Facilitation of money laundering by Dutch SMEs

Master Thesis

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Abstract

Fighting crime by focusing on the financial aspects has become more important over the past years. By combating money laundering, it becomes more difficult for career criminals to spend, invest or hide their illegal proceeds. This thesis examines the determinants of seemingly legitimate SMEs and their managers, that facilitate career criminals by laundering their money. Additionally, it reports the social link between facilitator and career criminal, underlying crimes of the laundered proceeds, and laundering methods. Firm level variables are approached from corporate governance and financial constraint perspectives. Individual level variables are approached from a behavioral economics perspective. The data consists of publicly available firm level data, and restricted police data on board members' criminal history. The method applied is logistic regression. At both firm level and individual board member level, a matched and non-matched sample is used. Results indicate that facilitation is positively related to the following constructs: the legal form private limited liability company (PLLC), leverage, board members' age category 26-35, being female and having an above average criminal history. The criminal history, however, is characterized by less severe crimes. Facilitation is negatively related to board size and a firm's liquidity. Board tenure and an individual's cultural background are not demonstrated to be related to facilitation. Additionally, results indicate that facilitating firms have a greater tendency to not comply with their obligation to publish financial statements at the chamber of commerce. Facilitating board members typically launder for one career criminal. Facilitators and career criminals typically have had previous legal dealings prior to the facilitation, are the spouse of career criminals or are their family members. Females tend to especially launder for their spouses. Underlying crimes are in most of the cases narcotics related crimes and fraud. Common laundering methods are fictitious labor contracts (cost laundering) and the use of company bank accounts (balance sheet laundering).

Keywords: money laundering; facilitation; SMEs; corporate governance; financial constraint; behavioral economics; fraud; white-collar crime; criminal record; self-control theory

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1. Introduction

1.1 Context

In recent years, fighting crime by focusing on money laundering and other financial aspects has taken on an increasingly important role worldwide. By preventing criminals from spending and reinvesting the money they earn illegally, it becomes less attractive for them to engage in the various underlying crimes (Unger et al., 2006). In the Netherlands, many different government agencies are involved in fighting crime through financial means. Examples of key players are: the Dutch police, the Tax and Customs Administration, the Financial Intelligence Unit, the screenings authority legal entities Justis and the Authority Financial Markets (Knoop & Rollingswier, 2015). The financial investigators of the Dutch police focus on money laundering cases that involve SMEs.

1.2 Problem

The financial investigators of the police increasingly receive tips that seemingly legitimate SMEs and these SMEs' managers are possibly involved in facilitating money laundering for one or a very small number of criminals. Sources of these tips can be investigators from other specializations (e.g. narcotics or human trafficking), colleagues patrolling the streets or non-police institutions such as the tax administration, municipalities and financial institutions. However, it is unfeasible to conduct a full investigation every time the name of a firm comes up. For this reason, the police need a way to determine whether firms and their managers fit the profile, and are therefore sufficiently suspicious to investigate further.

However, since little is known about this specific type of laundering, a profile has not been created. Much of the knowledge and information about facilitators is present in the police organization. Yet, this data has not been systematically collected and analyzed. For this reason, the police require that research is conducted on the determinants of firms and board members that facilitate career criminals in money laundering. The input of this model, however, should only consist of determinants which are quickly, unlimitedly and freely accessible for police employees. This includes both publicly available data and data accessible through internal police systems. The reason for this requirement is that requesting other data, such as information from the tax administration, is a lengthy and costly procedure. Additionally, the police require insight in the social link between the launderer and the career criminal, the underlying crimes and the laundering methods.

The problem described above has been formulated by the author of this thesis, based on a request from lead financial investigators and analysts of the Dutch police. The author of this thesis is employed by the Dutch police as a police officer, and therefore has access to the required data.

1.3 Relevance and link to prior research

The amount of literature on money laundering that focusses on SMEs is limited. Performed studies mainly focus on legal issues, laundering methods, anti-money laundering policies and macro-economic determinants and effects. Besides this, most researchers limit their scope to one specific country.

Furthermore, literature on facilitation of money laundering should be clearly distinguished from self-laundering and laundering by professionals. Research specifically conducted on the topic of SMEs that facilitate money laundering, is to the knowledge of the author of this thesis practically non-existent. However, Malm and Bichler (2013) have discussed strongly related topics in their paper. They explicitly distinguish 'Opportunists' from 'Professional launderers' and 'Self-launderers'. Opportunists are launderers who initially facilitate one criminal, typically met through their social circle. However, the authors hardly discuss the characteristics or motivations of this category. Malm and Bichler (2013) affirm that "there is very little research documenting how often this form of laundering occurs" (p. 368). However, they do not mention what little research *is* available. Since there is a lack of literature on

this specific topic, the framework of this thesis is based on more widely applicable fields of research: corporate governance, financial constraint, behavioral economics and, specifically, fraud literature. Based on this theoretical framework, relevant determinants are examined and hypotheses are formulated.

1.4 Main research question

To address the problem stated above, the following main research question has been formulated:

> What are the determinants of Dutch SMEs and managers that facilitate money laundering?

1.5 Sample and results

The unique dataset used in this thesis, contains publicly accessible firm data. This includes board data and financial data. Additionally, it contains restricted data on board members' criminal records and demographics. The data is analyzed through logistic regressions using both a matched and non-matched sample. The main results indicate that both firm level and individual level variables can be valuable indicators for facilitation. This thesis contributes to the scientific community, by providing exploratory research on a very specific type of criminal behavior by SMEs and their managers, that has hardly been examined before. It tests the implications of several theories, such as agency, financial constraint and self-control theory, in a very specific and unique setting. The practical relevance of this thesis for the Dutch police, consists of the insights that it provides on the determinants of facilitators. Additionally, insights are provided on the social link between the launderer and the career criminal, the underlying crimes of the laundered proceeds and the used laundering methods.

1.6 Overview

This introduction is followed by chapter two: the literature review. In this literature review, multiple hypotheses are formulated. Subsequently, in chapter three, the methodology used to answer the main research question and to test the hypotheses is discussed. In the fourth chapter of this thesis, results of this research are presented and discussed. Chapter five concludes.

2. Literature Review

In this chapter, facilitation is first defined and classified. In the second paragraph, the theoretical framework that functions as the foundation of this thesis is discussed. The third paragraph discusses the variables that are deemed relevant based on the theoretical framework.

2.1 What is facilitation of money laundering?

2.1.1 Origin

It is argued that the origin of the term money laundering can be traced back to the early twentieth century. Launderettes were supposedly popular with criminal organizations for avant la lettre money laundering (Duyne, 2003; Lizier, 2014). However, this claim lacks any form of reliable evidence and can be discarded as popular speculation.

The concept of money laundering reached legal adulthood in 1970 with the United States Bank Secrecy Act. This act required financial institutions to keep records of transactions, report suspicious transactions and identify depositors. The actual term "money laundering" however, did not make its entry in the legal domain until 1986 in the Money Laundering Control Act, qualifying money laundering as a federal crime in the Anti-Drug Abuse Act of 1986.

