

Corruption, money laundering and collusion in Brazil: empirical evidence of bonds between fraudsters and co-offenders at “Lava Jato” Operation

Corrupção, lavagem de dinheiro e conluio no Brasil: evidências empíricas dos vínculos entre fraudadores e cofraudadores no caso Lava Jato

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Keywords

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 Money laundering schemes.
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Palavras-chave

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Abstract

This exploratory study aims to understand the bonds that connect co-offenders in corruption and money laundering schemes at “Lava Jato” Operation. The database was built by reading the denunciations made by the Federal Public Ministry (MPF). All the accused persons, and their characteristics (gender, age and pre-crime experience) have been identified, as well as the nature of the type of connection between fraudsters and co-offenders, type of crime and role in crime. The results have shown that the leaders are those who have previously been convicted and/or have experience with the frauds. Regarding the nature of the bonds, the results highlighted that the affective bonds are positively related to misappropriation, concealment of evidence and being a straw man. In one hand, Fee and Murphy (2015) have highlighted the nature of the bonds between members of fraudulent groups, our findings evolve and provide some empirical evidence for the organization-serving functional bonds and invariably for affective bonds.

Resumo

Este estudo exploratório objetiva compreender os vínculos que conectam cofraudadores em esquemas de corrupção e lavagem de dinheiro presentes na Operação “Lava Jato”. A base de dados foi construída por meio da leitura das denúncias realizadas e documentadas pelo Ministério Público Federal (MPF). Foram identificadas todas as pessoas acusadas pelo MPF e suas características (gênero, idade e experiência anterior ao crime), assim como a natureza dos vínculos entre fraudadores e cofraudadores, o tipo de crime e o papel do acusado no crime. Sinteticamente, os resultados demonstraram que os fraudadores líderes já haviam sido condenados anteriormente e/ou possuíam experiência nas fraudes cometidas. Os resultados demonstraram ainda que os vínculos afetivos estão positivamente relacionados à apropriação indébita, ocultação de provas e “testa de ferro”. Se por um lado, Fee e Murphy (2015) destacaram a natureza dos vínculos entre membros de grupos fraudulentos, nossos achados evoluem e fornecem algumas evidências empíricas dos vínculos funcionais que servem à organização e invariavelmente para os vínculos afetivos.

Implicações práticas

Results showed that people involved in corruption had not only affective/friendship relationships, but also labor relations. This may make it difficult for law enforcement to identify suspicious links between criminals. In this sense, it would be essential to increasingly seek the improvement of intelligence agencies and control systems considering the characteristics of fraudsters and co-offenders and their relationships, both addressed in this study.

1 INTRODUCTION

Corruption and money laundering are intrinsically connected, as they often occur simultaneously (Chaikin, 2008; Cox, 2014; OECD, 2018). Cox (2014) explains that money laundering begins with criminal activity, where illicit resources originate, and mentions that both tax evasion and corruption result in the production of resources that the fraudster will attempt to conceal (or launder). Corruption as a crime is the most common scheme in all regions of the world and has strong impacts on economic and social development. It is estimated to absorb \$1.5 to \$2 trillion annually, with a negative impact on economic growth, tax loss losses and poverty promotion (Reuters, 2016; Dimant & Tosato, 2018; ACFE, 2018).

Similar to corruption, money laundering is considered significant and global. The United Nations Office on Drugs and Crime estimates that between 2% and 5% of world GDP is “laundered” each year (UNODC, 2019). That means annual amounts between 800 billion and 2 trillion dollars. Examples such as the cases of Danske Bank, Swedbank, BNP Paribas and HSBC demonstrate that money laundering is present in many parts of the world, especially within the financial system (McLannahan, 2017; Milne, 2019; Schwartzkopff & Magnusson, 2019).

There may be a central element in large corruption and money laundering schemes, namely collusion (Free, 2015). According to Free and Murphy (2015), one is unlikely to have the resources, access and ability to build sophisticated fraud without the help of others. Furthermore, collusion enhances fraud, making it more severe regarding costs and threatening anti-fraud mechanisms (Trompeter, Carpenter, Jones & Riley Jr, 2014; Bishop, Hermanson & Riley Jr, 2017). The 2018 ACFE report shows that collusion between two fraudsters tends to be more expensive, on average, twice as much as frauds by one fraudster alone, and for three fraudsters, the loss increases by 4.5 times.

