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RESEARCH

The Structure of Drug Trafficking Organizations and Money Laundering Practices: A Risk Appetite Hypothesis

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Scholarly and policy literature has yet to provide a systematic analysis on how criminal organizations launder money beyond descriptions of who conducts this illegal activity and the existing types and practices for laundering the proceeds of crime. This article seeks to bridge the divide of two scant perspectives within illicit economies literature: one related to the structure of drug trafficking organizations (DTOs) and the other related to theoretical conceptualizations of money laundering. It provides a working hypothesis on how DTOs choose to launder money contingent on the risk appetite each structure has as a result of the investment in human capital they conduct at the managerial levels. Using Mexican DTOs as case studies (Arellano Félix, Sinaloa, La Familia Michoacana, and Zetas) and data collected during fieldwork with US and Mexican officials involved with anti-money laundering measures, I show hierarchical structures—understood as structures that process information and acquire knowledge—prefer risk-averse methods, whereas wheel networks tend to use risk-tolerant procedures for laundering money. These findings have important implications for theory development and policy design.

Keywords: money laundering; drug trafficking organizations; risk appetite; financial crime; Mexico; United States

I. Introduction

Disrupting the flow of money to illegal groups is central to weakening and containing their activities. In recent years, governments and scholars have focused on the financial activities of terrorist groups because their perceived threat to national security has absorbed available resources. However, illicit market activities, in which drug trafficking organizations (DTOs) participate, ultimately may do more damage to society. In 2017, 18,753 people died worldwide from terrorist attacks (Department of State 2018) whereas 70,237 people died of drug overdoses in the United States alone; yet financial activities within illicit markets have received less attention (Center for Disease Control and Prevention 2017).

On a general level, scholarly literature conceptualizes money laundering as a problem DTOs face because they need to integrate money into the financial system in order to benefit from their activities. Despite propositions on the types of individuals who launder money (Morselli and Guigere 2006; Kleemans and de Poot 2008; Malm and Bichler 2013; Soudijn 2014) and descriptions on how proceeds are laundered (Financial Action Task Force 2006, 2012, 2015), what is missing in the literature is a systematic analysis that links specific types of criminal groups with particular practices for money laundering. Significant data constraints partially account for a lack of theoretical approaches. This problem is further exacerbated by an absence of work that disaggregates DTOs instead of treating them as unitary, homogenous actors.

Instead of focusing on descriptions of how DTOs launder money, I propose a hypothesis linking the structural type of DTOs—either hierarchies or wheel networks—to varying degrees of risk appetite which mediate the methods for laundering money. Hierarchical and network structures have different levels of investment in human capital, which influences the risk appetite observed in DTOs regarding money laundering. To be clear, I do not argue that the choices of money laundering methods are the direct outcome of DTO structure. Rather, the structure of DTOs affects the risk appetite of the organizations, or how willing they are to sacrifice assets, both human and financial, which in turn impacts the methods for laundering money.

Table 1: DTO Structure, Investment in Human Capital, Risk Appetite, and Expected Money Laundering Methods.

	Investment in Human Capital	Risk Appetite	Money Laundering Methods
Structure Hierarchy	<i>High</i>	<i>Reduced</i>	<i>Risk-Averse</i>
Wheel Network	<i>Low</i>	<i>Increased</i>	<i>Risk-Tolerant</i>

Furthermore, I do not contend that risk-appetite is the only variable that affects how they choose to launder money. However it is an important factor for anticipating the methods DTOs will use, instead of thinking of them as a product of happenstance. In this research, risk is not understood as danger but instead as a greater variability in the potential outcomes of a decision or action regardless if the outcome is desired or not. **Table 1** summarizes the argument showing the expected investment in human capital in each structural type, the level of risk appetite, and the methods for laundering money.

Focusing on theoretical mechanisms will help scholars and law enforcement identify linkages between structural types, risk appetite, and methods for laundering money. By thinking of different structural types of DTOs we can advance the conversation without examining networks and organizations as if they were empirically independent. In contrast, we can think of networks as a subtype of organizational structure. This can inform policy strategies that target the weaknesses of each organization, offering cost-effective alternatives to high-value targeting (HVT) approaches that focus on capturing or killing alleged kingpins.

The article proceeds as follows: Section II discusses previous literature. Section III presents the working hypothesis linking DTO structure to risk appetite and how it mediates money laundering methods. Section IV discusses the data streams and empirical strategy. Section V presents case studies from Mexican DTOs to support the hypothesis. Section VI offers potential avenues for future research and concludes.

II. Previous Literature

The extant literature, both empirical and theoretical, on money laundering is distinguished by its paucity. Despite the publications on “Methods and Trends” by the Financial Action Task Force (FATF) on money laundering such as *Trade-based Money Laundering Typologies* (2006, 2012) and reports of award-winning investigations submitted by financial intelligence units around the world to the Egmont Group (2014), scholars have yet to provide a systematic analysis that links the types of DTO with expected money laundering methods. In part, this is due to scant literature that disaggregates DTOs as well as discussions of money laundering that move beyond techniques used by criminals.

Work on DTO organization has paid attention to leadership (Dickenson 2014; Phillips 2015), including learning and adaptation processes (Kenney 2007).¹ It also has examined the effects of size of criminal groups (Thrasher 1963; Block 1979; Reuter 1983; Eck and Gersh 2000; Bouchard 2006, 2008) and in particular the link between risk and size of the organization (Reuter and Haaga 1989; Dorn et al., 1998; Bouchard and Morselli 2014; von Lampe 2015). Focusing on size, however, assumes organizations are similar, only varying in the number of members working for the group, and neglects different DTO structures as variables of interest.

Recent empirical work has attempted to shed light on who launders money in the illicit drug market. For example, Malm and Bichler (2013) argue that the majority of money laundering in the drug market is self-laundered by individuals who occupy an important structural position relative to others in the drug market, echoing previous work by Kleemans and de Poot (2008). In contrast, Soudijn (2014) argues Malm and Bichler’s findings do not necessarily apply for big players within the illicit drug market. In turn, Soudijn focuses on financial facilitators—those who assist a criminal in some key way in money laundering (2014: 202). This is similar to Levi’s (2015) finding of the relevance of the social capital of the offender in relation to illicit financing, including but not limited to money laundering activities.

Critically, I argue that by conceptualizing DTOs with different structural types, we can discern behavior *specific* to each type and thus explain why some DTOs follow risk-averse money laundering practices while others choose risk-tolerant methods. Rather than emphasizing the individual level of analysis by attempting to learn *who* launders money within the organization, focusing on the structure will provide greater analytical leverage by explaining which methods are more appealing to different criminal groups based on the risk appetite they have.

¹ Kenney’s argument is closer to hybrid covert structures such as the Iraqi Insurgency and Al-Qaeda analyzed by Serena (2014) and Kahler (2009) respectively.

III. DTO Structure and Risk Appetite

The hypothesis advanced here focuses on managerial levels within DTOs and is not intended to predict behavior for the entire organization. While the decisions made by management are not deterministic, their behavioral patterns are more relevant for the organization compared to what happens at lower levels. Linking risk appetite to different types of organizational structures builds on theoretical work related to transaction costs (Alchian and Demsetz 1972; Coase 1937; Miller 1993; Moe 1984), collective action (Olson 1965; Schelling 1984), and social network analysis and theory (Powell 2003; McGuire 2002; Balkundi and Kilduff 2006; Kahler 2009; McGuire and Silvia 2009; Borgatti and Halgin 2011; Serena 2014).