The Council of the European Communities adopted the term money laundering in its 1991 directive 'prevention of the use of the financial system for the purposes of money laundering and terrorist financing'. Still, it was not until 14 December 2001 that the Dutch Parliament implemented the term money laundering (witwassen) in the Dutch penal code in the form of article 420bis. However, the term money laundering was already recognized by the Dutch Parliament in 1993 in its legislative proposal for the Dutch equivalent of the American Banking Secrecy Act 1970, known as the 'Wet melding ongebruikelijke transacties'.

2.1.2 Definition

Of greater importance than the origin of the term money laundering is its definition, since it could make the difference between the verdict guilty and not guilty. The definition is also relevant at a larger scale when performing comparative studies between countries. Differences between definitions can result in different measurements of money laundering, which could lead to invalid results. Additionally, confusion about the term could distort the co-operation, and therefore prosecution, when multinational organizations are involved in fighting money laundering (Unger et al., 2006).

Unger et al. (2006) performed an extensive international analysis of 18 different definitions of money laundering. The comparison includes definitions ranging from those used by (inter)governmental organizations and penal codes, to academic papers and other scientific literature. Unger et al. (2006) find that definitions vary among three different aspects: the activity, the subject and the goal. The goal of Unger et al. (2006) however, is to estimate the amounts of money laundered in different countries and to describe the effects of money laundering. Therefore, they desire to find a universal and specific definition so that different countries with unique definitions, and therefore different presentations of data, can still be compared (Unger et al., 2006).

For this thesis, the Dutch penal code's definition is relevant since the Dutch police and court are obliged to follow this definition:

"Guilty of money laundering is:

a. he who hides or disguises the true origin, the source, the place of finding, the alienation or the movement, or hides or disguises who is the rightful claimant of an object or has it available, while he knows that the object is – directly or indirectly – derived from a crime;

b. he who acquires, has available, transfers or converts an object, or uses an object, while he knows that the object is – directly or indirectly – derived from a crime." (Dutch penal code, translated from art. 420bis Wetboek van Strafrecht)

The Dutch penal code describes the activity very precisely: "Hiding or disguising the true origin, the source, the alienation, the movement or the place where it can be found" (Dutch penal code, translated from art. 420bis Wetboek van Strafrecht). Because the activities are described this specifically, it could be argued that this limits the definition, and therefore the possibility to prosecute. The subject of the laundering is more broadly described as "all objects and rights … derived from a crime" (Dutch Penal Code, translated from art. 420bis Wetboek van Strafrecht). This means that not only money but also other proceeds are included. Furthermore, only criminal proceeds are included, therefore excluding illegal proceeds (i.e. proceeds gained from breaking administrative laws). The third aspect, the goal, has no legal relevance (Unger et al., 2006). Yet, it is still described in the Dutch penal code's definition, overlapping with the described activity: "Hiding or disguising the true origin …" (Dutch Penal Code, translated from art. 420bis Wetboek van Strafrecht).

So far, the definition of money laundering in general has been discussed. However, the Dutch penal code does not specifically define *facilitation* of money laundering. It makes no distinction between money laundering and facilitating money laundering. This is exemplified by the fact that the subjects of interest of this thesis, were all prosecuted for money laundering in general, based on art. 420bis of the Dutch penal code. It can be concluded that the definition of the facilitation element, in facilitation of money laundering, cannot be derived from Dutch law. Therefore, it needs to be derived from another source.
Malm and Bichler (2013) define a type of launderer which has similarities with the subjects of interest in this thesis. They separate professional launderers and self-launderers, from opportunists. These opportunists are engaged "in money-laundering for one person involved in the drug market, but they also have a familial or friendship tie with this individual" (p. 372). In contrast with professional launderers (those who provide financial and legal expertise for multiple criminals) and self-launderers (those who launder the criminal proceeds they earned themselves), these opportunistic launderers typically launder for one person, not being themselves. However, whether the subjects of this thesis only launder for one person, and whether they have a familial or friendship tie with the criminal, is not yet clear. For this reason, defining the subjects of this thesis as opportunists, would imply that certain characteristics of facilitators are already determined, which is not the case. Additionally, Malm and Bichler's (2013) opportunists do not by definition launder through firms.

Based on the Dutch penal code, on Malm and Bichler's (2013) definitions of the three types of launderers, and on the main research question, facilitation is defined in this thesis as follows:

> The act of laundering, as defined by the Dutch penal code, of criminal proceeds not generated by the launderer himself, carried out by SMEs and their managers in any other way than by providing legal or financial expertise.

Though the terms SMEs and managers are implemented in this definition, facilitation by large firms and non-managers is also possible. However, this is not the topic of this thesis. The definition as formulated above, is used in the remainder of this literature review. Furthermore, the sample is selected based on this definition.

2.1.3 Classification

In this sub paragraph facilitation of money laundering is classified based on various sources. The complete classifications per source can be found in appendix I.

The purpose of the International Classification of Crime for Statistical Purposes (ICCS) published by the United Nations Office on Drugs and Crime (UNODC, 2015), is to classify crime in a manner that can be applied worldwide. Based on the descriptions per category, especially 'Acts involving fraud, deception or corruption' seems to fit facilitation of

money laundering, more specifically: the subcategory 'Acts involving the proceeds of crime'. It is notable that in the description of this sub category a clear distinction is made between "acts of money laundering" and "self-laundering" (p. 72). However, as has already been concluded, literature on the category money laundering is limited. The next sub category that seems most strongly related to facilitation is 'Financial fraud'. Financial fraud is defined as "Fraud involving financial transactions for the purpose of personal gain" (UNODC, 2015, p. 68). This sub category includes, among others, investment fraud and securities fraud. When a person facilitates, he clearly uses financial transactions. If the person is compensated for his facilitation by the criminal, he has personal gain. It can be concluded that facilitation fits the classification fraud and specifically financial fraud.

Gottschalk (2014) bases his classification mainly on European papers and statistics. This source does not categorize crime in its broadest context but specifically addresses white-collar crime. It is notable that Gottschalk (2014) uses the terms financial crime and white-collar crime as if they are interchangeable. The author bases this interchangeability on Pickett and Pickett (2002). However, Pickett and Pickett (2002) do not have a clear explanation for why no distinction needs to be made and even state that "financial crime, white-collar crime, and fraud" (p. 3) can be used interchangeably. Of the four categories that Gottschalk describes, the categories manipulation and fraud both fit facilitation of money laundering. Gottschalk categorizes laundering (in general) under manipulation but does not make a distinction between facilitating laundering and self-laundering. Additionally, based on examining literature it becomes clear that the classification manipulation is not recognized by other authors as a crime category, making it less useful for this thesis. Gottschalk defines the other category, fraud, as (2014, p. 5): "An intentional perversion of truth for the purpose of inducing another in reliance upon it to part with some valuable thing belonging to him or to surrender a legal right." Facilitation involves some perversion of the truth. However, whether someone is induced in parting with some valuable thing or surrendering a legal right, is less clear. The government or society in general could be perceived as the entity that is being induced to part with the right of confiscation. However, this seems somewhat stretched. Gottschalk also lists several sub categories of fraud. The sub category that is most similar to facilitation is occupational fraud (2014, p.9): "Any fraud committed by an employee, a manager or executive, or by the owner of an organization when the victim is the organization itself may be considered occupational fraud." Facilitation includes the abuse of one's occupation (or one's firm when the owner is involved) to commit fraud. This includes less related forms such as employees that falsely call in sick or embezzle money. However, one very specific form of occupational fraud Gottschalk names, seems to be quite similar to facilitation: financial statement fraud. This type of fraud involves inaccurately presenting a firm's financial situation or performance. Though the direct motivation for facilitation and falsifying financial statements might differ, the outcome is similar: the financial statements do not correctly represent the firm's underlying economic activities and situation. It can be concluded that facilitation has strong similarities to fraud, and specifically occupational and financial statement fraud.

