To be or not to be a drug trafficker:  
Modeling criminal occupational choices

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Abstract

Violent deaths, kidnapping and extortion have spiked in Mexico’s border towns since 2004. Using a formal model and case studies from Mexico, I argue that such phenomena are partially explained by (a) a change in the politics of organized crime, (b) changes in the composition of illegal labor markets, and (c) the incentives generated at legal labor markets. With democratization, Mexico’s government became unable to keep performing its role as central enforcer of territorial boundaries between drug cartels. As cartels became guardians of their own territories, a need to recruitment new cartel members to form private armies emerged. As a result, an illegal labor market –so far closed to non-blood-related individuals– opened and modified the incentives to join/remain in the legal labor markets. The outcome was the emergence of a new generation of drug employees that (a) disdain old mafia laws, (b) are more violent and (c) are also more prone to take part of other forms of “entrepreneurial” illegal occupations such as kidnapping and extortion.
“You live in a nice area of Tijuana or San Diego. You’re driving a decent car. (...) But you’re not driving the Porsche, the Lamborghini, the Ferrari, the Mercedes, the new Beamer that just came out.”  

The beginning of this century has saw the emergence of a new Mexican mafiosi. Unlike old drug cartel members, new dealers are younger, increasingly belong to urban classes and are much more educated. Furthermore, those in charge of cartel’s protection, in particular hired assassins, are much better trained in the use of violence. Actually, most of them have previous experience in formal legal enforcement institutions such as the army or the police. They are generally more brutal and break old mafia rules. Until recently, cartels were known for their respect towards the family members of their leaders (Navarro, 2009). Daughters, sons and wives were normally left out of the battles unless they were directly involved in the organization. Now, complete families have been killed, raped and tortured with unprecedented levels of cruelty and violence. More than one in ten of all drug related executions have signs of torture. The bodies are often riddled with messages from one cartel to another. They warn each other of who will be the next. Mexico has long been a player in the illegal drug industry but this type of violence, openly cruel and bold, has not precedent. The old Mexican mafiosi are peaceful next to the new ones.

Furthermore, border towns where drug trafficking used to be the main source of criminality are now increasingly facing other forms of organized crime: extortions, kidnappings, prostitution and human trafficking have become common. Business located at Ciudad Juarez, Nuevo Laredo, Tijuana and other border cities have become easy prey for extortionists which ask for monthly fees of up to 5,000 USD in exchange for “protection” or as a rent to avoid being kidnapped or assassinated. Yet, kidnappings are far to be targeted exclusively to high/middle class Mexicans. A new trend towards kidnapping poor immigrants waiting to illegally cross the US-Mexican border has emerged. Drug cartel members take them captive until they pay small fees of 200 or 300 USD. Failure to pay generally leads to their killing. Fear has silenced the media. Newspaper editors, journalists and managers have increasingly been targeted by drug organizations. In 2010, Mexico became for the first time in its history the most dangerous

1Middle-class lawyer from Tijuana who turned into drug trafficker explaining why the criminal labor market is attractive
country for journalism. By February 2010, more journalist had been assassinated in Mexico than in Iraq or in the Philippines. One of the most immediate effects of drug violence has been an increase in immigration. Since 2003, the number of asylum petitions from Mexicans to the US has five-folded, going from 35 per year to 178 in 2008. Fearing traffickers, Mexicans are increasingly migrating into the US looking for the protection and security that they cannot find at home (Sierra 2009, Ramírez 2009). Large number of Mexican business, particularly restaurants, have moved into El Paso, Laredo and San Diego.

In this paper, I propose an explanation for such changes in mafia behavior. Making use of two main streams of labor economics literature (a) the classic approach of Becker (1968) where individuals face single criminal vs. legitimate market wages and (b) the Roy (1951) model perspective of different returns to skills in the criminal vs. legitimate labor market sectors, as well of (c) a analysis of changes in the politics of organized crime in Mexico, I argue that changes in the forms of violence can be understood when analyzing politics, legal and illegal labor markets. Legal and illegal labor markets interacted for the first time when the old informal rules between Mexico’s authoritarian regime and drug cartels broke as a result of Mexico’s democratization. In short, the emergence of new, more violent mafiosi cannot be explained unless a holistic portray of the politics and economics of Mexican organized crime done.

The paper is organized as follows. In the first section, I describe the way in which political changes have generated a larger demand for drug cartel members. It details how the break of traditional political arrangements between cartels and government lead to the emergence of a new illegal labor market. In the second section, I develop a theoretical model to asses how this new illegal labor market interacts with the legal ones generating different incentives for different individuals to either join or not drug cartels. My model predicts that the incentives will attract more “efficient” criminals with higher entrepreneurial abilities and higher tendencies towards violent behavior. In the third section, I study the case of Mexico and show how, the results of my model are compatible with the experiences of such country. When Mexican cartels began recruiting outsiders, a more violent and entrepreneurial mafiosi emerged. Violence changed in form; it became more cruel and targeted. In this section, I also present some policy recommendations that can be extracted from the model. Finally, I conclude by summarizing my main results.
A market for drug traffickers

Following the Mexican revolution, Mexico was ruled by a single hegemonic party—the Institutional Revolution Party (PRI)—for more than seventy years. During the PRI regime, authorities agreed to allow drug cartels to perform their illegal activities as long as a strict code of conduct was respected (Resa Nestares 2001b). As Ricardo Monreal, the former Governor of the state of Zacatecas and ex-PRI official described, authorities used “extra-official mechanisms” to enforce a set of informal rules that every cartel had to follow (Guerrero, 2009). Among the most important one was an strict requirement of order and respect for cartel territories. The size and borders of territories were delimited and granted by the PRI and all cartels had to respect them.