Nevertheless, several authors point to a lack (or neglect) of collusion-focused fraud research (Van Mastrigt & Farrington, 2011; Trompeter, Carpenter, Jones and Riley Jr, 2014; Free, 2015; Bishop, Hermanson & Riley Jr, 2017; Button, Shepherd & Blackburn, 2018). This is because much of the literature seeks to understand individual motivations about fraud and not collusion (or relationships) between fraudsters (Pinto, Leana & Pil, 2008; Free & Murphy, 2015; Maragno & Borba, 2017). Recently, the literature on corruption has suggested a shift in research from individual-level corruption to collective corruption (Kominis & Dudau, 2018). Given this, the phenomenon of “co-offending”¹ (collusion) and the role of “co-offenders” are still poorly understood, especially in corruption and money laundering schemes. Bishop, Hermanson and Riley Jr (2017) point out that an exception to the lack of research on collusion is the research of Free and Murphy (2015).

Nonetheless, the literature dealing with collusion is limited to juvenile delinquency and specific crimes (Weerman 2003; Van Mastrigt & Farrington, 2011; McGloin & Nguyen, 2012; Lantz & Hutchison, 2015; Tillyer & Tillyer, 2015). Therefore, to fill this gap and to investigate aspects related to collusion in fraud, we propose to analyze the characteristics of fraud leaders, and whether the nature of the link between fraudsters and co-offenders is related to specific types of frauds. The purpose of this study is to provide evidence on the bonds that connect fraudsters and the types of crimes involved in these relationships, especially in corruption and money laundering schemes. In addition, it also aims to contribute to the understanding of characteristics of the leaders in collusion.

Therefore, questions were answered based on the largest Brazilian investigation of corruption and money laundering, originated by Operation “Lava Jato”. The operation showed that 438 people² were criminally charged, including politicians and board members of companies such as Petrobras, Odebrecht and other companies in the construction industry. In this sense, this study contributes to a growing body of research that theorizes corruption as a problem of collective action, especially in societies where corruption is an expected behavior (Kominis & Dudau, 2018; Jancsics, 2019). According to this theory (collective action problem), corruption persists because the public agent realizes that all other agents are probably corrupt, similar to the theory of public choice – corruption is explained by the rational calculation of means and ends (Jancsics, 2019).

¹ “Co-offending” refers to the perpetration of fraud by more than one person and includes criminal cooperation at different times and places, a process in which individuals voluntarily pool their resources in pursuit of shared but illegal goals (Free & Murphy, 2015).

² According to the MPF website on September 21, 2019. Fonte: <<http://www.mpf.mp.br/grandes-casos/caso-lava-jato/atuacao-na-1a-instancia/parana/resultado>>

2 CORRUPTION, MONEY LAUNDERING AND COLLUSION

One of the widely accepted definitions of corruption describes it as the misuse of public office for private gain (Alvarez, 2015; Kominis & Dudau, 2018; Gonçalves & Andrade, 2019). Corruption can be divided into high-level corruption and low-level corruption. The first is understood as any corrupt activity involving senior administrative or political officials (Alvarez, 2015). This can lead to collective corruption, as these people have the resources and the power to change the "rules of the game" for personal gain (Kominis & Dudau, 2018). The second involves the interaction between low-ranking civil servants and ordinary citizens, driven by economic incentives (Alvarez, 2015).

This division stems from the multidimensional typology, organized around two variables that consider the types of state resources, as well as the actors at different levels of government with control over these resources (Jancsics, 2019). Ashforth and Anand (2003) point out that motivation and opportunity to engage in corruption depend on environmental factors (strong competition, legal and regulatory enforcement), organizational factors (poor performance, structural complexity) and, to a lesser extent, personal factors.

The money laundering process is described in three stages: concealment, dissimulation and integration (Levi & Reuter, 2006; Chaikin, 2008; Cox, 2014). Concealment is the introduction of illicit resources into the financial system (Levi & Reuter, 2006). Dissimulation is a set of activities designed to distance illicit resources from their point of origin (Levi & Reuter, 2006; Chaikin, 2008). Integration is the conversion of illegal resources into seemingly legitimate business gains through normal financial or business operations (Levi & Reuter, 2006). Maragno and Borba (2019) demonstrate these three phases are present in the Petrobras case, based on an analysis of the first phase of Operation "Car Wash". More broadly, Gonçalves and Andrade (2019) describe the case "Car Wash" through a sociological approach.

The most vulnerable phase is concealment (Levi & Reuter, 2006; Cox 2014). Thus, financial institutions are required to verify customer identity and conduct due diligence measures, increasing the likelihood of crime detection (Chaikin, 2008; Cox, 2014). However, specialized service providers such as lawyers and accountants have the knowledge and skills to design and organize money laundering schemes and may include the concealment or integration of financial transactions using companies in offshore tax havens along with concealment or destruction of records, avoiding detection (Chaikin, 2008).

Corruption and money laundering often occur together, with one reinforcing the other (Chaikin, 2008). Corruption may still be present at all stages of money laundering, but it has its greatest opportunity in the concealment phase because politically powerful individuals who wish to conceal illicit resources can bribe agents of financial institutions to prevent their bank accounts from being discovered (Chaikin, 2008).