Hierarchical and network structures have different levels of investment in human capital, which influences the risk appetite observed in DTOs regarding money laundering. In hierarchies, agents who want to increase their rewards (which are not allocated randomly) will try to perform at higher levels, which translates into an investment of time and resources. By the same token, managers who seek to delegate will also invest time and resources in teaching agents how to perform the tasks needed for organizational efficiency. These high costs both for managers and agents incentivize risk-averse behavior. An individual who has invested his resources in a hierarchy will minimize the opportunities in order to jeopardize acquiring more rewards for his performance. Nevertheless, shirking will occur because agents pursue at least some of the time their own economic private interest.

Lack of investment in developing human resources in wheel networks also enhances the potential for shirking and defection. Due to the risks of participating in an illegal market, individuals who lack long-term incentives for cooperation will have high discount rates that bolster risk-tolerant behavior. For example, a hit man knows he cannot be promoted within the organization and faces penalties, if caught, for participating in an illegal activity, which motivates him to try to obtain quick gains and leave the organization either to create his own DTO where he can capture a larger (managerial) share of the profits, or exit the illegal market completely with his bounty. **Table 2** summarizes the expected methods for money laundering contingent on the risk appetite.

The concept of structure is not intended to be a fixed one. Rather, criminal organizations throughout their life may change structures. A criminal group will face different incentives depending on the internal organizational characteristics. Whereas a kinship-only structure may be extremely risk-averse, a hierarchical organization with some kinship ties (ritualistic or biological) may be slightly more willing to take on greater risks. The key, however, is that the structure of criminal groups is not randomly assigned or exogenously determined. Instead, how organizations choose to structure themselves has consequences for their criminal activities including laundering money.

In this research, hierarchies are understood as organizations devised optimally to process information, acquire knowledge, and monitor individuals (Garicano and Van Zandt 2012). This definition does not imply that hierarchies are structures where there is one leader who centralizes knowledge and has all the decision-making power i.e. a kingpin. Instead, the key characteristic is that hierarchies provide information on the type of agent with whom exchanges are conducted to a greater degree than other organizational structures.

Table 2: Risk Appetite and Money Laundering Methods.

Risk appetite	Money Laundering Methods	Expected methods
Risk-averse	<p>If discovered by law enforcement, human and financial assets are not lost, either through arrest, death, and/or seizures.</p> <p>Risk averse methods allow DTOs to learn when they have raised suspicion before they have to confront law-enforcement. If their actions attract attention, they have time to devise a different strategy to secure the funds as well as the personnel involved in this aspect of the business.</p> <p>Risk-averse methods can also involve the use of brokers who launder money for the DTO but are not considered members of the group.</p>	<p>Banks with medium compliance standards.</p> <p>Trade based or black peso market</p> <p>Currency exchange (in absence of regulations that monitor and report suspicious transactions).</p>
Risk-tolerant	<p>If discovered by law enforcement, human and financial assets are lost, either through arrest, death, and/or seizures.</p> <p>Risk tolerant methods prevent DTOs from learning when they have raised suspicion before they have to confront law enforcement. If their actions attract attention, they lack time to devise a different strategy to secure the funds as well as the personnel involved in this aspect of the business.</p>	<p>Banks with absent to low compliance standards or in violation of compliance regulations.</p> <p>Gambling (with regulations in place that monitor transactions)</p> <p>Currency exchange (with regulations that monitor and report suspicious transactions).</p>

This is achieved by constantly generating information and developing trust through repeated interactions that incentivize long-term participation.

Although money laundering is always risky, risk-averse hierarchies will prefer to launder their proceeds through methods that lower the probability of losing assets, both financial and human. Hierarchical DTOs will prefer to launder money through a system that lets them know when they have raised suspicion before they encounter law-enforcement. If their actions attract attention, they have time to devise a different strategy to secure the funds as well as the personnel involved in this aspect of the business.

For example, managers within a hierarchical DTO, those who oversee a *plaza* and therefore coordinate the distribution and logistics of trafficking within a territory may receive greater responsibilities within the organization as they perform successfully a series of tasks. Evidence from indictments suggests that even family members experience contract renegotiations, acquiring more responsibilities as they contribute to the success of the operation or, in contrast, reducing their participation given unsatisfactory performance. Agents who have become managers in hierarchical structures represent a significant investment of time and resources of the organization. Part of the investment lies in the training and tradecraft taught to the manager, but an equally important part lies in determining the agent's type. Given the high costs, both to the individual who wants to move up the ranks and the organization that spends time and resources in grooming managers, DTOs with hierarchical structures will tend to follow risk-averse money laundering practices. Therefore, they may experience operational costs if their strategy is uncovered, but they will retain their monetary assets and managers.

In contrast, wheel networks will generally launder their proceeds through riskier methods that are quick but not covert. Risk-tolerant methods for laundering money entail direct contact with law enforcement if discovered. Unlike schemes that prevent the loss of money and personnel, risk-tolerant money laundering methods lack a buffer that gives the DTO time to shield and move assets. When discovered, the network will lose the assets as well as personnel involved with this side of the business.

Networks tend to be risk-tolerant because individuals are hired for an expertise that cannot be internally produced and cannot be imposed from above or dictated by authority (Powell 1990). In a wheel shape network each cell communicates to one central element and this cell is not necessarily the decision maker for the network. In this type of network, the outer nodes communicate at most with one or two outer cells in addition to the hub.

By design, network structures do not have top managers because the structure provides some degree of shared control and authority over different areas of operation. This emphasis on acquisition of expertise rather than control and supervision implies a deficit in the investment in human capital from potential managers and time and application by members in the organization.

The managers in wheel network structures are more interested in the recruitment process than in grooming agents who, by design, will not be promoted within the organization. The goal is to recruit an adequate individual for each task needed to be performed and after the recruitment process is completed, there are limited mechanisms to acquire information about the true character of the agent. The lack of investment of time and resources both from managers and recruits creates a high discount rate: present gains are valued more than future gains.

IV. Data Streams and Empirical Strategy

Even though the money laundering cases examined here constitute failures on the part of DTOs, given that successful criminal activities remain largely unknown precisely because law enforcement was unable to stop them, what matters is the variation in these sub-optimal outcomes. I do not pretend that the cases examined here are the only ways in which money is laundered by the Sinaloa, Arellano Félix, La Familia Michoacana, and Zetas DTOs. In turn, the cases are indicative of a strategic component of the methods chosen for money laundering suggesting a fruitful avenue of research that to date remains largely unexplored. The key is to examine the behavior comparatively: do hierarchical DTOs and wheel network DTOs exhibit different patterns for laundering money depending on the risk appetite of each structure?

The hypothesis was developed *prior* to conducting research on money laundering practices of different types of structures, rather than generating types based on observations of behavior. Similar to Shapiro's empirical strategy in terrorism studies, this method generates evidence that can help falsify the theoretical argument because evidence collected from interviews and court documents represents independent evidence from the one used in the initial inductive stage (Shapiro 2013: 303).

Given the inherent challenges in doing research on criminal activities, I followed an empirical strategy incorporating multiple data streams. Bearing in mind that any one observation might be biased, to the degree that observations from multiple sources agree, we can have more confidence in them and therefore

understand the strategies behind specific money laundering methods. The DTOs selected—Sinaloa, Arellano Félix, La Familia Michoacana, and Zetas—are organizations recognized by the US Foreign Narcotics Kingpin Designation Act as significant actors in international drug trafficking.

