of producing *ic*, and its price inelasticity of the demand. In general, the p_{cl} grows less than p_{ic} and the narco-insurgency gets the difference. That is an important way this group obtains profits from the cocaine market in Colombia. The other way is the tax for producing coca-leaf.

6.2 Forward induction

We are going to estimate the main variables of our model by considering the order *cl-ic-c*. The narco-insurgency fixes p_{cl} by using the rule in Theorem 1. The farmers use this price to determine *cl* in its supply function of Proposition 4. The variables p_{cl} and *cl* are completely determined by the technology, the available land for producing coca-leaf, the price-elasticity of *cl* and *ic* and the risk of *cl* and *ic*.

Corollary 4 *The p_{cl} is given by*

$$p_{cl} = \left(\beta(1-\alpha)(1-\tau_{ic}\sigma_{ic}) \left[\frac{2}{A_{cl}} \frac{b}{b\overline{L} - \overline{c}} \left(\frac{w}{\beta(1-\tau_{cl}\sigma_{cl})} \right)^{\beta} \right]^{\frac{\alpha}{1-\beta}} \right)^{\frac{1}{1+\alpha\varepsilon}}$$

Proof : Use $cl = f(p^{\varepsilon})$ from Proposition 4 and replace it in p_{cl} from Theorem 1. □

Corollary 5 *The cl-production is given by*

$$cl = \left(\left[\frac{A_{cl}}{2} \frac{b\overline{L} - \overline{c}}{b} \left(\frac{\beta(1-\tau_{cl}\sigma_{cl})}{w} \right)^{\beta} \right]^{\frac{1}{1-\beta}} (\beta(1-\alpha)(1-\tau_{ic}\sigma_{ic}))^{\varepsilon} \right)^{\frac{1}{1+\alpha\varepsilon}}$$

Proof : Use p_{cl} from Theorem 1 and replace it in $cl = f(p^{\varepsilon})$ from Proposition 4. □

The risk in the *cl*-market increases p_{cl}, but an effective interdiction in the *ic*-market reduces it. An inelastic demand curve for *ic* reduces both p_{cl} and *cl*. However, it allows the narco-insurgency to put a high p_{ic} getting important profits from a higher difference $p_{ic} - p_{cl}$. We estimate the narco-insurgency variables forward.

The second stage is the production of inputs for trading cocaine. We use the p_{cl} and cl for estimating p_{ic} and ic. The in-elasticity of ic-demand and the risk of trading cl and ic increase p_{ic}, so it is really greater than p_{cl}. Additionally, these factors reduce the volume of ic traded. The effect of technology, wages and available land is clear enough.

Corollary 6 *The p_{ic} is given by*

$$p_{ic}=\left(\frac{\beta}{((1-\alpha)(1-\tau_{ic}\sigma_{ic}))^{\alpha\varepsilon}}\left[\frac{2}{A_{cl}}\frac{b}{b\overline{L}-\overline{c}}\left(\frac{w}{\beta(1-\tau_{cl}\sigma_{cl})}\right)^{\beta}\right]^{\frac{\alpha}{1-\beta}}\right)^{\frac{1}{1+\alpha\varepsilon}}$$

Proof : Replace p_{cl} from Corollary 4 in p_{ic} from Theorem 2. $\square$

Corollary 7 *The ic-production is given by*

$$ic=\left(\frac{\beta}{((1-\alpha)(1-\tau_{ic}\sigma_{ic}))^{\alpha\varepsilon}}\left[\frac{2}{A_{cl}}\frac{b}{b\overline{L}-\overline{c}}\left(\frac{w}{\beta(1-\tau_{cl}\sigma_{cl})}\right)^{\beta}\right]^{\frac{\alpha}{1-\beta}}\right)^{-\frac{1}{\alpha(1+\alpha\varepsilon)}}$$

Proof : Use Corollary 6 and $ic=p_{ic}^{-\frac{1}{\alpha}}$. $\square$

Finally, we could estimate the main values of the cocaine market. We use the expression p_{ic} in Corollary 6 into c and p_c from Theorems 3 and 4. We find that the aggregated risk from cl, ic and c increases p_c which, with μ, is really huge. As a remark, we could write $p_c > p_{ic} > p_{cl}$ because of the associated risk in each stage of the vertical integration.

Corollary 8 *The p_c is given by*

$$p_c=\frac{\mu+\left(\frac{\beta}{((1-\alpha)(1-\tau_{ic}\sigma_{ic}))^{\alpha\varepsilon}}\left[\frac{2}{A_{cl}}\frac{b}{b\overline{L}-\overline{c}}\left(\frac{w}{\beta(1-\tau_{cl}\sigma_{cl})}\right)^{\beta}\right]^{\frac{\alpha}{1-\beta}}\right)^{\frac{1}{1+\alpha\varepsilon}}}{1-\tau_c\sigma_c}\left(\frac{n}{n-\theta}\right)$$

Proof : Replace p_{ic} from Corollary 6 in p_c Theorem 4. $\square$

Corollary 9 *The c-production is given by*

$$c=\left(\frac{\eta(1-\tau_c\sigma_c)}{\mu+\left(\frac{\beta}{((1-\alpha)(1-\tau_{ic}\sigma_{ic}))^{\alpha\varepsilon}}\left[\frac{2}{A_{cl}}\frac{b}{b\overline{L}-\overline{c}}\left(\frac{w}{\beta(1-\tau_{cl}\sigma_{cl})}\right)^{\beta}\right]^{\frac{\alpha}{1-\beta}}\right)^{\frac{1}{1+\alpha\varepsilon}}}\left(\frac{n-\theta}{n}\right)\right)^{\frac{1}{\theta}}$$

Proof : Replace p_{ic} from Corollary 6 in p_c Theorem 3. $\square$

The prohibition policy, translated in the associated risk and μ, is a strong reason for the high prices (returns) in each stage of the market. These returns are not equitably divided among the participants, making some of them particularly interested in its correct functioning. Cocaine traffickers and narco-insurgency get the most returns, so they use their violent capacity to sustain it and promote it.

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