Collusion research focuses on juvenile delinquency (Weerman 2003; Van Mastrigt & Farrington, 2011; McGloin & Nguyen, 2012; Lantz & Hutchison, 2015; Tillyer & Tillyer, 2015). Weerman (2003) states the most comprehensive theoretical model of joint delinquency proposed is the "Social Exchange Theory of Co-offending," which is grounded in the areas of social psychology and sociology. Such theory conceptualizes joint crime as an interpersonal exchange of material and immaterial goods, in which each offender has something to gain from the cooperation of the other. For Van Mastrigt and Farrington (2011), co-offender recruitment can be an important mechanism through which definitions, skills and rationalizations are transmitted from more experienced criminals to less experienced criminals.

On the one hand, as benefits to collusion, Weerman (2003) suggests that offenders anticipate that committing crimes with accomplices will be easier, more lucrative, and less risky than committing individual crimes. Offenders perceive co-offenders as an asset (Tillyer & Tillyer, 2015). On the other hand, criminal groups are less stable because their members may be arrested or give up over time and there is a risk that at least one member of the group will be arrested and, subsequently, expose the others (Weerman, 2003). Also, long-term maintenance of criminal groups is more difficult (Lantz & Hutchison, 2015) and there may be treason among members (McGloin & Nguyen, 2012).

Literature on sociology, social psychology and criminology points out that age and gender (Bonny, Goode & Lacey, 2015), type of crime (Button, Shepherd & Blackburn, 2018) and crime experience (Weerman, 2003) explain the reasons why some individuals are "leaders" or "instigators". These individuals are seen as those who persuade others to participate in collective delinquency (McGloin & Nguyen, 2012). Thus, they emerge because of skills that are relevant to the task or problem at hand, and criminal experience can determine status among offenders (Weerman, 2003; McGloin & Nguyen, 2012).

Regarding the gender of occupational fraud fraudsters, Bonny, Goode and Lacey (2015) demonstrated the estimated average cost of fraud by men is more than four times higher than those committed by women. Still, the authors state that, in white-collar fraud, lower fraud rates have been observed for women. Yet, from a theoretical point of view, it is argued that women are less individually oriented (selfish) than men (Dollar, Fisman & Gatti, 2001). In the study by Dolar, Fisman and Gatti (2001), the results showed that women tend to adopt stronger positions regarding ethical behavior.

The results of Bishop, Hermanson and Riley Jr (2017) revealed some differences between collusion fraud and individual fraud in relation to the characteristics of leaders. Leading fraudsters are younger and more likely to be male (Kleemans & De Poot, 2008; Bishop, Hermanson & Riley Jr, 2017) and less likely to have college degrees (Bishop, Hermanson & Riley Jr, 2017).

Bishop, Hermanson and Riley Jr (2017) point out the work of Free and Murphy (2015) contributed to the development of collusion literature and point out that the reason for the scarcity of research is the unavailability of data. To circumvent this problem, Free and Murphy (2015) interviewed 37 fraudsters who committed collusion frauds. The authors conclude the reasons fraudsters commit fraud vary according to the three qualitative nature of bonds between group members: (i) functional bonds that serve the individual – co-offenders find it in their own individualistic interest to cooperate with others in pursuit of individual benefits; (ii) functional links that serve the organization – based on greater workplace affiliation; and (iii) affective functional bonds – refer to bonds based on emotive connections between co-fraudsters.

Therefore, given the cost of collusion fraud and such research limitation on the subject, studying relationships between fraudsters in collusion can be helpful in understanding the individuals' corrupt behavior (Pinto, Leana & Pil, 2008; Bishop, Hermanson & Riley Jr, 2017).

3 METHODOLOGICAL PROCEDURES

3.1 Data collection

For building the database, ten cases filed by the Federal Prosecutor were read, which comprise the first phase of the investigation known as Operation "Lava Jato". The first phase is known for its focus on the performance of four black-market money dealers – those considered leaders of criminal organizations under the "Lava Jato" processes. Thus, according to Weerman (2003) and McGloin and Nguyen (2012), they would be responsible for coopting other fraudsters. Table 1 describes the denunciations used.

Table 1. Denunciations of Operation "Lava Jato"

N	Description of the crimes	Approximate Total Value
1	Embarrassment crime to criminal organization investigation.	-
2	Practice of financial crimes, parallel foreign exchange market and formation of irregular financial institution.	R\$ 5 million
3	Practice of financial crimes, money laundering and criminal organization formation. Fraudulent evasion.	US\$ 500 million
4	Practicing crimes of international drug trafficking and money laundering.	\$ 124K
5	Crimes against the financial system and parallel foreign exchange market.	R\$ 3 million
6	Criminal association crimes and money laundering.	R\$ 25 million
7	Currency evasion and money laundering.	R\$ 11 million
8	Crimes of criminal organization and against the National Financial System.	R\$ 2.5 million
13	Money laundering crime, criminal association, embezzlement and estelionate.	R\$ 10 million
14	Financial and money laundering crimes.	R\$ 215 million

Source: <http://www.mpf.mp.br/para-o-cidadao/caso-lava-jato/atuacao-na-1a-instancia/parana/denuncias-do-mpf>.