To the knowledge of the author of this thesis, the number of systems that specifically classify Dutch crimes is very limited. The Dutch Centraal Bureau voor de Statistiek (CBS) has developed a standard classification system which is based on the Dutch penal code (CBS, 2016a). In this system, facilitation of money laundering is classified as a property crime. However, this is a very broad category including crimes ranging from armed robbery to counterfeiting. Though facilitation fits this classification, it is less useful for this thesis due to the large heterogeneity within this classification.

2.1.4 Conclusion

In this paragraph, it has become clear that money laundering in general is well defined. However, the behavior that the subjects of this thesis demonstrate, facilitation, has not yet been clearly defined. Therefore, it has been defined in this paragraph. There are multiple categories of crime that are strongly similar to facilitation: white-collar crime, fraud, financial fraud, occupational fraud and financial statement fraud all fit facilitation. However, it should be kept in mind that there is large heterogeneity within these categories. Therefore, it is important to note that literature on these related types of crimes, cannot necessarily always be generalized to facilitation.

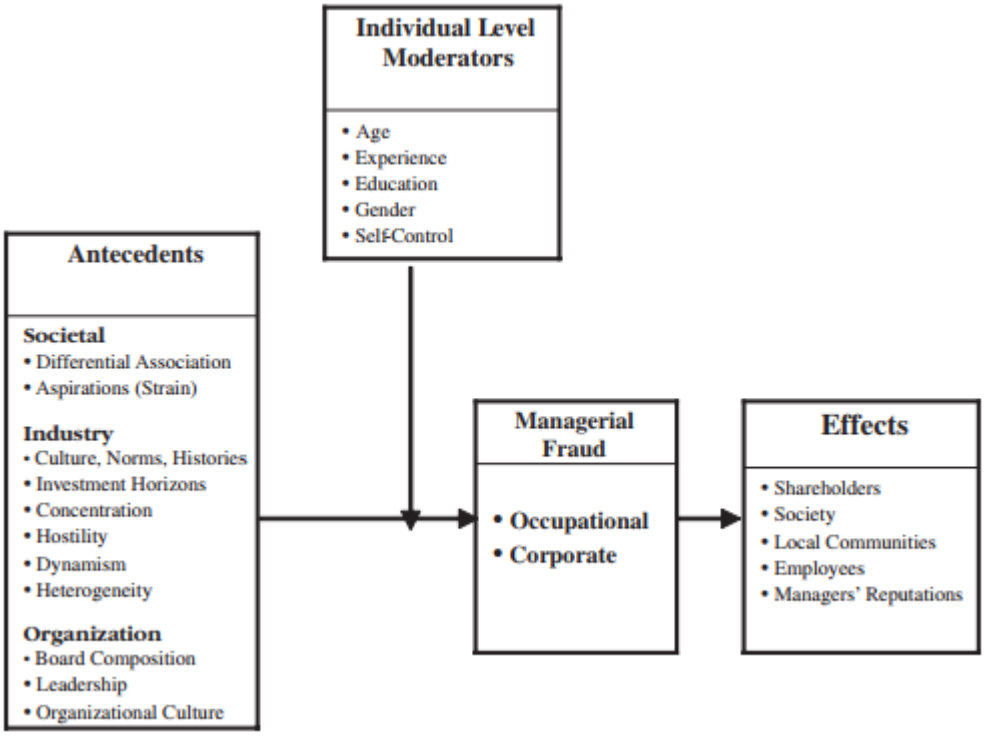
2.2 Theoretical framework

In the previous paragraph, facilitation has been defined and classified. In order to structurally select and examine relevant determinants, a theoretical framework is necessary. In this paragraph, the theoretical framework by Zahra et al. (2005) is discussed and used as a starting point. Subsequently, it is adjusted so that it fits the requirements of this thesis. The choice for Zahra et al.'s (2005) framework is based on the fact that it approaches fraud on both organizational and individual level, and additionally complements business literature with criminological literature.

2.2.1 Framework by Zahra, Priem & Rasheed

The theoretical framework by Zahra et al. (2005) is visualized in figure 1. The authors argue that societal, industry and organizational factors affect the chance of fraud. However, whether an individual actually chooses to commit fraud is moderated by individual factors. This choice, in turn, affects multiple stakeholders.

Figure 1 Theoretical framework by Zahra et al. (2005, p. 807)



The main research question of this thesis concerns determinants at the organizational and individual level. For this reason, the societal and industry level are not relevant for this thesis. However, this does not mean that it is irrelevant in which industry the firms of this thesis operate. Though Zahra et al. (2005) do mention that financial aspects play a role on societal, industry and organizational level, their discussion of this topic at the organizational level is limited. They argue that, at an organizational level, managers of financially distressed firms tend to unduly focus on financial performance. The rest of their discussion of the organizational level only concerns corporate governance determinants, and leadership and cultural determinants. However, a large number of authors have examined the effects of financial constraint on fraud occurrence (Loebbecke et al., 1989; Bell et al., 1991; Fanning & Cogger, 1998; Beneish, 1999; Spathis, 2002; Firth et al., 2011; Davidson et al., 2015; Lisic et al., 2015; Biggerstaff et al., 2015).

The effects of fraud on various stakeholders as discussed by Zahra et al. (2005), are not topic of discussion in this thesis and are therefore left out. Yet, it raises the question whether the problem of this thesis should be approached through stakeholder theory. However, as Jensen (2001) argues, application of stakeholder theory potentially limits

value creation on a global scale and merely serves as an instrument for those who wish to use it to pursue their own goals. It seems that stakeholder theory is, arguably, less suitable to examine behavior and choices in business.

In summary, in order to answer the main research question of this thesis, corporate governance and financial constraint determinants need to be examined at an organizational level. In addition, individual determinants are relevant. These are approached based on the field of behavioral economics.

2.2.2 Corporate governance

At the organizational level, Zahra et al. (2005) include board composition, leadership and culture in their framework. Leadership and organizational culture are not practically observable for the police and cannot be used for this thesis. However, data on board composition is both accessible and practically measurable. Zahra et al. (2005) base their argumentation to implement board composition in their framework on agency theory. However, their discussion of agency theory is rather limited and mainly focusses on one type: shareholder-manager. For this reason, agency theory will first be discussed more extensively in this sub paragraph.