The data used for this study consists of information from the USA v. Arellano Félix et al., USA v. Miguel Angel Treviño Morales et al., and the USA v. Pineda Sanchez et al., cases from 2002, 2012 and 2015 respectively. Additionally, I used data from the Office of Foreign Assets Control (OFAC) of the US Department of Treasury listing businesses designated to be in violation of financial regulations from the US either belonging to the Sinaloa, Arellano Félix, La Familia Michoacana or Zetas DTOs.

I selected three cases prosecuted in US courts where sentencing hearings had already occurred. This allowed accessing indictments, as well as court documents that would provide information on the cases which are not equally available through Mexican court documents. Two of the cases, USA v. Miguel Angel Treviño Morales et al., and the USA v. Pineda Sanchez et al., are a source of information for two of the case studies [Zetas and Sinaloa respectively], while a third case, USA v. Arellano Félix et al., provided complementary information for the Arellano Félix case study.

Indictments are useful for researching the methods that DTOs use to launder money because in order to charge individuals in the United States with ‘Conspiracy to Launder Monetary Instruments’ it is necessary for the prosecution to discuss ‘manners and means’ in which the individuals attempted to (or successfully) laundered money.

In the case of Mexico, the most recent evaluation by the Financial Action Taskforce rated the country in terms of its effectiveness as ‘low’ (in a scale from low, moderate, substantial, and high) for money laundering investigation and prosecution as well as confiscation. From 2013 to 2016, Mexico’s Attorney General’s office made 1,439 consultations/accessed the Financial Intelligence Unit’s database that resulted in opening 80 investigations. As of January 2018, 65 were still ongoing with only two convictions.

This is consistent with a trend in the United States where there are a significant number of offenders sentenced for drug trafficking compared to those sentenced for money laundering. According to the most updated data from the Bureau of Justice Statistics, shown in **Figure 1**, between 1998 and 2014 there were 400,500 convictions for drug trafficking (excluding simple possession) compared to 15,091 for money laundering. This is equivalent to an average of 23,558 convictions per year for drug trafficking and only 888 for money laundering.

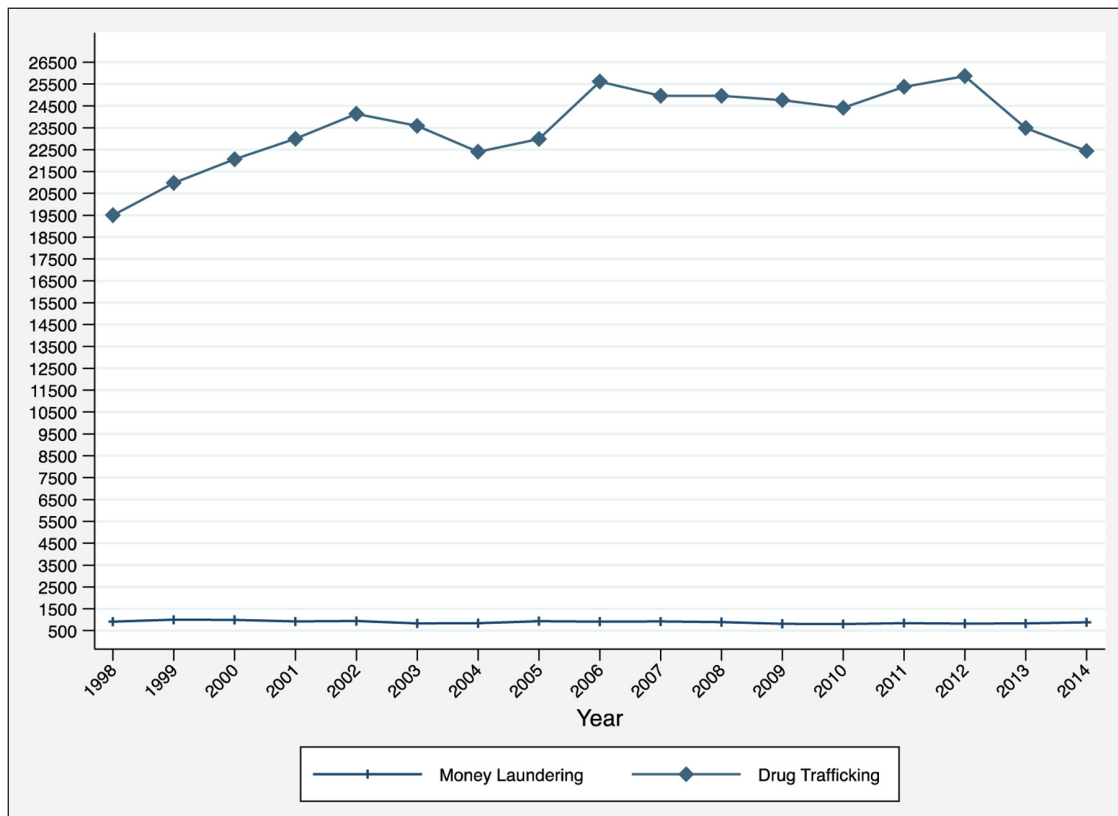


Figure 1: Offenders Sentenced in the US for Drug Trafficking and Money Laundering 1998–2014.

I also selected two cases prosecuted in Mexican courts. While the information available on these is significantly scant, given that information from Mexican courts is less readily available, I used cases that received ample media coverage both in Mexico and the US. Furthermore, the methods discussed in these cases were also covered by the US Treasury department.

I triangulated the data from indictments and OFAC with publicly available records on money laundering schemes including investigative reporting. The most important element of the triangulation involved information collected during field interviews in Mexico and the United States with journalists, policy experts, and government officials involved in anti-money laundering strategies either during the Calderón administration (2006–2012) or the Peña administration (2012–2018).

For the interviews, all respondents were notified that the interviews were strictly confidential and off the record such that the information shared could not be traceable to the source nor directly quoted in this research. The interviews were semi-structured with interview guides tailored for each respondent and with open-ended questions. The types of questions asked included questions about experiences that focused on the actions of respondents, opinion questions in order to establish their thoughts on topics related to their role in counter money laundering policies or analysis, and knowledge questions that sought to establish what the respondent considered a fact rather than what is true objectively (Patton 1990).

Interviews were scheduled first with journalists and policy experts and subsequently with government officials. This was done in order to acquire information that had not been published that would serve to design topical probes that would prevent current and former government officials from providing answers that could be found on public sources. A total of 22 interviews were conducted and interviews lasted between 60 to 90 minutes. On average, the interviews produced information that is not available publicly and is very unlikely to be published in the coming years.

V. Mexican DTOs: Risk-averse vs. Risk-tolerant Money Laundering

To date there is no consensus on the literature on Mexican DTOs regarding the structure of each organization. Process tracing conducted using data from indictments, journalistic accounts, and publicly available documents strongly suggest that the DTOs examined in this research—Sinaloa, Arellano Félix, Zetas, and La Familia Michoacana—closely resemble the structural types discussed. In this research Sinaloa and Arellano Félix are considered to approximate a hierarchical structure whereas Zetas and La Familia Michoacana resemble a wheel network structure.²

This section is not intended to be an exhaustive account of Mexican DTOs; other works provide detailed historical and sociological analyses related to criminal groups (Astorga 2005; Maldonado 2012; Valdés 2013). The evidence provided is not considered the only methods used by the Sinaloa, Arellano Félix, Zetas, and La Familia Michoacana DTOs to launder money.