The enforcement of these rules was possible because of the strict control that the PRI-regime had over state and municipal governments, as well as other branches of government such as the judicial authorities and local polices. The outcome was a win-win situation in which the government could “tax” cartels’ profits via bribes, and the cartels could perform their business without been systematically prosecuted. PRI’s centralized control over all levels of government was crucial for such agreement to remain stable. Drug trafficking requires all levels of governments to agree on not prosecuting; the defection of a single level could block trafficking completely. As such, having a single ruling party was the only way to ensure sustainable coordination. Bribing is also more efficient with a centralized government. One single, large bribe could be paid by each cartel to the PRI, and it would be the PRI itself who would distribute it among all bureaucracies. Bureaucracies won’t need to compete between them to get the higher share of the bribe. In short, Mexico’s authoritarian rule ensured that corruption were viable and stable.

Democracy changed the picture. In 2000, Vicente Fox a charismatic leader of right opposition party (National Action Party, PAN) was elected president in what many analysts believe to be the first truly democratic election in Mexican history. The arrival of Fox in power brought several changes among them a dramatic redefinition of the relationship between the government and drug cartels. Mexico’s democratization reduced government centralization, weakening Fox’s

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2The other nine rules included (1) No dead people in the streets, (2) No drugs in the schools, (3) No media scandals, (4) Periodic seizure of illegal drugs and imprisonment of lower level traffickers, (5) Generation of economic revenues for small, poor communities, (6) No gangs, (7) No deals with other levels/branches of government and/or bureaucracy., (8) Mistakes are to be punished with imprisonment, not death, (9) Revenues must return to Mexico in the form of investments.
ability to enforce the old pact (Patin 2007, Valle 2009). With the advent of democracy the federal government became only one out of many government actors. Cartels now had to pact with different parties at each of the different levels of government. With several uncoordinated actors collecting bribes—each one of which would have a dominant strategy to charge bribes equal to the marginal cost of production—engaging in corruption with the government became privately expensive for cartels. Under democracy, each level of government ignores cross elasticities of demand and maximizes its own bribe revenues rather than the aggregate bribe revenue. As a result, when all bribes are added, the total bribe is larger than the marginal benefits that cartels would gain by engaging in corruption. Because cartels cannot pact with a government that is divided, they take enforcement in their own hands.

The marginal value of engaging in corruption for cartels also diminished because of changes in the relative power of cartels and Mexican authorities. The Mexican government became weaker. The PAN had little ruling experience and had weaker connections with the old mafia. Coordinating and information sharing became relatively more expensive. The PAN also faced much more immediate concerns such as reforming an electoral, judicial and legislative system built to favor the old regime. At the same time that Mexico was going into this major political transition, Mexican cartels were becoming more powerful because of the international context. Before the nineties, Colombia was keeping most of the revenues and “hired” Mexican cartels to introduce drugs across the US-Mexico border. The larger share of the drug revenues went to Colombian hands. Yet, Plan Colombia and president Uribe’s changed the balance of power. Since the late eighties, Mexico slowly started to take over the drug business. Because of US pressure, Colombian traffickers were being systematically targeted by the Colombian government. The new security policies put in place in Colombia made money laundering more costly, leading to Colombian lords to pay their Mexican partners in kind. Paid with cocaine, Mexican cartels started to engage in the drug business not only as external contractors but as independent firms. Furthermore, both the US and Colombia increased their surveillance of the Caribbean, increasing the dangers of introducing cocaine via Florida. A larger and larger share of the total drug production became to be introduced via Mexico. In general, trafficking moved from Colombia to Mexico. Mexican cartels appropriated a larger share of the profits and became more powerful. The balance of power between Mexican cartels and government changed. For the Mexican cartels, the alternative to corruption, that is to say keep trafficking drugs without having to give a share of their profits to the Mexican government, became more
and more viable. In other words, the outside option—openly opposing the Mexican government instead of bribing it—became relatively less costly.

In short, it was the conjuncture of (a) democratization, (b) increasing preeminence of the Mexican mafia over the Colombians, and (c) the inexperience of PAN’s government what broke the bribing equilibria. The contract to respect each other cartel’s territory became unbinding and as such, cartels realized that without the PRI as central enforcer, they would have to take care of their territories themselves. It became cartel’s responsibility to enforce compliance with territorial boundaries.