Agency problems arise when the interests of the principal and the agent are not aligned, and when there is an information asymmetry between these parties (Jensen & Meckling, 1976; Eisenhardt, 1989; Hillier et al., 2012). Though this theory is applicable in multiple fields of study, it is particularly a topic of interest in the field of business administration (Harris & Raviv, 1978; Shapiro, 2005). Research in this area strongly focusses on how the interests of the principal and the agent can be aligned. Jensen and Meckling (1976) argue that especially the relation between those who provide capital and those who control it are of interest. Therefore, in this sub paragraph the shareholder-manager relation and debtholder-shareholder relation are examined. However, other types also exist such as the relation between majority and minority shareholders, but these are less present at SMEs (Kim et al., 2007; Ratnawati et al., 2016). Another agency relation could be between e.g. a CEO or dominant board member and other board members: if he decides to invest in certain projects, to commit fraud or to facilitate money laundering, this could affect (or even incriminate) the other board members. However, (allegedly) all board members of each board in this thesis' sample were actively involved in the laundering, so this form of agency does not play a role.

A shareholder-manager relation can result in self-interested value destructive behavior by the manager. This manifests through risk-averse behavior (Eisenhardt, 1989), paying greenmail (Ang & Tucker, 1988; Bhagat & Jefferis, 1994; Manry & Nathan, 1999), empire-building (Deutsch, 2005; Hillier et al., 2012), management entrenchment (Shleifer & Vishny, 1989; Bebchuck & Cohen, 2005; Hillier et al., 2012), investing in projects that pay off quickly (Hillier et al., 2012), overinvestment (Jensen, 1986; Richardson, 2006; Hillier et al., 2012) and takeover defenses (Ryngaert, 1988; Deutch, 2005). When specifically examining shareholder-manager agency in context of fraud, Beasley (1996) and Beasley et al. (2000) list several variables of interest to this thesis: board ownership, board tenure, and board size. Additionally, firm age and firm industry are examined but the theoretical implications of their relation to fraud are less clear. Financial performance is also potentially relevant according to Beasley (1996) but for this thesis' subjects impractical to measure. This thesis' subjects do not have the obligation to publish profit & loss and cash flow statements. Though financial performance could theoretically be derived from balance sheets, this data cannot be controlled for paid dividends due to the unavailability of this data.

A debtholder-shareholder relation can result in underinvestment, negative present value projects or very risky investment choices. These undesirable situations are caused by the tendency of shareholders to try to make a profit by risking the debtholders' capital (Myers, 1977; Gavish & Kalay, 1983; Green & Talmor, 1986; Burkhardt & Strausz, 2009; Hillier et al., 2012; Lawless et al. 2015; Schnabel, 2015), When specifically examining debtholder-shareholder agency in the context of fraud, managers and/or shareholders can manipulate earnings so that debtholders are more inclined to provide debt capital or demand lower interest rates (Hogan et al., 2008). Additionally, high leverage results in high monitoring by debtholders which, in turn, arguably results in higher observation rates of fraud (Lisic et al.,

2015). Yet, this effect might be less present at SMEs since these are more difficult to monitor by banks compared to listed firms which possibly provide quarterly and detailed financial statements. It has become clear that both liquidity and leverage play a role in corporate governance and specifically agency theory. However, these factors are possibly less relevant, from an agency perspective, when examining SMEs.

In both agency relations described above, the agent has information and the power to make decisions, but the risk of loss is (at least partially) for the principal. This problem can be addressed by making the agent's compensation (partially) dependent on the principal's compensation, as well as by monitoring the agent (Jensen & Meckling, 1976; Eisenhardt, 1989; Datta et al., 2009; Hillier et al., 2012). However, the true effectiveness of incentive alignment and various monitoring mechanisms has received criticism (Tosi et al., 1997; Duffhues & Kabir, 2008; Sarens & Abdolmohammadi, 2011; Cao et al., 2011; Schultz et al., 2013; Gao & Li, 2015). The effectiveness of interest alignments is especially complex in case of fraud: managers could be inclined to fraud in order to report inflated earnings so that their performance-based pay increases. Therefore, the common 'solution' for agency problems, potentially *creates* agency problems. Additionally, with SMEs, ownership is generally less separated from management: managers of SMEs frequently own large percentages of firms' shares, if not all shares, which mitigates agency problems.

The potential effects of a firm's legal form are not examined by Zahra et al. (2005). An explanation for this is that fraud literature is commonly conducted on listed firms, which basically all have the same legal form. This is in contrast with the subjects of this thesis. However, based on agency theory the legal form of a firm has the potential to influence decision-making by managers and shareholders. The tendency of shareholders to make risky investments at the cost of debtholders, is especially likely to occur at corporations due to limitations in liability. This is in contrast with sole proprietorships and partnerships, where the owners are fully liable for the debts of the firm (Leach & Melicher, 2015). This effect, however, would arguably not be present when a shareholders' personal situation is also close to bankruptcy. This would namely mitigate the full liability generally associated with sole proprietorships and partnerships. Because of the potential role of a firm's legal form, it is added as a determinant in this thesis.

2.2.3 Financial constraint

Literature suggests that when firms lack sufficient liquidity, their managers and/or shareholders are more inclined to demonstrate (according to other parties) undesirable investment behavior such as investing in negative NPV projects or very risky projects (Hillier et al., 2012). Negative NPV projects might be especially tempting when they generate short-term positive cash flows and let the firm survive for a little while longer. High-risk projects can be especially tempting when the firm is highly, or even completely, leveraged. In this case the shareholder has nothing to lose since he is only entitled to (non-existing) residual cash flows in case of bankruptcy. Fraud could be perceived as a very high-risk project (Armstrong et al., 2013) or even negative NPV project, especially when also the risks of reputation damage, fines and imprisonment are considered.

For multiple reasons, the problems associated with being financially constrained, are especially severe at SMEs. First of all, SMEs have greater difficulty in attracting capital. Beck et al. (2005) demonstrate that small firms experience severe obstacles when trying to attract equity or debt. Beck and Demirguc-Kunt (2006) provide results in line with Beck et al. (2005) by demonstrating that small- and medium sized firms can get less bank financing and equity, and are therefore more dependent on alternative sources such as supplier credit and informal financing. Secondly, the effects of being financially constrained potentially encourages SMEs to demonstrate undesirable behavior even stronger. Since managers and shareholders of SMEs are often completely dependent on their firms for income, their personal financial situations are often perfect reflections of their firms' finances. This might have pushed the subjects of this thesis to perceive facilitation as a final resort to avoid both firm and personal bankruptcy. On top of the sensitiveness of SMEs to financial constraint, the cases in this thesis' sample often started facilitating during the

financial crisis, evaporating cash reserves and limiting access to financing even more (Fraser et al., 2015). For these reasons, liquidity and leverage are implemented in this thesis, in line with Fanning and Cogger (1998), Beneish (1999), Spathis (2002) and Biggerstaff et al. (2015).