Notes: Four complaints from this phase were not considered (cases 9-12) as they dealt with processes related to the Banestado case, filed due to a turn state's evidence agreement in 2000.

From reading the files, the researchers first identified the persons in focus – those formally accused by the Federal Prosecutors' Office (MPF). Subsequently, their characteristics were identified as follows: gender, age and experience prior to the crime – previous conviction or experience for the same crime imputed in the investigation, the type of crime and the role in the crime. Also, the relationships between the accused and the liaison (i.e. co-offenders) were tabulated, as were the characteristics of the co-offenders (gender, age, pre-crime experience, type of crime and the role in the fraudster's crime). To illustrate the relationship between fraudsters, see the following example:

“X along with his cousin Y negotiated dollar sale with customer Z”

In this way, the relationships between X and Y, X and Z, and Y and Z were identified; Appendix A illustrates the links found, as well as examples of experience and role in crime.

3.2 Data identification

Nature of bond

The Nature of Bonding records the interpersonal ties that exist between individuals reported by the Federal Prosecutors' Office. The nature of the bonds between members of the criminal group were classified based on the concepts of Free and Murphy (2015). Thus, the relationships are described in Table 2.

Table 2. Nature of bond

Nature of Bond	Relationship	Description
Affective bonds	Family	Couples, divorced couples, children, siblings, brothers-in-law, mothers, fathers, etc.
	Friendship	Friends and companions.
Functional bonds	Professional	Customers and contractors, employees and partners.

Source: Prepared by the authors from Free and Murphy (2015).

Role in crime

The Role in Crime, according to Table 3, refers to the role and position exercised and occupied by the accused in the hierarchy, as described in the proceedings filed by the MPF.

Table 3. Role in crime identified in the processes

Role in crime	Description
Leader	The one who leads, makes the request, bosses others.
Operational	One who performs operational activities such as withdrawals, deposits, cash transportation and sales.
Managerial	One who performs managerial activities such as managing companies/operations.
Straw man	The one who lends/gives/sells his name to be used in the formation of companies.
Managerial Straw man	Combination of manager and straw man.
Operational stooge	Combination of operational and stooge.
Money changer	That parallel or black exchange market trader.
Drug dealer	One who moves and sells drugs.
Politician	One who holds a public political office.
Customer	One who hires the services of a money changer.
Not described	This term was used when the whistleblowers did not say if the subject was performing any illegal activity.

Source: Prepared by the authors as described in the MPF processes.

Note: It is noteworthy that an individual with a managerial role could perform operational activities, but was classified only with the highest hierarchical function.

Type of crime

The Type of crime, according to Table 4, refers to the act performed by the individuals mentioned in the complaints. For this, the description present in the cases was considered.

Table 4. Types of crimes identified in processes

Type of Crime Described in Process	Description	Treatment by Law
Money Laundering	Operations carried out to conceal the illicit origin of money.	Art. 1 of Law No. 9,613/1998
Currency Evasion	Sending money out of the country irregularly, either by physical means or by financial transactions justified by false contracts.	Art. 22 of Law No. 7,492/1986
Black Money Market	Act as a financial institution in Brazil without permission.	Art. 16 of Law No. 7,492/1986
Corruption	Illegal activities involving the collaboration of civil servants.	Art. 317 and Art. 333 of Law No. 2,848/1940.
Concealment of Evidence	Deleting corporate papers, documents and company values.	Art. 2 of Law No. 12,850/2013.
Misappropriation	In the case of this study, taking over a company without the consent of the partners.	Art. 168 of Law No. 2,848/1940.
Straw man	Using a person's name to perform activities that benefit the criminal group, such as starting a shell company.	Art. 2 of Law No. 12,850/2013.
Trafficking	Movement and sale of illicit drugs.	Art. 33 of Law No. 11,343/2006
Not described	Term used when the process did not tell if the relationship was aimed at illegal activity.	-

Source: Prepared by the authors as described in the MPF processes.

3.3 Generalized linear models

Models 1 and 2 were estimated with the dependent variables *Leader* and *Manager*. In these models, the goal was to capture whether personal characteristics (i.e. *Age*, *Gender*, and *Experience*) explain positions in the crime hierarchy. The variables for the following Models are defined in Table 5 and shown in Appendix A.