Cartels needed private armies to defend their territories. New members would have to be recruited. In previous years, drug traffickers employed mostly family members or close friends. The drug trafficking labor market was relatively closed to outsiders as becoming a drug dealer required connections and intense loyalty evaluations. Under the new circumstances, family could not provide neither the number, nor the quality of the employees required. A new market for drug employees emerged and whether to join it or not became a micro economic decision. Politics changed organized crime incentives which in turn changed economic incentives for Mexicans. Everybody could become a drug trafficker now. Who would do it?

The following section presents a formal model to understand who would become a drug trafficker and whether the new traffickers will be different from the old ones. I show that answers are to be found in differences in (a) wage structure, (b) state capacity and (c) individual’s levels of risk aversion. By showing the incentives that people follow to become a drug trafficker, and how those incentives interact with the legal labor market, my model predicts that the recruitment of a new generation of drug traffickers in Mexico should bring into business more violent and entrepreneurial individuals.

Modeling criminal occupation choices

The basics

Individuals allocate their time $t$ in either $i$ illegal activities (drug trafficking) or $l$ legal activities. Time used in illegal activities is denoted as $t_i$ and $t_l$ denotes time used at legal activities.
Individuals are endowed with one unit of time such that

\[ t_l + t_i = 1 \]

There are two periods: the PRI-regime \( P_{pri} \) (when drug cartels and government could pact via bribes) and the PAN-regime \( P_{pan} \) (when because of state weakness, decentralization, and changes in the international context such pact became unviable). Assume that during \( P_{pri} \) there were no entry costs for legal activities but illegal activities remained closed to the general population. Only those who belonged to traditional cartel families could have \( t_i^* > 0 \). During \( P_{pan} \), cartels began to expand their recruitment mechanisms. Assume that during \( P_{pan} \) there are no entry costs for either legal or illegal activities.

Returns to illegality \( I \) and legality \( L \) are given by

\[
\begin{align*}
L &= t_l * w_l \\
I &= t_i * w_i
\end{align*}
\]

where

\[
\begin{align*}
w_l &= m_l + e_l \\
e_l &\sim N(0, \sigma_l^2) \\
e_l &= f(\xi, \nu, \tau)
\end{align*}
\]

\[
\begin{align*}
w_i &= m_i + e_i \\
e_i &\sim N(0, \sigma_i^2) \\
e_i &= f(\xi, \nu, \tau)
\end{align*}
\]

Equations (1) and (2) can be understood as describing earnings distributions composed by a baseline salary (\( m_l \) and \( m_i \)) and a payment to non-observable abilities (\( e_l, e_i \)). Both \( w_l \) and \( w_i \) can take negative values. A very unable trafficker may lose the merchandize during transportation and would have to pay for it; a very incompetent entrepreneur in the legal labor market
may end up with liabilities. If $e_l$ or $e_i$ are positive, individual has higher ability than average and thus, receives a higher wage.

Non-observable abilities are a modeled as a function of tastes for violence $\nu$, entrepreneurial ability $\xi$ and others $\tau$ where $\frac{\partial e_l}{\partial \xi} > 0$, $\frac{\partial e_l}{\partial \nu} < 0$, $\frac{\partial e_i}{\partial \xi} > 0$, $\frac{\partial e_i}{\partial \nu} > 0$, $\frac{\partial^2 e_i}{\partial \nu^2} < 0$, $\frac{\partial e_i}{\partial \tau} > 0$. Note that $e_l$ and $e_i$ are both increasing in $\xi$ and $\tau$, but only $e_i$ is increasing in $\nu$. Let $\sigma^2$ be the variance in individuals’ non-observable abilities.

There are good reasons to believe that entrepreneurial ability is rewarded in both legal and illegal labor markets (Fairlie 2002, Rios 2009, Fairlie and Woodruff 2004). Studies of legal labor markets with credible instruments for entrepreneurial ability have proven that such ability actually increases income (McKenzie and Woodruff 2006). The illegal labor markets seem to reward entrepreneurs also. Successful drug dealers possess unobserved characteristics, such as low levels of risk aversion and a preference for autonomy, which are highly correlated with entrepreneur ability. Actually, studies that have tracked the professional careers of criminals when liberated from prison show that it is those who were convicted by drug dealing charges, the ones with higher probability of becoming successful entrepreneurs (Fairlie 2002). This makes sense if we consider the way in which the drug markets operate. Success or failure among the drug dealers and smugglers requires a good deal of business skills. Marihuana dealers have proven to have highly sophisticated strategies to maximize his clientele while minimizing his exposure to arrest and competition (Adler 1985 and Sullivan 1989 as cited by Fairlie 2002).