2.2.4 Behavioral economics

Zahra et al. (2005) argue that in the end, despite the influences of higher-level factors, it is the individual that makes the decision to commit fraud. Research based on dominant business theories such as agency theory, seldom take individual characteristics into account (Thaler, 2005; Ackert & Deaves, 2009). However, individual factors that *should* not influence the decision-making process according to these theories, *do* influence it (Henrich et al., 2005; Shefrin, 2005; Gomez-Meija & Wiseman, 2007; Ackert & Deaves, 2009; Ottaviani & Vandone, 2011; Cartwright, 2011; Altman, 2012; Burton & Shah, 2013). When these determinants are not considered, the researcher implies that in the same situation, each individual would make exactly the same choice. Though agency theory falls under the umbrella of behavioral economics, the latter examines many other aspects (Ackert & Deaves, 2009; Cartwright, 2011; Altman, 2012; Szyszka, 2013): Behavioral economics "is about applying insights from laboratory experiments, psychology, and other social sciences in economics" (Cartwright, 2011, p. 4). This field of study has widely confirmed the potential of age, experience, education, gender and self-control to influence decision-making (Henrich et al., 2005; Shefrin, 2005; Ackert & Deaves, 2009; Yazdipour, 2010; Cartwright, 2011; Burton & Shah, 2013). More specifically, the determinants are also commonly linked to the decision to commit fraud (ACFE, 2016; KPMG, 2016).

The determinants age, gender and education are fairly practical to observe by the police and therefore useful for this thesis. However, experience as described by Zahra et al. (2005), includes constructs such as functional and military experience, on which data is often unavailable. The implementation by Zahra et. (2005) of self-control in their framework, is based on Gottfredson and Hirschi's (1990) self-control theory. These authors explain white-collar crime by the perpetrator's lack of self-control, and his attraction to risky behavior and short-term satisfaction. Self-control is a psychological construct and therefore, in principal, difficult to observe (Simpson & Weisburd, 2009). However, lack of self-control is something that is typically associated with having a criminal history. Therefore, in line with Davidson et al. (2015), criminal history is implemented to function as a proxy for lack of self-control.

Culture has an especially important role in Zahra et al.'s (2005) framework. This importance is also widely acknowledged in behavioral economics (Ackert & Deaves, 2009; Cartwright, 2011; Burton & Shah, 2013). In their framework, culture is implemented at the societal, industry and organizational level. However, since the societal and industry level are left out of this thesis, and organizational culture is impractical to measure, culture is chosen to be analyzed at an individual level.

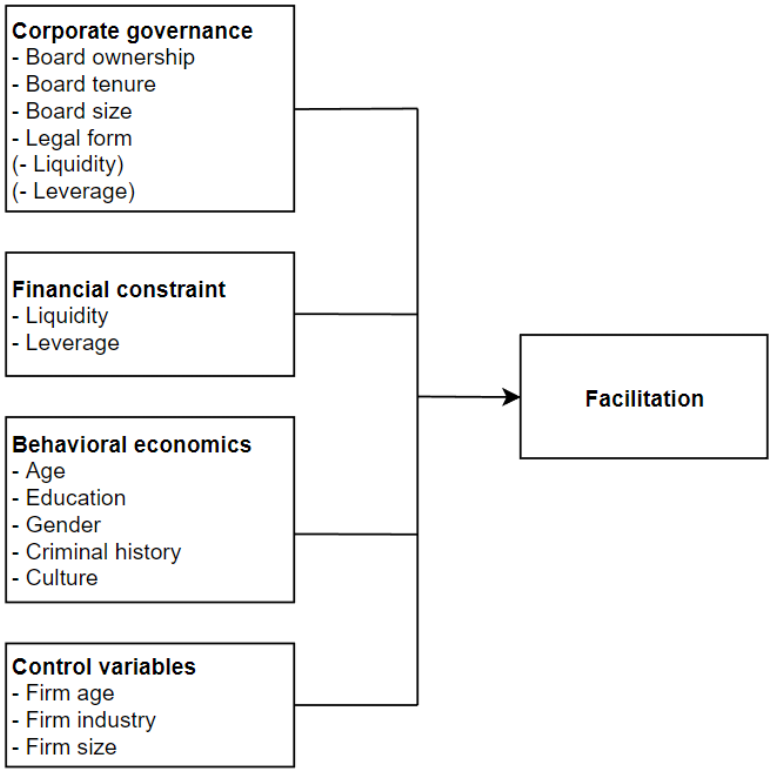
2.2.5 Conclusion

In this paragraph, it has become clear that fraud occurrence is influenced by factors at societal, industry, organizational and individual level. However, the first two categories are not the subject of this thesis. Organizational level determinants are mainly based on agency theory and address corporate governance determinants. Financial constraint also plays a role and partially overlaps with agency theory; liquidity and leverage play a role in both theories. However, it has become clear that agency theory has less, but possibly still some, potential to explain the relation between being financially constrained and fraud at SMEs. Therefore, financial constraint is examined separately. Individual level determinants are approached through behavioral economics and concern the demographics and self-control of a fraudster. In addition to these determinants, literature on corporate governance, financial constraint, behavioral economics and fraud specifically, indicates that firm age, industry and firm size play at least some role (Beasley, 1996; Beasley et al., 2000; Zahra et al., 2005; Beck et al., 2005; Beck & Demirguc-Kunt, 2006; Wang, 2011; KPMG, 2016; ACFE, 2016) Therefore, these variables are implemented as control variables in this thesis.

Zahra et al. (2005) argue through their framework that individual level determinants, in contrast with organizational level determinants, are moderators. However, the argumentation of the authors to implement these determinants specifically as moderators in their framework is based on circumstantial evidence and lacks sufficient theoretical support. Therefore, individual level determinants will not be implemented as moderators in this thesis' framework, but will be regarded as regular independent variables.

Based on this paragraph, the theoretical framework by Zahra et al. (2005) is adjusted as presented in figure 2. This adaptation is used throughout the rest of this thesis.

Figure 2 Theoretical framework



2.3 Determinants

In this paragraph, the determinants discussed in the theoretical framework are examined individually. The discussion of each determinant follows the same structure. First the determinant is briefly discussed in light of its related field: corporate governance, financial constraint or behavioral economics. Next, the determinant is discussed based on fraud literature. Then, these literatures are briefly reflected upon using white-collar criminology and business ethics literature. Finally, each sub paragraph, except those on the control variables, is concluded by formulating one or multiple hypotheses.

2.3.1 Board ownership

Agency theory suggests that boards are more inclined to act in the interests of shareholders when their interests are aligned. A common method to do this is through board ownership and other forms of equity-based pay (Conyon & He, 2012; Hillier et al., 2012). However, whether this strategy is actually effective remains unclear. Alternative explanations for the popularity of equity-based compensation have come up: arguably, large shareholders who are simultaneously a (potential) client, supplier or debtholder of the firm, are anxious to challenge the executive's equity-based compensation. The reason for this is that it might affect the business between their firms (Duffhues & Kabir, 2008).

Linking agency theory to financial statement fraud, the following extension can be made. If executives mainly act out of self-interest, those who receive (more) performance-based pay are arguably more inclined to misstate performance through fraud, creating a situation where the usual antidote becomes the poison. Most literature either confirms this positive relation or finds no significant relation (Beasley, 1996; Cheng & Warfield, 2005; Burns & Kedia, 2006; Bergstresser & Philippon; Armstrong & Vashishtha, 2012). However, Rezaee (2005) argues that the effect is shaped in a reverse U: Ownership of management between 0% and 5%, and above 25% decreases fraud chance, whereas ownership between 5% and 25% is related to an increased chance. Arguably, ownership percentages outside this range are either too small to provide sufficient reward when fraud is committed, or so large that the board members have relatively little to gain from misleading the shareholders because they largely *are* the shareholders.