Models 1 and 2:

$$(Leader_j; Manager_j) = \beta_0 + \beta_1 Age_j + \beta_2 Gender_j + \beta_3 Experience_j + \varepsilon_j$$

Models 3 and 4:

$$(SigBond_j; AffectBond_j) = \beta_0 + (\beta_1 Aprop_j + \beta_2 Corr_j + \beta_3 Eva_j + \beta_4 Lava_j + \beta_5 Merc_j + \beta_6 Ocult_j + \beta_7 Straw_j) Typeofcrimes + \beta_8 PreLeader_j + \beta_9 PreManager_j + \varepsilon_j$$

Model 3, on the other hand, was estimated with the dependent variable *SigBond*, to capture the effect of significant (i.e. professional or affective) or non-significant (i.e. not described) bonds between fraudsters and co-offenders. Model 4 was estimated with the dependent variable *AffectBond*, meaning affective bond (family or friendship) or non-affective bond (professional or not described). This procedure sought to capture the effects of affective bonds in relation to specific crimes. Also, we sought to capture the effect from the presence of leaders and managers, in order to observe whether they prefer collusion between people who have affective bonds or not.

Table 5. Measurement and description of variables used the in models

Variable	Measurement and Description
Dependent	
Leader	0 = non-leader, 1 = leader
Managerial	0 = non-managerial position, 1 = managerial position
SigBond	0 = bond not described, 1 = significant bond (professional, family or friendship)
AffectBond	0 = non-affective bond 0 (not described or professional), 1 = affective bond 1 (family or friendship)
Independent	
Gender	0 = woman, 1 = man
Age	Year 2019 minus date of birth
Experience	0 = no previous crime experience, 1 = previous crime experience
PreLeader	Leader presence = 1 otherwise = 0
PreManager	Managerial position presence = 1 otherwise = 0
Aprop	Misappropriation = 1 otherwise = 0
Corr	Corruption = 1 otherwise = 0
Eva	Currency evasion = 1 otherwise = 0
Lava	Money Laundering = 1 Otherwise = 0
Merc	Black exchange market = 1 otherwise = 0
Ocult	Concealment of evidence = 1 otherwise = 0
Straw	Straw man = 1 otherwise = 0
Traf	Trafficking = 1 otherwise = 0

All models were estimated using binary logistic regression based on maximum likelihood estimation. Binary logistic regression models are part of the Generalized Linear Models group because the dependent variable presents a Bernoulli distribution (Fávoro & Belfiore, 2017).

4 DATA ANALYSIS

4.1 Correlation analyses

Table 6 presents the Spearman correlation matrix for the model variables that explain the characteristics of leaders and managers. On the upper diagonal are the coefficients of the *Leader* variable, and on the lower diagonal are the coefficients of the *Managerial* variable. According to Gujarati and Porter (2011), there is no multicollinearity when the coefficients present correlations below 0.8, thus, it can be said that the variables do not present multicollinearity.

Table 6. Correlations between variables of models 1 and 2

	Managerial	Gender	Age	Experience
Leader		-0.035	0.101	0.609***
Gender	0.190		0.184	0.130
Age	-0.049	0.184		0.243*
Experience	-0.334**	0.130	0.243*	

Note: *, **, *** indicates statistical significance at levels of 0.10, 0.05 and 0.01, respectively.

Note that *Leader* is positively correlated with *Experience* (coef. = 0.609, $p < 0.01$). In contrast, *Manager* is negatively correlated with *Experience* (coef. = -0.334, $p < 0.05$). Still, the *Age* variable has a positive correlation with *Experience* (coef. = 0.243, $p < 0.10$). Table 7 presents the correlation matrix of the variables of models 3 and 4. In the upper diagonal are the correlations in relation to the variable *SigBond*, and the coefficients for the variable *AffectBond* are at the bottom of the diagonal.

Table 7. Correlation between variables of models 3 and 4

	AffectBond	Aprop	Corr	Eva	Lava	Merc	Ocult	Straw	PreManager	PreLeader
AffectBond		0.108	0.115*	-0.109	0.059	-0.311***	0.298***	0.410***	-0.144***	0.034
Aprop	0.119		-0.050	-0.158**	0.021	-0.162**	-0.050	-0.118*	0.226***	0.010
Corr	0.034	-0.050		-0.087	-0.008	-0.003	0.041	-0.081	0.149***	0.041
Eva	-0.077	-0.158**	-0.087		-0.195***	0.080	-0.176**	-0.047	-0.093	0.248***
Lava	0.000	0.021	-0.008	-0.195***		-0.272***	-0.150**	0.063	0.231***	0.105
Merc	-0.183***	-0.162**	-0.003	0.080	-0.272***		-0.180***	-0.219***	-0.044	0.107
Ocult	0.398***	-0.050	0.041	-0.176**	-0.150**	-0.180***		-0.030	-0.149**	-0.139***
Straw	0.336***	-0.118*	-0.081	-0.047	0.063	-0.219***	-0.030		-0.121*	0.082
PreManager	-0.180***	0.226***	0.149***	-0.093	0.231***	-0.044	-0.149**	-0.121*		-0.261***
PreLeader	0.021	0.010	0.041	0.248***	0.105	0.107	-0.139***	0.082	-0.261***	

Note: *, **, *** indicates statistical significance at levels of 0.10, 0.05 and 0.01, respectively.