Violence proneness may well be rewarded at the criminal markets but is not rewarded at the legal ones. Aggressiveness, violence and braveness are needed to be a drug trafficker because one of their main activities is murdering. Being violent is also necessary to advance the drug hierarchy (Corchado 2009c, Sierra 2009, Rios 2009a). Most of the Mexican drug lords started their careers as bodyguards of another lord. Being a part of the main cortege of a drug lord is a highly desired job. They access it, candidates have to show low risk aversion and proneness toward violent behavior. The reasons are simple. Risking their lives to close a deal or protect other cartel members is perceived as a sign of commitment, and being violent increases the re-

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3I chose $\nu$ and $\xi$ because the impact of such abilities in legal/illegal labor markets outcomes have been pretty well researched. Yet, $\xi$ could also be thought as a vector of abilities that are rewarded at both the legal and illegal labor markets (out of which entrepreneurial ability would be only one) and $\nu$ as a vector of abilities that are penalized at the legal labor markets but rewarded at the illegal ones –such as tasted for violence.
spectability of the cartel. Violence is useful to make the enemy fearful. By killing their enemies with cruelty, enemies are more efficiently deterred from threaten cartel’s interests. Indeed, the very best of the drug lords are such because they have manage to portray themselves as fearful and cruel individuals.

I define $\rho$ as the correlation between $e_l$ or $e_i$. Let $\rho_\xi > 0$ be the correlation between $e_l$ and $e_i$ with respect to entrepreneurial ability, $\rho_\nu < 0$ be the correlation between $e_l$ and $e_i$ with respect to tastes for violence, and $-1 < \rho_\tau < 1$ be the correlation between $e_l$ and $e_i$ with respect to other abilities.

Net returns of $t_i$ are uncertain and conditional to whether an individual is (or not) captured by the police. With probability $p(t_i)$ the individual is captured and is forced to pay a fine $F(t_i) > 0$. Assume that $p' > 0$, $p'' > 0$, $p(1) \leq 1$, and $F' > 0$. The probability of being captured and the fine increase as time devoted to illegal activities increases. The probability of being captured is a convex function (Reuter 1993). Because of law enforcement difficulties, if an individual is a full time criminal, the probability of being captured can be less than one.

Individuals’ utility function is given by $U(w)$ where $w$ is total income and has two potential realizations. With probability $p(t_i)$ $w = w_u$, where $w_u$ is total income when individual was captured (criminal was unsuccessful). With probability $(1 - p(t_i))$ $w = w_s$, where $w_s$ is total income when individual was not captured (criminal was successful).

Both potential realizations of $w$ can be decomposed as:

Following convention, $U'(w) > 0$, $U''(w) < 0$. Thus, $U(w_s) > U(w_u)$, $U'(w_s) < U'(w_u)$ and $U''(w_s) < U''(w_u)$. Note also that given that $F' > 0$, $\frac{dw_s}{dt_i} > \frac{dw_u}{dt_i}$.

4Note that rewards to violent behavior are concave. Excessive violence is not good for trafficking either. Extremely violent individuals may hurt the cartel by increasing the attention that enforcement institutions pay to drug trafficking. Extremely violent cartels are the first ones to be tackled by governments. For the purpose of simplicity, I assume that violence is a concave, positive function.

5Note that time is assumed to be proxy for the size of the crimes (i.e. each hour that criminals spend in criminal activities yields a fixed number of same sized crimes).
Individuals maximization problem will be given by:

\[
\begin{align*}
\max_{t_i,t_l} & \quad p(t_i)U[t_iw_l + t_iw_i - F(t_i)] + (1 - p(t_i))U[t_lw_l + t_iw_i] \\
\text{s. t.} & \quad t_i \geq 0; \\
& \quad t_l \geq 0; \\
& \quad t_i + t_l = 1 
\end{align*}
\]

Which can also be stated as:

\[
\begin{align*}
\max_{t_i} & \quad p(t_i)U[(1 - t_i)(w_l) + (t_i)w_i - F(t_i)] + (1 - p(t_i))U[(1 - t_i)(w_l) + (t_i)w_i] \\
\text{s. t.} & \quad t_i \geq 0 
\end{align*}
\]

**Main results**

In \(P_{pri}\), equation (3) becomes trivial since general population individuals can only choose \(t_i^* = 0\).

In \(P_{pan}\), individuals solve equation (3) yielding the following FOC:

\[
p'(t_i)[U(w_u) - U(w_s)] - p(t_i)U'(w_u)F' + (w_i - w_l)[EU'(w)] = 0
\]

(4)

where \(EU'(w) = [(1 - p(t_i))U'(w_s) + p(t_i)(U'(w_u))]\) and can be conceptually understood as the expected change in utility when wages change.

Note that in \(P_{pan}\) a new labor market is open and new incentives are generated. Now, individuals can choose a \(0 \leq t_i^* \leq 1\). In particular, we can identify three potential solutions for \(t_i^*\):

- if FOC > 0 \(t_i^* = 1\),
- if FOC = 0 \(0 \leq t_i^* \leq 1\) and
- if FOC < 0 \(t_i^* = 0\).