Armstrong et al. (2013) demonstrate that the relation between equity-based pay (typically measured as delta) and misreporting tends to be mitigated when controlling for vega, the sensitivity of shareholder wealth to stock volatility. The authors find a positive relation between vega and misreporting, meaning that when executives' wealth is more sensitive to stock price volatility, they have a greater tendency to misstate. Misstatement by management can be perceived as a risky project that increases the volatility of the firm's share prices. Therefore, when vega is high and the managers' wealth is strongly dependent on the firm's level of risk, they are more inclined to take high risks such as fraud.

Though, to the knowledge of the author of this thesis, there are no studies that specifically examine the effects board ownership on white-collar crime or business ethics, both fields have extensively examined the relation between reward and respectively crimes and unethical behavior. In white-collar criminology, rational-choice theory is one of the most dominant theories (Shover & Hochstetler, 2005; Miller et al., 2009; Minkes & Minkes, 2008; Burke, 2013). In summary, the theory purports that the decision to commit a crime is based on a rational weighing of benefits and costs, and opportunity. This shares similarities with the fraud triangle of Cressey (1953), which encompasses that fraud is the result of "Perceived unshareable financial need, perceived opportunity and rationalization" (ACFE, 2017, p.1). Lastly, comparing the findings above with the findings of business ethics, there is a consensus that unethical behavior is more likely to occur when it is rewarded (O'Fallon & Butterfield, 2005; Craft, 2013).

When applying the theory discussed above to the subjects of this thesis, an important difference should be noted. SMEs are typically characterized by board members who already own large percentages of shares, if not all shares. Specifically, for this thesis' sample, nearly all firms have only 1 board member. Additionally, all firms are owned by

the board members. This means that the roles of the CEO, the board and the shareholder are all simultaneously embodied by one person. Based on agency theory, this would remove the agency problem between shareholders and managers. However, the principals of agency theory are still applicable: board members would be more inclined to use their firm to facilitate, if they are the beneficiaries of the fee the career criminal is willing to pay to the firm. Otherwise, they would be taking the risk (fines, prison, etc.) without being rewarded for it, which is not in their own interest. This would mean that board members that own larger or all shares of the firm, are more inclined to facilitate. Alternatively, if the board member gets compensated directly, without proceeds going through the firm, this logic would not hold and board ownership should not affect the tendency to facilitate.

In conclusion, in line with agency theory, the underlying motivation for financial statement fraud and facilitation is equal: managers act out of self-interest and try to avoid risk when they are not compensated for it. This should result in a positive relation between board ownership and facilitation probability, assuming the fees paid by the career criminal go through the firm. When this is not the case, there should be no relation between board ownership and facilitation probability. The following hypotheses have been formulated:

Hypothesis 1a: There is no relation between board ownership and facilitation probability.

Hypothesis 1b: There is a positive relation between board ownership and facilitation probability.

2.3.2 Board tenure

Corporate governance literature provides opposing explanations of the effects of CEO and board tenure. Arguably, when a CEO does a good job, this is rewarded by a longer tenure (Coles et al., 2001). Alternatively, longer CEO tenure can result in rigid behavior and decision-making, which negatively influences performance (Miller, 1991; Coles et al., 2001). Another explanation for a negative relation between CEO tenure and performance is that a CEO's tenure increases his power over the board members, decreasing their power to monitor him (Hermalin & Weisbach, 1988). Specifically, with outside directors, a longer tenure could either result in more experience and a better knowledge of the firm and therefore higher quality monitoring, or a deeper entrenchment in, and dependency on the firm, resulting in lower monitoring quality (Beasley, 1996).

Beasley (1996) found no significant relation between CEO tenure and financial statement fraud. He argues that this finding indicates that a CEO's increase in power, through an increase in tenure, does not necessarily lead to more or less financial statement fraud. However, Beasley (1996) did find clear evidence of a negative relation between the tenure of outside directors and fraud occurrence. When comparing Beasley's findings on the effects of tenure with more recent studies, his non-finding of a relation between general board tenure and fraud are generally confirmed. Uzun, Szewczyk and Varma (2004) performed an analysis of US firms in the time-period 1978-2001 but found no relation between CEO tenure and financial statement fraud in any of their models. Erickson et al. (2006) were not able demonstrate a significant relation either, using the same sample and time-period, but a different methodology. Chen et al. (2006) used a sample of Chinese firms to examine the effects of the tenure of the chairman. They argue that, in China, the chairman has greater power than the CEO, but at the same time has less inside information. They provide evidence that when a chairman's tenure is shorter, he is less able to monitor the firm and detect fraud.

Davidson, Dey and Smith (2015) provide evidence for a significant relation between CEOs' private spending patterns, tenure and financial statement fraud. Specifically: they found an interaction effect between unfrugal behavior and the tenure of CEOs, and the likelihood of financial statement fraud and other forms of financial reporting risks. The authors argue that through tenure, a CEO influences the culture of his firm. This means that as an unfrugal CEO's tenure increases, the chance of financial statement fraud committed by other insiders increases. With frugal CEOs, the relation is the opposite: through tenure they influence the corporate culture in such a manner that other insiders are less inclined to commit financial statement fraud.

Wang et al. (2017) argue that CEO tenure is an inefficient measure and replace it, along with a number of other variables, with managerial ability. This variable is based on an approach by Demerjian et al. (2012) and represents the efficiency of management. With this measure, Wang et al. (2017) demonstrate strong evidence that a manager's ability is negatively related to financial reporting fraud. It can be argued that non-findings on the effects of tenure by Beasley (1996), Uzun et al. (2004) and Erickson et al. (2006) are due to the fact that tenure is just a small element of the complete variable: managerial ability. Alternatively, the differences between the findings could also be due to the difference in populations. It should be noted that Demerjian et al.'s (2012) measurement instrument requires detailed data such as purchased goodwill and net operating leases. This makes it less suitable for smaller and unlisted firms.

The field of white-collar criminology provides no additional insights on the effects of tenure. Both O'Fallon and Butterfield (2005) and Craft (2013) conclude that the amount of business ethics literature on the effects of tenure is limited and unclear.

In conclusion, in theory CEO and other board members' tenure have potential to explain financial statement fraud occurrence. However, the hypothesized directions of relations are contradictive and literature provides little to no evidence. There is some evidence that those who have a monitoring role (external board members and the chairman) are better at countering financial statement fraud as their tenure increases. However, literature discussed above is based on listed firms. External board members and chairmen are uncommon at SMEs. Since most findings and theoretical implications of the effects of tenure are based on the monitoring quality by these parties, no well-supported direction of a relation can be hypothesized. The following hypothesis has been formulated:

Hypothesis 2: There is no relation between board tenure and facilitation probability.