Instead, this section provides detailed examples that emphasize the strategic component in money laundering activities. For the purpose of this research, Sinaloa DTO exclusively refers to the criminal group rather than the state in Mexico also named Sinaloa. Furthermore, Sinaloa DTO is understood as the groups also known as ‘Guadalajara Cartel’ and ‘The Federation’. The Arellano-Félix DTO is also known as the ‘Tijuana Cartel’.

V.I. Risk-averse methods for money laundering: Currency exchange houses

On an otherwise typical Southern Californian summer day in 2013, Eduardo Arellano Félix a.k.a. “el doctor” (the doctor) was sentenced to 15 years in prison for money laundering charges in a federal court in San Diego. He was the last of the wanted Arellano Félix brothers of the Arellano Félix Organization (AFO) to be brought to justice and after his sentence different US government agencies expressed their satisfaction.

Special Agent William R. Sherman from San Diego’s Drug Enforcement Administration (DEA) declared: “the sentence that Eduardo Arellano-Félix received today marks the end of an era in cartel history” (DOJ 2013). In a more reserved tone, Special Agent Jose A. Gonzalez from the Internal Revenue Service’s Los Angeles Field Office (IRS) stated “Today’s sentencing of Eduardo Arellano-Félix, the last brother and a former leader who ran Arellano-Félix Organization is a significant contribution to the end of brutally violent, multi-national drug cartel [...] IRS Criminal Investigation, working with our law enforcement partners, leveraged our financial expertise to assist in the dismantling of this dangerous and deadly drug cartel” (DOJ 2013).

² For a detailed discussion on the origin and characteristics of each structure see Farfán-Méndez (2016).

Despite the contentment by US government agencies, Eduardo's direct involvement in money laundering remains unclear. Eduardo Arellano-Félix was first indicted in 1998 along with his brothers, Alberto Benjamín, Francisco Javier, and their associates Miguel Aguirre-Galindo and Jesús Labra-Avilés on drug conspiracy charges. In 2002, prosecutors added charges of racketeering, conspiracy to distribute and import marijuana and cocaine, and money laundering.

The seventh superseding indictment specifies the roles of all the defendants. For Eduardo, the indictment states 'was the senior advisor to Alberto Benjamín Arellano-Félix, and was involved in, and consulted about, all major Enterprise decisions, including the organization and transportation of drug shipments into the United States, distribution operations in the United States, and the kidnapping and murder of Enterprise "enemies"'. Conspicuously absent are money laundering functions.

The seventh superseding indictment only identifies two specific instances of money laundering and those were conducted by Jesús Labra-Avilés: one in February 1998 for \$68,000 (\$106,047 in 2019 dollars) and another one on March 1998 for \$132,000 (\$205,856 in 2019 dollars). Unlike other indictments that specify *how* the money was laundered, this one only states Labra-Avilés did 'knowingly and intentionally transport, transmit, and transfer monetary instruments and funds from a place in the United States, that is Santa Ana, California, to a place outside of the United States, that is the Republic of Mexico with the intent to promote the carrying on of a specified unlawful activity.' Therefore, if Eduardo Arellano-Félix, despite being sentenced for money laundering and conspiracy charges, was not identified on the indictment conducting this illegal activity, who laundered money for the Arellano-Félix DTO?

On July 2001, in the early months of Vicente Fox's presidency (2000–2006) and five years before the declaration of the war on drugs, Ivonne Soto-Vega a.k.a 'La Pantera' (the panther) was arrested in the city of Tijuana in the border state of Baja California. Mexico's Attorney General's Office (PGR per its Spanish acronym) identified her as 'the main money launderer for the Arellano-Félix organization' (PGR 2001, 2005). According to a press release by the PGR, Soto-Vega was linked to Labra-Avilés through a shared godparent relationship (PGR 2001). In 2005, a circuit court in Mexico determined there was insufficient evidence to convict her and subsequently released her.

That same year, OFAC published a chart detailing the companies and individuals involved in the Arellano-Félix money laundering scheme. In particular, it listed Ivonne Soto-Vega and José Manuel Ruelas Martínez as the managers of a group of brokers that operated one pawn shop, one restaurant, and nine currency exchange houses, eight of which were in Tijuana and one in Guadalajara in the state of Jalisco.

According to FinCEN (2005), dollars from illicit drug sales in the US were smuggled in bulk into Mexico. These dollars were then brought back into the US by declaring the currency in the name of the currency exchange houses in Mexico, therefore concealing the illicit origin of the funds. The currency was then deposited into US bank accounts held in the name of the currency exchange companies. To further conceal the origin of the funds, money from these accounts was transferred via wires to bank accounts around the world, although OFAC does not specify which countries.

Ivonne Soto-Vega's absence from the Arellano-Félix organization indictment is notable, not only because the Mexican government identified her in 2001 as the main money launderer for the Arellano-Félix DTO, but because in 2005 the Department of Treasury stated that Ivonne Soto-Vega laundered over a three-year period more than \$120,000,000, an amount far superior to the \$200,000 laundered by Jesús Labra Avilés. Importantly, both Mexico's Office of the Attorney General and the US Department of Treasury identified Soto-Vega as a money launderer but not as a member of the Arellano-Félix DTO. Notably, the Mexican government did not shut down the currency exchange houses designated under OFAC's Special Designated Nationals List (SDN List).

While laundering money through currency exchange houses could be regarded a risk-tolerant strategy, at the time Soto-Vega laundered money for the Arellano Félix DTO there were key institutional and regulatory vacuums in Mexico that in fact made it a risk-averse method. On the institutional front, the Financial Intelligence Unit (Unidad de Inteligencia Financiera per its Spanish name) under the Ministry of Finance and Public Credit (Secretaría de Hacienda y Crédito Público per its Spanish name) had yet to be created. Equally absent was the Specialized Unit under Mexico's General Attorney's Office in the Investigation of Transactions with Illicit Proceeds and Currency Falsification (Unidad Especializada en Investigación de Operaciones con Recursos de Procedencia Ilícita y de Falsificación o Alteración de la Moneda). On the regulatory front, it would be another 12 years since Soto-Vegas's arrest before Mexico passed comprehensive legislation against money laundering that required different businesses, including currency houses, to report transactions to the Financial Intelligence Unit at the Ministry of Finance and Public Credit.

V.II. Risk-averse methods for money laundering: Gold trading

On February 2015, 31 individuals were arrested in the United States on charges of laundering \$98.7 million for the Sinaloa DTO. The criminal complaint, page numbers indicated in parenthesis, states the individuals collected \$101 million in narcotics proceeds, of which \$98.7 million was sold for gold, \$1.4 million was seized by law enforcement, and approximately half a million was transferred to a bank account (309).

According to a multi-year investigation (2011–2014) led by Immigration and Customs Enforcement (ICE) in cooperation with Homeland Security, the Internal Revenue Service, and the Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF), the individuals laundered money by purchasing scrap and fine gold at jewelry stores and businesses with proceeds from crime, reselling the gold to refineries mostly located in Florida, and then transferring the money to Mexico.

The criminal complaint filed in the Northern District Court of Illinois Eastern Division (*USA v. Pineda Sanchez et al.*, 15CR61) details 49 separate occasions between 2013 and 2014 in which the individuals charged collected proceeds for the laundering scheme. Most of the data on the criminal complaint come from an informant identified as CI-2 who was part of the scheme by picking up proceeds, sending them to the refineries, and sending the money to other members of the scheme in the United States.