A necessary condition for an individual to become criminal is that his expected wage as a criminal is larger than his expected wage in the legal labor market. Yet, even if the expected wage at illegality is higher than at the legal markets, an individual may not become a criminal. An individual with (a) \(U(w)\) sufficiently concave, (b) facing a sufficiently large probability of conviction or fine may not join the illegal markets even if \(w_i > w_l\). It can be shown that for a given \(w_i > w_l\) to have a solution in the range \(0 < t_i^* < 1\) we need
\[(w_i - w_l)[EU'(W)] \geq p'(t_i)[U(w_u) - U(w_s)] - p(t_i)U'(w_u)F'\]

Because \(EU'(W) = U'(w_s) + p(t_i)(U'(w_u) - U'(w_s))\), \(EU'(W)\) will increase as the concavity of \(U(w)\) increases. Intuitively, when the probability of conviction or the fine increases, the value of \(EU'(W)\) becomes bigger (or less negative). Actually, it can be shown that:

\[
\frac{dEU'(W)}{dp} = U'(w_u) > 0
\]

\[
\frac{dEU'(W)}{dF} = -p(t_i)U''(w_u) > 0
\]

Risk aversion also matters. If \(\frac{1}{p(t_i)} > -\frac{U''(w_u)}{U'(w_u)}\), increasing the probability of capture is a more efficient deterrent for crime than increasing the fines.

**Proposition 1:** The fraction of time spent in criminal activities decreases as wages in the legal labor markets become more unequal.

Recall that \(w_i\) and \(w_l\) are determined partially by stochastic processes. Thus, from equations (1) and (2) we can show that if \(w_i > w_l\), the upper-bound fraction of time spent in criminal activities will be given by:

\[
P = Pr[(e_i - e_l) > (m_l - m_i)]
\]

\[
= 1 - \Phi(m_l - m_i)
\]

where \((e_i - e_l) \sim N(0, \sigma_i^2 + \sigma_l^2)\), and

\[
\Phi(m_l - m_i) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{(m_l - m_i)} \exp[-\frac{x^2}{2(\sigma_i^2 + \sigma_l^2)}]dx.
\]

**Proposition 2:** Changes in legal wage inequality increases criminal activities less than changes in baseline salaries.

As equations (5) and (6) show, both \(m_i\) and \(m_l\) affect \(P\) quadratically, while \((\sigma_i^2 + \sigma_l^2)\) affects
it linearly.

Note that \( \frac{dP}{dm_l} > 0, \frac{d(m_l - m_i)}{dm_i} < 0, \frac{d(m_l - m_i)}{dm_i} > 0 \) and \( \frac{dP}{d(\sigma_l^2 + \sigma_i^2)} < 0 \).

Furthermore, \( \left| \frac{dP}{d(m_l - m_i)} \right| > \left| \frac{dP}{d\sigma_i^2} \right| > \left| \frac{dP}{d\delta_l^2} \right| \). In other words, people will be more prone towards legality if average illegal wage is reduced than if the distribution of illegal wages is truncated.

**Proposition 3:** As inequality in legal wages increases, talented workers feel less attracted towards illegality.

Wage inequality in legal labor markets has indeed some positive externalities. In a world where \( 0 > t_i^\ast > 1 \), and given that both \( w_i \) and \( w_l \) are determined partially by a stochastic distribution of ability, \( w_i^\ast \) and \( w_l^\ast \) will be endogenously determined. Using equation \( (5) \) and \( (6) \), it can be shown that:

\[
E(w_i|w_i > w_l) = m_i + \frac{\sigma_l \sigma_i}{\sigma_i^2 + \sigma_l^2} (\frac{\sigma_i}{\sigma_l} - \rho) \lambda \tag{7}
\]

\[
E(w_l|w_i > w_l) = m_l + \frac{\sigma_l \sigma_i}{\sigma_i^2 + \sigma_l^2} (\rho - \frac{\sigma_l}{\sigma_i}) \lambda \tag{8}
\]

where

\[
\lambda = \frac{\Phi(m_l - m_i)}{1 - \Phi(m_l - m_i)}
\]

The second terms in \( (7) \) and \( (8) \) define the kinds of selection biases generated by individuals’ income-maximizing behavior. Equation \( (7) \) shows that the average wage of new criminals may be better or worse than the average criminal wage before occupational change according to whether \( \rho > \frac{\sigma_l}{\sigma_i} \) or not. Similarly, equation \( (8) \) shows that the average wage of a legal employee, once criminals have left the legal labor market, may be higher or lower than the average legal wage before occupational changes depending on \( \rho > \frac{\sigma_l}{\sigma_i} \).

Define \( Q_i = E(w_i|w_i > w_l) - E(w_i) \) and \( Q_l = E(w_l|w_i > w_l) - E(w_l) \). From equation \( (7) \)
and (8) when know that, when only considering \( \xi \), \( Q_i > 0 \) and \( Q_l < 0 \) because

\[
\frac{\sigma_l}{\sigma_i} < \rho < \frac{\sigma_i}{\sigma_l}
\]

Yet, when only considering \( \nu \), \( Q_i < 0 \) and \( Q_l > 0 \) because

\[
\frac{\sigma_l}{\sigma_i} > \rho > \frac{\sigma_i}{\sigma_l}
\]

Consider what happens to \( Q_i \) when \( m_l \) changes:

\[
\frac{dQ_i}{dm_l} = \frac{\sigma_l \sigma_i}{\sigma_l^2 + \sigma_i^2} \left( \frac{\sigma_i - \rho}{\sigma_i} \right) \frac{\delta \lambda}{\delta u}
\]

Because \( \frac{\delta \lambda}{\delta (m_l - m_i)} > 0 \) the sign of \( \frac{Q_i}{m_l} \) will be determined by the sign of \( \rho \). When \( \rho > 0 \) and sufficiently large – as is the case for \( \xi - \frac{Q_i}{m_l} < 0 \). A larger \( Q_i \) can be interpreted as larger entrepreneurial drain from the legal to the illegal labor market. Thus, as \( m_l \) increases, the rate of individuals that become criminals is going to be reduced.