2.3.3 Board size

Board size is a widely examined determinant. In line with Jensen (1993), Yermack (1996) argues that larger boards are less efficient in monitoring management because the decision-making process is slower, risk aversion is increased and CEOs are better able to control larger boards. Yermack (1996) demonstrates that firm value is negatively related to firm value. Especially when boards increase from small to medium, firm value is negatively affected, implying a right-skewed relation between board size and firm value. Coles et al. (2008) argue that this relation is more complex and that the optimal board size depends on the firm's complexity, where complex firms benefit from more board members, and less complex firms benefit from fewer board members. Coles et al.'s (2008) theory seems to be confirmed by combining Yermack's (1996) findings with those of Adams & Mehran (2012), who argue and demonstrate that larger boards provide more expertise which leads to an increase in firm performance in the financial industry, which arguably needs more expertise due to its complexity.

When examining the effects of board size specifically in case of fraud, Beasley (1996) found that board size is significantly and positively related to financial statement fraud occurrence. This finding is in line with Jensen (1993) and Yermack (1996) who argue that smaller boards are more capable of monitoring and controlling the CEO, and that larger boards are less inclined to challenge or contradict the CEO. However, in later studies the effect of board size on fraud occurrence is less clear. Chen et al. (2006) conclude that the effect of board size on fraud probability is insignificant. However, this study examined fraud in a broader sense including illegal share buybacks and embezzlements by large shareholders. Biggerstaff et al. (2015) found no significant relation either. They argue that other variables such as firm size, leverage, board independence, market-to-book ratios and whether the CEO has been backdating options before he was hired, are more important. Cumming et al. (2015) split their sample in male-dominated and female-dominated industries. Interestingly, they demonstrate that the positive relation between board size and fraud occurrence is only significant in female-dominated in female-dominated industries. However, they provide no explanation for the difference between these groups.

Surprisingly, the fields of criminology and business ethics have produced little to no literature on the relation between board size and ethicality (O'Fallon & Butterfield, 2005; Craft, 2013).

Though there is no consensus on the relation between board size and facilitation, literature seems to provide three main theories: (1) larger boards provide more expertise which decreases fraud occurrence, (2) larger boards are less able to monitor and control the CEO which increases fraud occurrence, and (3) the optimal board size depends on the complexity of the firm. At SMEs, boards are far smaller than at listed firms. However, the theoretical implications of these theories can still be applied to this thesis. The underlying assumption of the three theories seems to be that the CEO needs to be monitored by other board members. When an SME has only 1 board member (which is not uncommon at SMEs and is highly common in this thesis' sample), this would mean he is not monitored at all. Considering the illegal nature of facilitation, board members arguably prefer to work alone to minimize the risk that they get caught. The same is likely for career criminals: they prefer to be facilitated by one board member, instead of an entire board. This leads to the following hypothesis:

Hypothesis 3: There is a negative relation between board size and facilitation probability.

2.3.4 Legal form

The characteristics of legal forms differ among the following seven dimensions (Leach & Melicher, 2015, p. 93): "Number of owners; ease of startup; investor liability; equity capital sources; firm life; liquidity of ownership and taxation." Depending on the needs of an entrepreneur concerning these characteristics, he must choose from one of the forms his legal / national environment provides. Though every country has its own unique legal forms, most countries provide (variations of) the following forms: sole proprietorship, partnership, limited partnership and corporation. Especially the corporation is a legal form that has been the topic of discussion, and receiver of criticism (Bakan, 2004; Campbell, 2007; Mayer, 2013). Ireland (2008) argues that this legal form was already controversial in the 19th century and that the corporation provides the worst combination of characteristics: shareholders have a limited liability, equal to the non-executive partners of a limited partnership, yet they have full control, equal to the executive partners of a limited partnership. This combination arguably encourages irresponsible corporate behavior.

Financial statement fraud literature that addresses the effect of a firm's legal form, is to the knowledge of the author of this thesis, non-existent. An explanation for this is that most literature on this topic is based on listed firms which basically always have the same legal form. Yet, though research that examines financial statement fraud at private companies is small in its extent, it is not non-existent (see for example Aris et al., 2015; Stuart & Wang, 2016). Though other legal forms such as the sole proprietorship and the partnership tend to not come up in financial statement fraud literature, these types of firms might still have reasons to defraud their financial statements. For example, the entrepreneur that wishes to sell his sole proprietorship for a higher price by manipulating the historic profitability, or the manager that desires a lower interest rate and provides false financial statements to the bank. There could be multiple explanations why there is such a disbalance between research on public and private companies and their tendency to commit financial statement fraud. Possibly, public firms are a more interesting subject due to the larger financial effects that their fraudulent behavior can have. Alternatively, it could be that the information on financial statement fraud committed by private firms is simply less available or accessible.

Bigus et al. (2016) do not address the relation between legal form and fraud, but they do address a strongly related topic. The authors demonstrate through their German sample that legal form is a determinant for firms' accounting choices. Compared to sole proprietorships and partnerships, corporations tend to smooth their income more, are more conservative in their accounting choices and are more inclined to avoid (small) losses on their profit and loss statements.

The tendency to smooth income is explained by the severity of agency problems at corporations. The owners are limited in their liability and are therefore more often constrained by the debtholders through debt covenants that must be met. The need for smoothing also originates from the desire to demonstrate a stabile income pattern, which is associated with a lower risk of default. The third reason is that a less volatile income results in a less volatile dividend pay-out, since the maximum pay-out by corporations is restricted to the net income according to German law. Owners tend to prefer a less volatile dividend pay-out and therefore a less volatile income.

The higher conservatism demonstrated by corporations is also explained by the dividend pay-out restriction mentioned above. When a firm uses conservative accounting methods, the income, and therefore the dividend pay-out, is more conservative as well. This leads to more retained earnings which in turn leads to less risk for the debtholders. Another reason why debtholders prefer accounting conservatism is that it leads to receiving information about value decreases of assets early on.

The avoidance of (small) losses is argued to be caused by the desire of corporations' managers to avoid a decrease in reputation and creditworthiness. This theory is supported by Bigus et al.'s (2016) finding that especially highly leveraged firms tend to avoid small losses. Additionally, corporations are more restricted by debt covenants which may trigger undesirable creditor rights when a corporation demonstrates a loss. Bigus, et al. (2016) also hypothesize that similar issues can play a role when comparing sole proprietorships with partnerships. However, the authors find no evidence that sole proprietorships and partnerships differ on the variables income smoothing and small losses avoidance. On the topic of conservatism, the results are opposite from their hypothesis: partnerships are less conservative compared to sole proprietorships. The authors argue that a possible explanation could be that partners expect a minimum amount of dividend, which limits conservatism. However, their argument is not in line with their earlier statement that partnerships are not limited in maximum dividend pay-out by the firm's income.

It should be noted that the sample of Bigus et al. (2016) consists of German firms, which are typically characterized by high dependency on banks for financing (Hillier et al., 2012). This might diminish the generalizability to other populations. Furthermore, the results are not controlled for influences of differences in ownership due to the lack of data on this subject. Linking this Bigus et al.'s (2016) paper to Ireland's (2008) paper, it can be argued that it follows the same logic. Assuming that income smoothing and avoiding small losses are forms of less responsible behavior, corporations seem to have a greater tendency to demonstrate less responsible behavior. However, whether these types of behavior are indeed irresponsible is also dependent on the perspective from which it is being looked at: the manager's, the debtholder's or the shareholder's.