In order to spread the risk, the Sinaloa DTO had differentiated functions and roles including: money pickup operations, bulk cash smuggling operations, and operations including the purchase of gold. In a standard transaction a DTO-associated broker provided a phone number to an associate along with a code phrase to say to the individual who answers the phone. The code phrase was used to confirm both parties were executing a previously agreed upon money contract between the broker and the DTO. If the code phrase and the name did not match, the pick-up was not conducted and the purchaser contacted the broker in order to re-schedule a pick-up or cancel it entirely.

Once the courier had delivered the money, the person who received the proceeds used it to buy gold and send it to previously agreed-on refineries mostly in Florida and rarely in California. The gold was sent using prepaid envelopes with tracking numbers that were given to the broker via e-mail. Once the gold had been sent, the broker and the sender confirmed the spot price (or the current market price) in order to estimate their payment for the services rendered, usually between one and two percent of the total laundered amount. The spot price was generally verified by a member of the Sinaloa DTO who either confirmed with the broker or lowered the price. On the few occasions when the DTO member disagreed with the broker on the price, it was the broker and his team who absorbed the loss.

Due to the illegal nature of the business, pickups between the money courier and the purchaser of gold (informant) were usually conducted in public locations, generally parking lots during daytime, allowing both parties to exchange the money without raising suspicion as well as to scout for potential law enforcement activity.

The recipient of the money always asked for confirmation of the amount given to him in order to verify that the courier was delivering the same amount as the one discussed with the broker. The recipient never counted the money in public and only received the package from the courier. Packaging was discreet generally using shopping bags from common retailers or simple black bags. These measures were not fortuitous but deliberate, as the informant said to one courier “some people want to do it very carelessly” (139). And in relation to a potential nighttime pickup “It’s too late [...] It’s not good to be moving around at night. It’s tough at night. Things can only go bad” (157).

Nevertheless, on several occasions, after law enforcement took the money from the informant and counted it (before sending it to the refinery) there were discrepancies between the amount stated by the broker and the one received by the courier.³ The pocketing of proceeds by the courier is a first-rate example on how DTO agents pursue their private economic interests some of the time. After money went missing on several instances by different couriers, the broker and the purchaser of gold discussed the possibility of renting an office space where the purchaser could count the money to conduct internal audits. This idea, however, never materialized partially out of a concern that a storefront could attract unwanted attention from law enforcement.

Given the ever-present possibility of interdiction, the courier did not transport vast sums. In turn, the courier dropped-off amounts usually no larger than \$100,000 using \$20 denomination bills. To contextualize, \$100,000 is not a considerable figure for the Sinaloa DTO. If the information on case number

³ The undercover operation was set in such a way that the informant’s participation stopped once he received the money. After the pick-ups law enforcement agents would take the money from the informant and count it. Then it was law enforcement that would buy gold and send it to the refinery using pre-labeled envelopes. Law enforcement gave all the details to the informant so he could communicate with the broker as if it was him conducting the business.

09-CR-383 is correct, the wholesale price for each kilo of heroin was \$55,000. Therefore, receiving \$100,000 for laundering represented less than the sale of two kilos of heroin; a small portion considering that the US government alleges one wholesaler received between 1,500 and 2,000 kilos or the equivalent of \$110 million in merchandise each month.

Laundering small amounts rather than larger ones is costlier for the individuals involved in the scheme because they risk contact with law enforcement more regularly compared to situations where they launder larger amounts and therefore have to deliver money less frequently. However, using smaller amounts is safer for the DTO that will only lose a limited quantity if the money gets interdicted.

According to the broker, this was also done in part to build trust with the DTO. Based on a conversation with the informant, the broker believed that efficient performance and on-time delivery of the money would increase the amounts they received for laundering in the future. Specifically, he stated, "They are going to open up on their own. They will begin to trust on their own. Later they are going to tell me, "Look, I'm going to bring you a hundred [\$100,000]" (29).

On one occasion when the money was going to be delivered late, after already fixing a date with the DTO, the broker requested the informant to pick-up the money and launder it right away. In exchange he said, "I'll give you my one percent. I don't want to profit anything; the thing that I want is not to let him down" (227). According to the broker delays were not problematic on their own right for the DTO. Miscommunication, however, created issues. In relation to the delay the broker said, "Why didn't you tell me? I committed myself. When you talk to me, you need to tell me the truth. Everything, alright? You lie to me, I relay the lies and I'm the one who gets it" (85).

Per instructions of law enforcement, the informant sometimes would ask couriers about their activities outside delivering money. The response by couriers was generally the same: they were only in charge of delivering money and their supervisors were adamant about not combining their activities with other drug trafficking operations. They specifically kept individuals involved in laundering money from participating in the sale and distribution of drugs because this could attract the attention of law enforcement.

After the seizure of \$110,000 by law enforcement, the DTO took measures to heighten the security related to the scheme. Data from the criminal complaint show that the brokers held a meeting with managers from the DTO in order to determine who should bear responsibility for the loss of \$110,000 during a scheduled pick-up. After that loss, the DTO reverted to only providing smaller amounts of money. This was done in order to try and rebuild some of the trust that was lost when the money got interdicted. Accepting smaller amounts, according to the broker, was a way of building confidence and showing that his team was not cooperating with law enforcement. In addition, individuals involved in the scheme changed phone numbers and devices in case law enforcement had tapped their previous ones. A few months later, they also changed the codes used in their telephone and text message conversations (292).

V.III. Risk-tolerant methods for money laundering: Music management

Risk-tolerant methods were used by the wheel network structure of La Familia Michoacana. Data from Mexico's Attorney General's Office from 2010, show that four years after the irruption of La Familia Michoacana in Mexico's criminal landscape, the DTO laundered money through concerts and county fairs in Mexico and the United States.

Public reports based on the PGR's file PGR/SIEDO/UEIDCS/018/2010 state the DTO hired music groups to play concerts in the United States. Even though these concerts had an average cost of \$50,000, groups typically signed contracts for half a million dollars. At times, concerts were held in venues owned by the DTO. According to the investigation, La Familia DTO owned a venue in Austin, Texas named 'Centenario' and another one in Atlanta, Georgia under the name 'Padrinos Night Club'. Once the group traveled back to Mexico, they would bring back the proceeds in cash—after paying taxes in the US—believing that they were not raising suspicions that the money in fact included proceeds from illegal activities.

It is unclear whether the music groups participated willingly or under duress in this scheme. In one version of events groups were targeted by the DTO that forced them to participate in addition to paying extortion quotas. However, an anonymous music industry expert revealed that some groups that had yet to become popular accepted DTO money in exchange for producing records and writing songs that praised the DTO. Once the music groups became popular, they could participate in the scheme because they could go on tour. In this sense, the DTO would invest in lesser-known groups in the hopes that the songs would become popular and allow them to go on tour.

This arrangement was unstable according to the music industry expert because once a group becomes famous and no longer needs the capital from the DTO it may seek to pursue an independent music career.

However, if a group or any members of the group tried to sever ties with the DTO they were often executed (Redacción a2012). For example, the lead singer of the group K-Paz de la Sierra, Sergio Gómez, was murdered in 2007. A top manager and founder of La Familia, Nazario Moreno a.k.a. 'el chayo' or 'the craziest', allegedly ordered his murder. The singer's body also showed signs of torture and severe burns in the genital area (Redacción b2014).