Consider what happens to \( Q_i \) when \( \sigma_l \) changes:

\[
\frac{dQ_i}{d\sigma_l} = \frac{\sigma_l^2}{(\sigma_l^2 + \sigma_i^2)^3} (\rho^2 - 1) \lambda - \frac{\sigma_i^2}{(\sigma_l^2 + \sigma_i^2)^3} (\frac{\sigma_i - \rho}{\sigma_i} (1 - \frac{\sigma_i}{\sigma_l} \rho) \frac{d\lambda}{d(m_l - m_i)} (m_l - m_i)
\]

Because \( |\rho| \leq 1 \), the first term is always going to be non-positive. The sign of \( \frac{Q_i}{\sigma_l} \) will be determined by the signs of \( (\frac{\sigma_i}{\sigma_l} - \rho)(1 - \frac{\sigma_i}{\sigma_l} \rho) \) and \( u \). For simplicity, let’s assume that \( t_i^* \geq 0 \) such that \( (m_l - m_i) > 0 \). Then, we know that \( \rho \xi > 0 \), \( (\frac{\sigma_i}{\sigma_l} - \rho \xi) < 0 \), \( (1 - \frac{\sigma_i}{\sigma_l} \rho \xi) < 0 \), and \( \frac{Q_i}{\sigma_l} < 0 \).

In short, if skills in legal and illegal market are positively correlated (as is the case for \( \xi \)), talent (high ability individuals) drains from legality into illegality unless legal wages are sufficiently unequal. If skills in legal and illegal markets are negatively correlated (as is the case for \( \nu \)), talent remains in legal labor markets independently of legal wage distribution.

The logic is straightforward. As legal wage inequality increases, higher ability entrepreneurs get access to more right-tale wages which reduces the relative attractiveness of drug traffic.
Talent drain from the legal to the illegal industry is reduced.\textsuperscript{6}

The following section applies the results of the model to Mexico’s drug trafficking industry. It analyzes the emergence of a new drug trafficker and set forward an hypothesis to explain the causes of changes in forms of violence. In particular, I argue that Mexican organized crime has become more violent and has diversified its activities because illegal markets offer higher expected income to very skilled individuals. The reasons are to be found in the comparison between legal and illegal labor market inequality.

\textbf{Who becomes a drug trafficker?}

There are good reasons to believe that the variance of illegal wages at Mexico’s drug trafficking industry are larger than at Mexico’s formal industries. Studies of criminal labor markets and my own field work (Levitt and Venkatesh 1998, Corchado 2009c) have shown that income differentials tend to be higher in illegal markets. Salaries at both the bottom/top of the illegal income distribution are much lower/higher than legal incomes. Indeed, wage distribution in legal labor markets at Mexico is fairly variable. Yet, if we restrict our attention to young, single men with few formal education –which are precisely the main employee pool for criminal activities– the distribution of wages become much more equal. Wage inequality within this group is small. The opportunities of legal employment for this group are limited to jobs within the working class. In such positions, large increases in income and class mobility are rare.

Class mobility in Mexico tends to be tied to college education, particularly private college education which is not accessible for low income individuals. A degree from a public institution does not ensure getting a well paid job. Actually, eight out of ten graduates from 16 different disciplines at UNAM (the main public university at Mexico City) are unemployed and, out of the two that find a job, the average annual wage is only 7,200 USD. Studying also requires a good deal of patience which may not be shared by all young men. Getting a degree takes at

\begin{equation}
\frac{\sigma_l \sigma_i^2}{(\sigma_l^2 + \sigma_i^2)^3} (\rho^2 - 1) \lambda < \frac{\sigma_l \sigma_i^2}{(\sigma_l^2 + \sigma_i^2)^3} \frac{\sigma_i}{\sigma_l} (1 - \frac{\sigma_i}{\sigma_l}) \frac{\delta \lambda}{\delta (m_l - m_i)} (m_l - m_i)
\end{equation}

increases in wage inequality will generate larger (not smaller) entrepreneurial talent drains from the legal to the illegal industry.

\textsuperscript{6}Note that, in a market where \((m_l - m_i) < 0\) such that

\begin{equation}
\frac{\sigma_l \sigma_i^2}{(\sigma_l^2 + \sigma_i^2)^3} \frac{\sigma_i}{\sigma_l} (1 - \frac{\sigma_i}{\sigma_l}) \frac{\delta \lambda}{\delta (m_l - m_i)} (m_l - m_i)
\end{equation}

\begin{equation}
\frac{\sigma_l \sigma_i^2}{(\sigma_l^2 + \sigma_i^2)^3} \frac{\sigma_i}{\sigma_l} (1 - \frac{\sigma_i}{\sigma_l}) \frac{\delta \lambda}{\delta (m_l - m_i)} (m_l - m_i)
\end{equation}
least four years and arriving to leadership positions inside a legal company takes even more time.