Coefficients present correlations below 0.8, which indicates the “perfect” or exact linear non-relationship between the independent variables of the model, i.e., there is no presence of multicollinearity (Gujarati & Porter, 2011). It is observed that the variable *SigBond* is positively correlated to *Corr*, *Ocult* and *Straw* (coef. = 0.115, $p < 0.10$, coef. = 0.298, $p < 0.10$ and 0.410, $p < 0.01$, respectively) and negatively correlated with *Merc* (coef. = -0.311, $p < 0.01$) and *PreManager* (coef. = -0.144, $p < 0.05$). The variable *AffectBond* is positively correlated to *Ocult* and *Straw* (coef. = 0.398, $p < 0.01$ and coef. = 0.336, $p < 0.01$, respectively) and negatively correlated with *Merc* and *PreManager* (coef. = -0.183, $p < 0.01$ and coef. = -0.180, $p < 0.01$, respectively).

4.2 Analysis of logistic regression models

Table 8 shows the estimation results of all models. Panel A presents the estimates of models 1 and 2, where the characteristics of leaders and managers are related to explain the position in the criminal organization.

Table 8. Logistic Regression Models

Panel A – Models 1 and 2						
	Model 1 (Leader)			Model 2 (Manager)		
	Coef.	Standard error	z	Coef.	Standard error	z
Constant	-1.702	1.887	-0.902	-1.159	1.266	-0.915
Gender	-0.868	1.006	-0.863	1.324	0.765	1.731*
Age	-0.012	0.039	-0.303	-0.004	0.024	-0.162
Experience	3.171	0.999	3.175***	-3.097	1.534	-2.018**
N		51			51	
R ²		0.4065			0.245	
Adjusted R ²		0.2324			0.1335	
Average IVF		1.16			1.00	
AIC		35.25			62.16	
Chi2		45.86			41.24	
ROC Curve		0.829			0.728	
Panel B – Models 3 and 4						
	Model 3 (SigBond)			Model 4 (AffectBond)		
	Coef.	Standard error	z	Coef.	Standard error	z
Constant	-1.455	0.461	-3.157***	-2.761	0.547	-5.047***
Aprop	2.696	0.868	3.107***	3.220	0.948	3.397***
Corr	2.519	0.855	2.947***	1.406	0.917	1.533
Eva	0.403	0.478	0.843	0.331	0.535	0.619
Lava	0.739	0.459	1.611	0.574	0.507	1.132
Merc	-0.895	0.485	-1.843*	0.111	0.554	0.200
Ocult	3.509	1.137	3.085***	4.797	1.164	4.121***
Straw	2.290	0.438	5.225***	2.386	0.487	4.894***
PreManager	-1.317	0.477	-2.759***	-1.120	0.564	-1.987**
PreLeader	-0.119	0.461	-0.258	0.173	0.532	0.325
N		193			193	
R ²		0.497			0.463	
Adjusted R ²		0.439			0.3898	
Average IVF		1.30			1.37	
AIC		193.29			166	
Chi2		193.09			164.49	
ROC Curve		0.878			0.861	

Note: *, **, *** indicates statistical significance at levels of 0.10, 0.05 and 0.01, respectively. The Variance Inflation Factor (VIF) in models 1 and 2 presented values between 1.00 and 1.22. In models 3 and 4, it presented values between 1.11 and 1.72. Which indicates weak multicollinearity. The R² does not show evidence that multicollinearity may be influencing estimates. Chi2 p-value tests for all models indicate the hypothesis that the models are not suitable may be rejected. R² and McFadden adjusted R².

Model 1 shows the dependent variable *Leader* positively related to *Experience* (coef. = 3.171, $p < 0.01$). This means that leaders have pre-crime experience, corroborating the work of Weerman (2003). Model 2 presents the *Managerial* dependent variable positively related to *Gender* (coef. = 1.324, $p < 0.10$) and negatively related to *Experience* (coef. = -3.097, $p < 0.05$). This means that managers are mostly men, as shown in the study by Dollar, Fisman and Gatti (2001). And they have no previous experience in crime, which corroborates the findings of Van Mastrigt and Farrington (2011), who point out the Leader's skills and experiences can be passed on to the coopted individual.