DTOs also could hire headline acts without their knowledge of who was paying. With more popular groups, the DTO could launder larger sums of money. In 2012 in Los Angeles, California a woman linked to this scheme was arrested and extradited to Mexico. According to the report, she oversaw deliveries of illicit drugs that arrived at the port in Long Beach hidden in avocado crates and guacamole containers. Once the drugs were sold, she laundered the proceeds and sent them back to Mexico using the music group scheme. According to the PGR, groups that participated in this money laundering scheme included *Los zafiros*, *Los hermanos Salgado*, *Los hermanos Gil*, *La dinastía de Tuzantla*, and *Trini y su leyenda*.

V.IV. Risk-tolerant methods for money laundering: Horse racing

Gambling generally serves for laundering money by showing income from wins as a legitimate source of money. Gambles with high odds are preferred because a bet placed with higher odds will yield a higher payoff thus justifying a large sum won. This strategy works because bets are generally fixed. Gambling is not an unusual method for laundering money (casinos are obligated to report transactions just as banks do to FINCen), however, the horse-racing scheme used by Zetas shows a lack of expertise at best and a willingness to tolerate high levels of risk. This is because their actions were rarely concealed and in fact continued after encounters with law enforcement.

In 2009 Tremor Enterprises was created in Lexington, Oklahoma, and two years later the LLCs 66 Land and Zule Farms were established.⁴ These LLCs were constituted by a section of Los Zetas leadership for buying, training, breeding, selling, and racing quarter horses. The names of Tremor Enterprises and Zule Farms are relevant given that Tremor comes from the combination of the last names Treviño and Morales of the Treviño Morales brothers and, in particular Miguel, who was a high-ranking member of the Zetas. Furthermore, Zule Farms derives from the first name Zulema who is the wife of José Treviño Morales, brother of Miguel.

Rather than concealing their business using other names, the Treviño Morales siblings used their real names despite knowing they were of interest to law enforcement. Another sibling, Francisco, a.k.a. 'Kiko' had been sentenced in Texas in 1995 for possession and distribution of marijuana.⁵ By one account, even though José was not indicted, his name came up during the trial which likely explains his absence during his brother's sentencing (Tone 2017: 27).

The decision to use José for the horse business can seem advantageous for starting and operating what appeared as a legitimate business in the United States. This is because José has US citizenship (acquired through marriage) and does not have a criminal record. However, José's relationship to Miguel was well known to US authorities who sent him to secondary inspection every time he crossed the border returning from Mexico (Tone 2017).

However, by naming corporations after his family name and drastically increasing his income, he was bound to attract the attention of law enforcement that was already attempting to trace his brother through him. José and Zulema Treviño had a checking account with an average income of less than \$3000. After the first race where a Tremor Enterprises horse won, he deposited the winnings—\$435,000—into his Bank of America account.

Straw purchasers in the horse racing scheme knew that José's presence was problematic for the business. As told in one account: 'With José around Carlitos and Fernando [straw purchasers] weren't just another pair of Mexicans with access to big Mexican money. They were José's guys, which made them Forty's guys [Miguel], which was a riskier distinction' (Tone 2017: 103).

In addition to the names of the corporations and José's overt participation, Miguel Treviño was spending large sums of money buying horses at auction at a time where the United States was still in the midst of the Great Recession, and therefore individuals were cutting back on luxury items such as race horses.⁶ On

⁴ An LLC is a Limited Liability Corporation where the owners are members. LLCs do not pay taxes as a business but according to their profit. Losses are paid for by each member of the LLC. Each member reports either a profit or a loss in his federal tax return. LLCs only have three requirements to be established: a name, the articles of the organization and the required license and permits for their type of business.

⁵ 'Kiko' was released in 2014 and presumed in several media outlets as a potential replacement to the Zetas leadership (Corchado 2015; Daugherty and Dudley 2015).

⁶ For a detailed discussion of the economic context in which the Zetas conducted their horse operation see Tone 2017.

multiple occasions purchasers acting on his behalf were the top spenders, including paying \$875,000 for one broodmare—the most ever paid in the history of public quarter-horse auctions—and \$2.3 million for approximately 23 horses; paying almost five times as much as the next-biggest buyer (Tone 2017: 94; 112). According to the American Quarter Horse Association (AQHA), the average race-bred Quarter Horse sells for less than \$20,000 at auction with a monthly maintenance cost of \$1,800 (AQHA 2009).

Tremor Enterprises, therefore, bought elite quarter horses in the industry rather than average race-bred quarter horses that would have allowed them to pass as another buyer. Adding to their risk-tolerant behavior, between 2009 and 2012 Tremor Enterprises grew at a very fast pace and hired one of the best-known trainers in the industry—Paul Jones, who charged \$45 dollars per day per horse housed at his stables. The Zetas leadership sent 45 horses to Jones for training with a total monthly cost of \$60,750.

In 2009, the horse Tempting Dash won the Dash for Cash in Texas as well as the Texas Classic Futurity for an amount of approximately \$1.5 million. In 2010, Separate Fire won the Ed Burke Futurity in California—one of the most prestigious races in the industry—for \$1 million dollars and that year, the horse Mr. Piloto won the All American Futurity in New Mexico for \$1 million. As noted by the journalist Ginger Thompson, the All American Futurity is ‘considered the Kentucky Derby of quarter horse racing’ (Thompson 2012).

What is important about hiring Jones, spending big at auctions, and claiming significant victories is that it put the spotlight on Tremor Enterprises. By becoming the top spenders at auctions and winning major races in the industry, Tremor Enterprises attracted the attention of the media. However, instead of shying away from the press, the leadership of Zetas appeared on publications discussing their success story as a newly formed business in horse racing. Unlike members of Sinaloa DTO whose pictures are scarce and often from arrests, the Treviño Morales family willingly appeared on popular equine publications. Furthermore, José Treviño gave interviews about his good luck in selecting winning horses (Tone 2017).

In addition to attracting the attention of law enforcement, the interviews also provided information that revealed the inner workings of the operation. By trying to look like another proud owner José drew attention to the straw purchasers who were acting on behalf of the Zetas. During one interview José declared, ‘I liked her on the catalog page, and I liked her at the sale’. This gave evidence to the Federal Bureau of Investigation (FBI) of the involvement of Zetas because previously José had maintained ‘he bought the horses *after* the sales [...] only transferring ownership after the potential revenue spiked’ (Tone 2017: 209 emphasis from the original).

VI. Incompetence, Liquidity Shortage or Risk Appetite?

While all organizations legal and illegal exhibit different levels of competence, the risk-tolerance versus the risk-aversion illustrated by the cases presented in Section V cannot be solely attributed to varying degrees of dexterity or ‘street smarts’ of each group. DTOs invest differently in their human resources which affects the risk appetite they have or how willing they are to sacrifice assets, both human and financial, which in turn impacts the methods for laundering money. Notably, risk aversion *does not* equal no-risk. Even when a group uses risk-averse methods, they are still involved with illegal activities which involve a cost of doing business. Furthermore, while risk-appetite is not the only variable that affects money laundering methods, it remains a variable of interest for understanding behavioral patterns of DTOs and their finances.

Laundering money by trading in gold and through currency exchange houses are risk-averse strategies used by the Sinaloa and Arellano-Félix DTOs. While the disruption of the methods was costly from an operational point of view, the Sinaloa and the Arellano-Félix DTOs did not have to confront law enforcement in connection to these schemes. On both cases, the individuals who were arrested were not top managers for the DTO but brokers who worked for them as part of several money laundering schemes. In other words, they were subcontractors for the DTO. This is clear insofar they did not launder all the proceeds obtained from the wholesale business in the United States, and more specifically in Illinois and California.