Furthermore, unlike jobs at the illegal markets, the ones available at legal markets are not leadership positions. Thus, young individuals with entrepreneurial abilities, high value for autonomy and independence and low formal education dislike the legal job opportunities that are available.

Crime offers possibilities of economic mobility that the legal labor market cannot match. Wages inside criminal organizations are far more variable. The right-tail distribution of illegal wages is far more distant from the average. Initial positions are unpaid or paid with very lower than minimum wages. Yet, as individuals scale in crime hierarchy, salaries become much more attractive. The annual wage of a hit man is approximately $28,000 which is considerable higher than what they would be paid in legal markets even with a college degree. Yet, they are still worse paid that the top decile of private college educated Mexicans which have an average wage of around $43,000. This is not true anymore when one considers the top of the drug hierarchy. The drug business generates a dollar flow of at least 4 to 6 billion dollars a year (Rios 2008) and drug lords certainly appropriate a significant part of it. Drug lords also tend to exhibit their wealth in more scandalous ways which may have an incidence in profession selection for young men without legal role model figures. The drug elite buys 15,000 USD flower arrangements for their funerals, buy Mercedes Benz in cash, and use 24 karat gold cell phones.

Thus, given that variance at the illegal labor markets is higher than at the legal ones, and using the results of the model, we would expect that the recruiting new members in drug trafficking will attract individuals who are more skilled than average in both (a) the abilities that are valued at legal markets (i.e. entrepreneurial ability) and (b) the abilities that are valued at legal markets (i.e. violence tastes). The current situation in Mexico seems to confirm this finding.

The two main Mexican cartels, Sinaloa and Golf, opened their labor markets to outsiders at the beginning of the decade. Their hiring processes were well known and quite public. Cartels transmitted radio adds and posted cartels in the main border cities of Mexico where they encouraged “brave men” to join their criminal organizations in exchange for a series of monetary prerogatives.
The new drug traffickers, known as “Negros” if affiliated with the Sinaloa cartel, and “Ze-
tas” if affiliated with the Golf cartel are more violent than traditional traffickers, more prone
towards diversifying their criminal portfolios (performing different illegal occupations such as
kidnapping and extortion), and generally neglect old-mafia laws and honor codes (Valle 2009,
Jorge 2009). In general, they are “more sophisticated and more savage (WOFA 2007).” Their
cruelty is much higher. Unlike traditional drug traffickers who concentrated their efforts only
in transporting illicit drugs, Zetas are real criminal entrepreneurs. They kidnap, extortion and
run all kinds of illegal business such as prostitution, human traffic, and even illegal immigra-
tion. They also use strong intimidation techniques such as burning the dead bodies of their
enemies in fueled barrels. An FBI assessment report shows that new members “are allegedly
more violent than their leaders and may be behind much of the drug-related turmoil occurring
along the border (WOFA 2007). The Negros have a penchant for assassinating policemen with
high-powered assault weapons, a practice that back in the PRI-regime days was uncommon.
They even invented the term “police-killer” to refer to a high-assault weapon that can pierce
policemen bullet-proof’s vests.

Furthermore, unlike previous traffickers, the new ones increasingly target Mexican author-
ities (Freeman 2006, CNDH 2009). In 2008, 12% of the victims of drug-related violence were
policeman and 2% came from the Mexican military. In states like Tijuana, at least 100 police-
men die on duty every year (Guerrero 2009a). To put this in perspective, in the entire United
States 133 police officers were killed in the line of duty in 2008. Police chiefs in border cities
are killed systematically. In some places such as Novalato, Sinaloa, nobody wants to be police
chief anymore –actually, the position is vacant. In other places, such as Asención, police chiefs
ran away as political refuges (Cabrera 2009, Cano 2008, Fernández Menéndez and Salazar Slack
2009). High-profile politicians - mayors, police executives, attorney generals - are also prime
targets. In march of 2010, three American consulate officials were killed in the border, the first
direct attack to non-Mexican targets. Even the head of the Mexican state have received serious
murder threats, an action that some decades ago would have been thought impossible.

The social characteristics of Zetas and Negros are also different from those of the traditional
traffickers. They tend to be more urban, have higher levels of formal education and share the
tastes of the Mexican middle classes. Even their music preferences are different; they listen to
American rappers, not to the traditional Mexican “corridos.”
As the drug industry have attracted more violent employees, the levels of violence when confrontation between cartels emerge have gone up. Actually, the forms and degrees of violence that have been in place during the last decade as the result of inter-cartel territorial fights has not precedent. Drug traffic violence has recently spiked in Mexico. With over 7,900 homicides just in 2009, border cities as Ciudad Juarez, Reynos and Laredo have become war fields for traffickers. Indeed, no one then would have predicted that the number of drug-related casualties in Mexico would double the number among coalition troop causalities in Iraq (El Universal, 2009) and escalate to a point where US border towns and states would be calling for federal troops to protect their citizens.