These results, in addition to reinforcing the juvenile delinquency literature in the sense that pre-crime experience is a defining factor of the organization's leader, contribute by demonstrating that experience is a determining factor in corruption and money laundering schemes. Also, they show evidence that men are more coopted to the managerial function than women, contributing to the studies by Bonny, Goode and Lacey (2015) and Dollar, Fisman and Gatti (2001). Furthermore, the results show the leaders and money changers are those who have experience before the crime. This shows that, because they have experience, they do not need people with pre-crime experience in managerial positions, as the manager characteristics model resulted in a negative relationship to experience.

Models 3 and 4 in Panel B present estimates of crime types and the presence of leaders and managers (verified in models 1 and 2) in relation to the nature of the link between fraudsters proposed by Free and Murphy (2015). In Model 3, the dependent variable is *SigBond* was positively related to *Aprop* (coef. = 2.696, $p < 0.01$), *Corr* (coef. = 2.519, $p < 0.01$), *Ocult* (coef. = 3.509, $p < 0.01$) and *Straw* (coef. = 2.290, $p < 0.01$). In addition, negatively related to *Merc* (coef. = -0.895, $p < 0.10$) and *PreManager* (coef. = -1.317, $p < 0.01$).

This means that for the crimes of misappropriation, corruption, concealment and straw-man performance, some kind of significant bond between fraudsters, such as professional, family or friendship, is required. Moreover, these results showed that when at least one of the parties is at the managerial level of the criminal organization, the personal bond between individuals tends to be non-affective, i.e., at this hierarchical level people relate more to individuals with whom they have no family or friendship ties. Suggesting that relationships are built after the cooptation of the act and thus, developed over time, restricted to the professional bond.

The results for the presence of a Leader – the one who heads the criminal organization – were negatively related to significant bonds. These results suggest that the scheme may have become too large and the leader's relationships with several people in the organization, as well as family members, friends, and professionals, are needed. Also, as an alternative explanation, it may be that leaders may prefer to preserve the family and consequently avoid affective conflicts (Free & Murphy, 2015).

In Model 4, the dependent variable *AffectBond* was positively related to *Aprop* (coef. = 3.220, $p < 0.01$), *Ocult* (coef. = 4.797, $p < 0.01$), *Straw* (coef. = 2.386, $p < 0.01$). This means that, in addition to the bond being significant, it is affective (i.e., family or friends). Furthermore, the dependent variable is negatively related to *PreManager* (coef. = -1.120, $p < 0.05$). That is, the affective bonds (family or friendship) are positively related to Misappropriation, Concealment of Evidence and Straw-man performance.

In both Model 3 and Model 4, the *PreManager* presented a negative and statistically significant relationship. This implies that people in managerial positions are not those who have relationships with functional or affective bonds (family or friendship).

Free and Murphy (2015) highlighted the nature of bonds between members of a fraudulent group, and our results provide empirical evidence for the functional bonds that serve the organization and the affective bonds.

Regarding Misappropriation, it was observed that a corrupt politician associated himself with a black-market money dealer to, through a shell company, move and launder the money acquired from corruption. The crime of concealing evidence refers to the cooptation of family members to conceal evidence. Regarding Straw man performance, the results showed positive relationships between affective bonds and Straw man. This result suggests that reliance on family members or friends is necessary for the fraudster to borrow the name (i.e. social security number - CPF) for shell companies to be created and to conduct financial transactions.

5 CONCLUSIONS

The understanding of the collusion phenomenon, especially in corruption and money laundering schemes, is limited, and Dimant and Tosato (2018) claim a recent effort to understand the multifaceted nature of corruption and its interactions at the micro, meso and macro levels. Therefore, this exploratory article sought to expand their findings, presenting evidence from the case related to Operation “Lava Jato”. The built-in database provided evidence on who the leaders of criminal organizations decided to co-offend with and what their characteristics were. The article presents evidence on the characteristics of co-offenders in managerial positions in the criminal organization hierarchy. Finally, the study sought to explain the nature of the links between fraudsters and co-offenders and their relationship to types of crimes.

The empirical results showed that corruption was carried out not only by people who had affective/ friendship relationships, but also working relationships that enhance and can make it difficult to identify suspicious links between criminals by the control agencies (State Police - PF and MPF). In this sense, the improvement of intelligence organs is symptomatic, since corruption generates different demands and may be correlated with other financial crimes, such as money laundering, illegal currency exchange or currency evasion, among others.

One of the predominant ways identified in Operation “Lava Jato” for the commission of crimes was the use of “straw men” that help transform illicit resources into “apparently” lawful ones. The focus has been on the acquisition of goods, the execution of fictitious financial transactions and the management of shell companies with the purpose of laundering the money obtained. Unlike “stooges”, which are eventually used without their science, to simulate criminal acts, “straw-men” are preponderant elements in criminal money laundering activities. Thus, the Penal Code could typify such conduct, which invariably falsely represents the ownership of companies, gives away the ownership of bank accounts and/or puts vehicles and other assets in their names.