In the absence of institutions and regulations on anti-money laundering practices in Mexico, using currency exchange houses was a risk-averse strategy. This is because there were no special units within the Ministry of Finance and Public Credit and/or the Attorney General’s Office that allowed collecting intelligence on money laundering practices. Furthermore, there was no comprehensive anti-money laundering regulation that required currency exchange houses to report transactions to the Ministry of Finance and Public Credit. Consequently, the activities conducted by the currency exchange houses in Mexico could easily avoid any law enforcement scrutiny, benefitting from a context with sophisticated financial products but a very loose regulatory environment.

The least risk-averse link in the chain of the currency exchange scheme was returning the dollars to the United States in the name of the currency exchange houses in Mexico and using US bank accounts. This is

because unlike Mexico that lacked anti-money laundering regulations, the US had in place the Bank Secrecy Act which regulates banks, national and foreign, operating in the US to safeguard the financial institutions against money laundering. However, despite being discovered, the scheme remained risk-averse, both because the currency exchange houses continued to operate in Mexico, and because Ivonne Soto-Vega, the alleged brain of this money laundering scheme, was freed less than four years after her arrest.

The fact that the currency houses continued to operate is important for understanding the risk-aversion of the Arellano-Félix DTO. Once they were discovered, they did not lose financial assets, but rather the possibility of using the US financial system for laundering their ill-gotten gains. In this sense, they were able to continue to operate with other entities within Mexico and other countries. Additionally, given that Soto-Vega was released on the grounds that there was insufficient evidence to convict her, demonstrates the overall regulatory weakness at the time for prosecuting financial crimes. While it is possible that Soto-Vega paid for her freedom, it remains true that the Mexican government was not able to produce sufficient proof that she in fact laundered \$ 120,000,000 as alleged by the US government.

Long after she was released, the Arellano-Félix DTO continued its operations as evidenced by the subsequent arrests and deaths of some of the Arellano-Félix siblings. Even after Eduardo's sentence in 2013, the DEA declared the death of this organization, to date the organization continues to be recognized as a player in transnational drug operations albeit without the power it wielded in the late nineties and early 2000s (InsightCrime 2018).

In the case of gold trading, once the scheme was dismantled, the DTO did not lose money, except for the \$1.4 million confiscated during the gold-for-cash investigation from an estimated monthly income of \$110 million. Selling gold in Florida illustrates the risk-aversion in the gold-for-cash scheme. According to 2013 estimates, gold was the top export and import for the Miami Customs District while South Florida is considered a hub for bullion trading, assaying, refining, logistics and financing operations. In 2012, Miami's gold imports, including scrap gold and gold-plated jewelry totaled \$8.8 billion (Whitefield 2013). Given the booming gold business in Florida, small shipments from Chicago could be low-key, providing a good cover for laundering money.

Evidence from the criminal complaint also shows at least one refinery used in the process was in cahoots with the DTO. This refinery was used because it also had offices in Mexico which allowed transferring money to the DTO in a more direct way. In order to make the shipments and transactions as circumspect as possible, the refinery made the receipts as payments for brass rather than gold. Today, it would be nearly impossible to trace the money that was laundered using this scheme prior to the investigation of law enforcement.

Informants also highlighted the low-risk appetite exhibited by Sinaloa. According to the government officials interviewed, a significant element for understanding how Sinaloa launders its proceeds relates to a very sophisticated wealth management structure that not only launders but also integrates the money into the financial system so future generations of family members can use the money earned through criminal activities. Wealth management differs from other banking practices in that it is a:

'[T]ype of financial planning that provides high level net worth individuals and families with private banking, estate planning, legal resources, and investment management with the goal of sustaining and expanding long-term wealth [...] The banks create separate branches, services and other benefits to retain or attract these customers who typically bring in more profit than other retail banking customers' (Wu, Lin, and Tsai 2010: 972).

That is, Sinaloa *prefers* to use low-key schemes that will ensure their family members can use the money at a later time and therefore keep the money within the financial system. Some of the wealth management banking services include:

'[P]ortfolio management and rebalancing, investment management and strategies, trust and estate management, private banking and financing, tax consulting, and family office structuring. Products can include stocks and stock trading, equity-linked investment, structured savings, structured investments and derivatives, foreign exchange, mutual funds and unit trusts, property management and investments and alternative investments (wine, precious metals, property)' (Wu, Lin, and Tsai 2010: 973).

The process of layering, therefore, is a complex one where there are many stages involved in distancing the money from the criminal activity. This complex layering creates important barriers for obtaining proof of the

illegal origin of the funds with the overall result that the offender, and his family, continue to have access to his money in the long-term.

According to interviews, given that Sinaloa engages in wealth management instead of regular banking, the types of services used for laundering money are also different from other organizations. They use professional services that have a proven track record for successful tax evasion. Per the sources consulted, this gives Sinaloa a guarantee, to the extent that you can acquire one in these type of dealings, that the individuals conducting the operations are experts in finance. When family members are not directly involved in laundering money, they use professional services that have a thorough understanding of financial regulations in order to avoid basic mistakes such as depositing 'smurf' amounts that attract the attention of law enforcement. In return for their services, these experts generally charge a commission, which can be understood as an acceptable cost to the DTO for laundering their money without attracting attention.⁷

Unlike the gold scheme and the currency exchange houses, the horse racing and the music management businesses used by La Familia Michoacana and the Zetas were risk-tolerant methods that resulted in significant financial and personnel losses for the DTOs.

In the case of La Familia, the concerts in the US allowed the DTO to transport bulk sums of cash without having to conceal the money because they had paid taxes. However, once the scheme was discovered, the DTO lost human assets, including the woman who operated in California as well as the music groups that were identified as facilitators for money laundering. In some cases, this did not hinder their popularity, but it is likely other law-abiding venues and music promoters were hesitant to hire them after their links to the DTO were revealed. Furthermore, any revenue generated by the groups after the link was revealed was likely under significant scrutiny by the Mexican and US governments which effectively blew their cover as money launderers.

Moreover, other Mexican musical groups came under increased scrutiny. In particular, contracts for half a million dollars were likely to attract attention, considering headline acts in Las Vegas make less money per concert than what the groups used by the DTO charged per performance. When the spectacle of *La dinastía de Tuzantla* makes more money per concert than Britney Spears, it is likely to attract the attention of law enforcement despite the DTOs attempt to pay taxes and appear as a legitimate business venture.

In the case of the Zetas, José and Zulema Treviño, who primarily managed the horse racing business, were arrested. While Zulema and Alexandra (Zulema and José's daughter) pled guilty to money laundering and received probation, José refused to take a plea bargain and is currently serving his sentence in the United States.

Unlike the currency exchange houses and gold trading that can be low-profile businesses, horse racing and music management attracted scrutiny which was exacerbated by the behavior of the Zetas and Familia Michoacana. In the case of the Treviño Morales brothers, they further attracted attention to themselves by breaking a longstanding tradition in the industry by renaming horses. Whereas 'naming conventions in horse racing are designed to capitalize on pedigree, paying homage to the sire, the dam, or both' (Tone 2017: 115), the Zetas involved with horse racing used names directly linked to them. One Famous Patriot became Tamaulipas Boy, One Proud Feature became Forty Force, and Racing Down a Dream became Number One Cartel. The choices show risk-tolerant behavior by emphasizing Tamaulipas, the hub of operation of the Zetas, the alias Forty, which was Miguel's designation within the group, and flagrant portrayals of the criminal group as the 'number-one cartel'.