Some important policy recommendations can be extracted from the main results of the model.

First, the attractiveness of the drug labor markets will be reduced more if Mexico focuses in capturing a random selection of all people involved in the drug business instead of just the heads of the organization. So far, Mexico’s security police has been pretty much focused in capturing high-profile cartel leaders. Capturing drug lords has been portrayed as more efficient because (a) it generates instability inside the cartel structure and (b) it sets an example for those who want to become part of the drug industry. Yet, as proposition two shows, crime will diminish more with reductions in average wages than with reductions in wage variance. Capturing drug leaders is equivalent to reducing the variance of wages by truncating the upper bound of drug traffickers’ wage distribution. This is a much less efficient deterrent than it would be to capture individuals from all wage levels inside the drug labor market. Capturing people from all around the spectrum will reduce average wages by increasing the probability of getting a fine.

Second, because criminals tend to be less risk averse than average, increasing the capacity of the Mexican state to capture criminals would be a more efficient deterrent of crime than increasing the amount of time than criminals spend in prison. Yet, the threshold at which capture is a deterrent depends on how much individuals value money. Greedy individuals will have much more tolerance to risk. Patrolling would be a much efficient measure than changes in penalties for reducing short term violence.
Third, reducing the attractiveness of illegal labor markets is not about increasing jobs at the legal industry but about increasing jobs that will attract those individuals that are particularly prone to join the illegal markets. It is the entrepreneurs the ones who like the drug industry. Opening possibilities for young, urban, marginalized men to open their own business may be a much more efficient deterrent of crime than any policy of law enforcement. Fighting poverty by creating job positions that pay below average will not reduce crime. Mexico has to create jobs and provide quality education that allows for social mobility. Supporting the creation of small informal business by providing micro credits could also be a possible solution to the violence problem, at least in the long term.

Finally, the attractiveness of illegal labor markets can also be reduced by reducing the extend to which both markets share a demand for certain skills. This result is particularly interesting because it shows a potential positive effect of Calderón’s drug war. By increasing the difficulty of the drug business, the Mexican government is fostering that drug traffickers increase their demand for labor qualifications that are not valuable in the legal markets (i.e. tastes for violence). Indeed, as the drug business becomes less similar to the legal markets, it “compete” less with them. Talent sorts more adequately, leading those whose talents are valuable for the legal industries to remain there.

1 Conclusion

Over the course of this paper I have argued that the causes for the emergence of new Mexican mafiosi are to be found in a change in the politics of crime and the interaction between legal and illegal labor markets. I presented a theoretical model which showed that (a) wage structure, (b) income inequality, (c) state capacity and (d) individual’s levels of risk aversion have played a decisive role in sorting individuals into criminal activities. Those with higher entrepreneur skills and higher tastes for violence are the ones who have recently joined the cartel forces. The result has been an change in the profile of organized crime. New drug traffickers have increased general levels of violence, and by performing other forms of criminal activities, have also increased rates of kidnappings and extortion. The new generation of drug dealers are more violent and more keen on criminal diversification.

The model sheds light on the important and severely understudied relationship between law
enforcement policies, formal labor markets and crime rates. When because of a change in the politics of crime, the illegal labor market opened to outsiders in—and because of the larger variance in salaries in the illegal versus the legal industry—highly talented entrepreneurs and individuals with higher tastes of violence sorted into illegal occupations. Talent is draining from the legal to the illegal markets.

The policy implications are strong. Reducing crime is not only a matter of security policy but an issue of economic development. If it is the best of Mexico’s entrepreneurs the ones that are deciding to become criminals, drug trafficking is not only increasing crime rates but reducing human capital and economic growth. Crime is a development problem. The implications for long term development are crucial. Mexico has to improve the quality of legal labor markets, not just the availability of jobs, to reduce the attractiveness of drug trafficking. Increasing the variance of wages for young, single men with lower formal education should become a priority. Class mobility has to be made possible.

Furthermore, creating jobs that attract entrepreneurs would also be a good deterrent for crime. Those who join crime like the independence and the autonomy that comes with such profession. Generally, working class jobs do not allow for such prerogatives. Fomenting, for example, the creation of small business could be a good form to employ individuals in the legal market in positions that allow them to be decision makers.

A final implication refers to the strategy to fight crime in the short term. Current Mexico’s war against drug trafficking has increased the probability of capture and fines for drug lords. It has also reduced the profits of the drug industry which have in turn diminished wages within illegality. Lower criminal salaries are indeed one of the major disincentives for people to devote time to illegality. Yet, as my model had showed, this strategy will not be efficient to deter very greedy individuals, or those who are less risk averse. Individuals that have very high tastes for violence may also not be deterred. Their abilities are much valuable in the drug industry than in any legal job. Mexico’s security policy have to change towards capturing all types of drug traffickers (not just drug lords as has been the case) to further incentives to join criminality.
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