The study limitations provide opportunities for further research. The first limitation refers to data collection, as only the processes referring to the first phase of Operation “Lava Jato”, which focuses on the scheme leaders, were read. Future studies may expand to further phases and/or other investigations. Moreover, this study did not identify when the co-offenders were coopted, i.e., when the relationship began. Another limitation was to assume that when the bond was not described, it was not significant, so interviews with the accused could overcome this limitation.

Future research can also explore each individual crime, especially the most frequent ones in the “Lava Jato” case (money laundering, currency evasion and black money market), such as Gonçalves and Andrade (2019), who addressed corruption in specific. Finally, the functional bonds that serve the individual, proposed by Free and Murphy (2015), i.e., the individual motives of each accused were not collected due to the reading of the processes, not allowing for the identification of personal motives for individuals deciding to co-offend.

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Appendix A

Example of Affective Bond in Criminal Procedure: 5025676-71.2014.404.7000 between fraudster (Paulo Roberto Costa) and co-offender (Shanni Azevedo Costa Bachmann)

Shanni Azevedo Costa Bachmann, nascida em 13/08/1981, **filha** de Paulo Roberto Costa e Marici da Silva Azevedo Costa – CPF: 091.878.667-30, Endereço: Rua dos Jacarandás, 1000, Bloco 03, Apto 501 – Barra da Tijuca – Rio de Janeiro/RJ – CEP 22.776-050

Example of Role in Criminal Procedure Crime: 5025676-71.2014.404.7000 of co-offender (Shanni Azevedo Costa Bachmann)

Já o casal HUMBERTO e SHANNI chegou no escritório às 9 horas e 20 minutos. HUMBERTO permaneceu no local somente até as 9 horas e 24 minutos, quando deixou o prédio e passou a esperar do lado de fora. Durante todo o tempo, o denunciado demonstrou ter consciência dos fatos e prestou auxílio material aos demais denunciados.

A denunciada SHANNI, por sua vez, permaneceu até 9 horas e 53 minutos no escritório prestando auxílio na remoção de documentos para o denunciado MARCIO. Durante este período subiu e desceu os elevadores por duas vezes. A primeira vez com uma bolsa de ginástica e uma bolsa preta pessoal. A segunda, apenas com a bolsa preta pessoal.

Assim, coube aos denunciados ARIANA E MARCIO a tarefa de remover materialmente as provas dos crimes praticados pela organização criminosa. Já os denunciados HUMBERTO e SHANNI prestaram auxílio material sem o qual a empreitada criminosa não seria consumada. Enquanto SHANNI auxiliava MARCIO na identificação e remoção dos documentos de dentro do escritório, HUMBERTO, prestou auxílio aguardando no carro do lado de fora.

Todos atenderam a ordem do denunciado PAULO ROBERTO COSTA, que era o único interessado na destruição das provas.

Example role in crime in Criminal Procedure: 5049898-06.2014.404.7000 of the co-offender (Carlos Alberto Pereira da Costa)

No esquema, MURILO TENA BARRIOS, junto com Marcio Bonilho, era diretor das empresas Sanko Sider e Sanko Serviços, envolvidas no esquema. CARLOS ALBERTO PEREIRA DA COSTA atuava como “testa de ferro”, mas também auxiliava no planejamento jurídico das atividades e na lavagem de valores, sobretudo administrando as empresas de YOUSSEF.

Example of experience in Criminal Procedure: 5026212-82.2014.404.7000 fraudster (Alberto Youssef)

A atuação de YOUSSEF data de longa data no sistema financeiro paralelo. Trabalha, no mínimo, há vinte anos no mercado de câmbio paralelo, como doleiro, e já foi considerado um dos maiores doleiros do Brasil. Conforme é sabido, foi condenado pela Justiça pela evasão de divisas. Interessante anotar diálogo em que YOUSSEF conversa com ANDRÉ LUIS e afirma que já chegou a ter 150 milhões de dólares na conta, antes de “quebrar” – ou seja, de ser preso no passado – e mesmo assim pagou todo mundo.

Example of experience in Criminal Procedure: 5026663-10.2014.404.7000 of the fraudster (Carlos Habib Chater).

HABIB já foi condenado pela Justiça Federal do Distrito Federal, em duas ações penais pela prática de crimes contra o sistema financeiro e pelo comércio ilegal de moeda estrangeira, bem como constituição de sociedades em nome de laranjas, condutas que estão agora novamente sendo-lhe imputada, o que denota que faz dessas práticas o seu meio de vida.