Tremor Enterprises also attempted to use the banking system, however, the way it was executed denotes an elementary understanding of how banks monitor transactions. Tremor Enterprises used circular deposits from the LLC to Bank of America and then from the bank to Tremor Enterprises with the intent to generate the appearance of legitimate income being deposited into the account. However, the deposits were always for the same amount thus making it evident that it was a circular transaction.

According to one government official, circular transactions are some of the easiest to identify when looking for suspicious activity (Mexican government official in discussion with the author, August 2014). Moreover, because banks monitor all transactions over \$10,000, Tremor Enterprises made deposits from October to December 2010 for amounts just below this threshold. These 'smurf deposits', attracted attention precisely because it became apparent they were trying to conceal the transaction by using amounts such as \$9,900.

⁷ It is important to note that the existence of professional services does not necessarily imply the existence of a market for laundering money. This is because suppliers of money laundering services are not free to offer their services to any customer.

They also used similar practices when crossing cash across the border. The practice known as 'structuring' uses couriers who carry cash below the \$ 10,000 threshold that needs to be reported to US Customs, but who are working together and therefore crossing with an amount of cash greater than \$ 10,000. In addition to the border crossing, there are multiple checkpoints inland where individuals can legally be stopped and asked for appropriate documents and can potentially be searched.

As part of transferring money used in drug sales for the horse business, members of the Zetas delivered cash at the border despite knowing of the existence of the checkpoints and the potential for interdiction. Structuring is a risk-tolerant strategy for moving money across borders. However, in the case of the Zetas risk-tolerance was exacerbated considering 'they had a lot of confidence in their ability to do that [structuring] without being detected. Even if they were detected they [couriers] were disposable to them. It made no difference' (Joe Tone in discussion with the author, December 2018).

One of the most risk-tolerant actions followed by the Treviño Morales siblings relates to the purchase of properties in Oklahoma to house the horses. José Treviño bought the properties *after* agents from the Drug Enforcement Administration conducted a raid in his home in Texas. Even though the raid was not approved by the field agent from the FBI who was conducting the main investigation, the search of José's home was a clear indicator that law enforcement, and in particular the agency in charge of enforcing laws and regulations related to controlled substances, was zeroing in on them.

It is highly likely that José communicated to Miguel the DEA had searched his family home in Texas (Joe Tone in discussion with the author, December 2018). Yet, despite knowing they were under surveillance, they purchased properties in Oklahoma for the horse business. Had they been risk-averse after the raid of José's home, they would have avoided attracting the attention of law enforcement by not conducting operations related to the business, ceasing communication for a time period, or even closing Tremor Enterprises.

In addition, the US Treasury Department confiscated 500 horses and sold them in 2013 for \$9 million. Notably, Tempting Dash and Mr. Piloto were sold for \$1.7 million and \$85,000 respectively. Consequently, while owning a business that launders money such as Tremor Enterprises can sanitize proceeds at a swift pace, it is a risk-tolerant scheme because it attracts significant attention. Furthermore, once it was unveiled, the organization lacked any mechanisms to protect their assets—both human and monetary—from law enforcement.

Information from witness testimonies from three US federal trials that took place between 2013 and 2016 in Texas revealed that the Zetas had an urgent need for cash in order to pay bribes to local officials and gain control of territories (Smulders et al., 2017). Per the testimonies, at least in two separate occasions the then Governor Humberto Moreira received payments of \$2,000,000 in cash in exchange for control of the state of Coahuila. In another high-level exchange, the Zetas 'donated' \$12,000,000 to Fidel Herrera's campaign to the governorship of the state of Veracruz (Smulders et al., 2017).

Even though these are substantial cash expenses, they are not directly linked to the type of money laundering methods chosen by the organization. This is because while the \$12 million payment to Herrera was to bribe the governor in order to receive state contracts from Mexico's oil company PEMEX, the payment is not a money laundering transaction. Moreover, the cash payments to government officials in exchange for territorial control do not need to be laundered by the Zetas but rather by the recipient of the bribes. In this sense it was Moreira and Herrera who had to produce proof of the legitimacy of the income, and not the Zetas who could transfer the money from illegal activities directly to these government actors. Therefore, the pressing need for liquidity can help explain other reckless behavior by the Zetas but not their risk-tolerant money laundering methods.

Interviews conducted with high-level officials in Mexico and the United States directly involved with anti-money laundering measures provide further evidence about the high tolerance for risk and lack of sophistication exhibited by the Zetas. While the organization had an efficient accounting system in place, in particular to keep track of the money generated through extortion and kidnappings, they do not engage in wealth management practices thus highlighting the short-term incentives present in network structures.

The interviews highlight that Los Zetas launder less money and when they do so, they generally prefer risk-tolerant methods, as evidenced in the lack of sophistication of the horse racing business. More importantly, they committed the fatal mistake of combining a family hobby with an integral part of their business operations.

VI.I. What's Next?

This article presented a risk appetite hypothesis on money laundering practices contingent on the investment of human capital present in each structure of DTOs: hierarchies and wheel networks. The working hypothesis suggests that hierarchies will follow risk-averse practices and wheel networks will tend to choose

risk-tolerant methods. Hierarchical DTOs that invest time and resources in developing managers and incentivize long-term participation will prefer risk-averse methods for laundering money. Risk-averse procedures avoid contact with law enforcement if they are discovered, thus allowing the DTO to safeguard human and financial assets; both which are costly to develop within a hierarchy. In contrast, wheel-network DTOs that hire based on expertise and incentivize short-term participation will choose risk-tolerant methods that are quick but not covert. When the methods are discovered by law-enforcement the DTO incurs financial and personnel losses.

Evidence from four Mexico-based DTOs, Arellano-Félix, Sinaloa, La Familia Michoacana, and Zetas, offers a remarkable level of detail on the strategic component for selecting money laundering methods. Information collected from high-level government officials in Mexico and the United States directly involved with anti-money laundering measures provides strong evidence to support that DTOs launder money in diverse ways, and the difference is a product of strategic choice rather than happenstance. Internal characteristics of DTOs, beyond size, are relevant for understanding decisions made by the organization including laundering money.

Additional data are needed in order to allow a systematic analysis of diagnostic evidence on the degree to which money laundering practices predicted by the risk appetite hypothesis exist. However, focusing on risk-averse versus risk-tolerant methods offers several advantages. On a theoretical level, thinking of the risk appetite of organizations will allow researchers to classify practices for laundering money in relation to the structure of criminal groups. This is important because it transcends descriptive reports on money laundering and a focus on individuals within criminal organizations. In turn, it encourages disaggregating DTOs by paying attention to internal characteristics, beyond size, that determine observed behavioral patterns.

Additional data are needed in order to continue to evaluate the hypothesis. A risk appetite approach does not dismiss previous findings but instead builds on earlier empirical work to deepen our understanding of financial crimes. By thinking of the risk appetite of organizations in choosing methods for money laundering contingent on the structures they have, scholars and policy-makers can benefit from theoretical and empirical advantages currently unavailable in highly descriptive studies of money laundering. More importantly, an analytical framework that considers the risk appetite of criminal organizations can better anticipate financial services that will be targeted by specific groups and thus design intelligent anti-money laundering mechanisms that are not solely reliant on increasingly complex regulation.

Ethics and Consent

All government officials spoke on strict condition of anonymity to the author. Informed oral consent was obtained from all individual participants included in the study.

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The author has no competing interests to declare.

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