In conclusion, to the knowledge of the author of this thesis there is no literature that addresses the relation between legal form and fraud. The fields of criminology and business ethics do not provide insights on this topic either. However, it is argued that corporations are more inclined to demonstrate irresponsible behavior compared to other legal forms. This difference in behavior is mainly explained by the agency relationship between shareholder and debtholder, due to the shareholders' combination of full control and limited liability. Whether other legal forms than the corporation are more or less inclined to irresponsible behavior remains unclear.

Based on the theory discussed above, it could be argued that corporations could have a greater tendency to be involved in facilitation than sole proprietorships and (limited) partnerships. However, though facilitation of money laundering can be considered as irresponsible corporate behavior, there is a difference between irresponsible and criminal behavior. Ireland (2008) does not make this distinction, and since he argues that the irresponsible behavior originates from the combination of limited liability and full control, it can subsequently be argued that facilitation of money laundering tends to be committed by corporations just as often as by the other legal forms: regardless of whether the firm is a corporation or a sole proprietorship, when a crime is committed the person who is in control is 'liable' for the criminal penalty. Alternatively, the idea of a separate legal entity might still create a perceived distance

between the shareholder and the firm, and therefore the illusion of limited liability concerning criminal penalties. Following this logic, corporations should be more inclined to commit facilitation. The following hypotheses have been formulated:

Hypothesis 4a: Corporations are not more inclined to facilitate than other legal forms.

Hypothesis 4b: Corporations are more inclined to facilitate than other legal forms.

2.3.5 Liquidity

General financial constraint literature is not discussed in this sub paragraph and sub paragraph 2.3.6 since it has already been discussed in paragraph 2.2.3. Instead, this sub paragraph starts with discussing fraud literature.

Evidence in fraud literature seems to point in the direction that fraud is more probable to occur when firms experience low liquidity. Yet, the amount of evidence is limited. Spathis (2002) demonstrated that fraud is more likely to occur when firms have difficulty meeting financial obligations. Kaminski et al. (2004), in line with Spathis (2002), find that fraudulent firms also differ significantly in working capital ratios. However, they only found this difference to be significant in the three years after the fraud occurred. This implies that liquidity is less suitable to predict fraud, but can be used to detect fraud afterwards. Furthermore, a decrease in liquidity also seems to increase fraud occurrence through its role in Altman's Z-score, which is negatively related to fraud occurrence (Altman, 1968; Spathis, 2002; Kirkos, 2007).

Though criminology provides no insight in the effects of firm liquidity directly, it does provide a large amount of literature on *personal* liquidity problems and crime. Strain theory (Miller et al., 2009) and Cressey's (1953) fraud triangle both argue that financial need can push a person to commit a crime. Though the author of this thesis does not argue that firms react to liquidity problems in the same way as individuals, he does note that with SMEs the income of shareholders and managers is often completely dependent on their firms.

It can be concluded that liquidity influences both firms and individuals. Firms arguably tend to commit financial fraud more often when they cannot meet their financial obligations. The tendency of firms to engage in fraud and other criminal activities might especially occur when shareholders and/or managers are largely or completely dependent on the firm for income. These assumptions can be applied to facilitation by formulating the following hypothesis:

Hypothesis 5: Liquidity is negatively related to facilitation probability.

2.3.6 Leverage

Shareholders and/or managers of highly leveraged firms, could be more tempted to provide false financial statements in order to meet debt covenants, pay lower interest rates or receive debt capital at all (Fanning & Cogger, 1998; Hogan et al., 2008; Lisic et al., 2015). This positive relation between leverage and fraud occurrence has been confirmed in many studies (Fanning & Cogger; Spathis, 2002; Kaminski, 2004; Firth et al., 2011; Biggerstaff et al., 2015; Lisic et al., 2015). Additionally, leverage plays a role through its implementation in Altman's Z-score: Spathis (2002) and Kirkos et al. (2007) found that fraudulent firms tend to have significantly lower Altman's Z-scores. In Spathis' sample the mean of fraudulent firms measured 0.778 whereas the non-fraudulent firms had a mean score of 1.990. Keeping in mind that scores below 1.8 are generally linked to a high probability of bankruptcy, this finding indicates that firms are more likely to fraud when they are financially constrained. Brazel et al. (2015) found that investors perceived firms that are close to violating debt covenants as more likely to commit financial statement fraud.

The usefulness of leverage and other ratios to predict financial statement fraud is also widely confirmed in research on neural networks and meta-learning (Green & Choi, 1997; Lin, Hwang, & Becker, 2003; Cecchini et al., 2010; Abbasi et al., 2012). However, these papers do not discuss individual variables but rather discuss the usefulness of the full

model. Though these models can prove to be valuable in general, they provide no additional theory-based explanation or prediction for the individual variables discussed in this paragraph and are therefore not practical for this thesis.

Lisic et al. (2015) argue that highly leveraged firms will face higher costs due to financial distress, and are therefore more likely to (falsely) avoid reporting deteriorating financial results. The positive relation between leverage and fraud arguably provides counter evidence for an alternative explanation: highly leveraged firms have debtholders that are more motivated to monitor the board and are more critical of the financial data they receive. This would, arguably, discourage managers to commit fraud.

There is little doubt that there is a positive relation between leverage and financial statement fraud. However, there are several possible explanations for the existence of such this relation. Managers could be inclined to fraud in order to satisfy debt holders in various ways. Alternatively, it could be that highly leveraged fraudsters are simply caught more often, also resulting in a positive relation between leverage and fraud (observation). A third theory is that highly leveraged firms commit financial statement fraud less often *because* they are closely monitored. However, evidence points to the first or second explanation. The fields of criminology and business ethics provide no additional or alternative insights on the effects of leverage.

Though the nature of financial statement fraud and facilitation differs, the underlying principals can be applied to this thesis. If a firm's leverage increases and faces financial distress or bankruptcy, and has no other way of attracting financing, facilitation could be perceived by shareholders and managers as a last resort. However, the monitoring element of leverage is possibly less applicable to the subjects of this thesis. Whereas listed firms regularly provide detailed financial data, this is less the case with SMEs, mitigating the monitoring effect of debt. Arguably, banks are not even willing to provide debt capital to these SMEs because they are so difficult to monitor (Beck et al., 2005; Beck & Demirguc-Kunt, 2006). Yet, from both a financial constraint perspective and agency perspective, leverage is expected to be positively related to facilitation. This leads to the following hypothesis:

Hypothesis 6: Leverage is positively related to facilitation probability.

2.3.7 Age

Richards (2014) argues that with age comes experience, which partially explains why individuals tend to develop a preference for less risky behavior: older people are more inclined to engage in diversified portfolios. An alternative explanation of this effect could be that older people tend to have more financial capital and are therefore more careful. Besides a decreasing risk preference, people tend to become better at investing as they age. This effect is especially strong for women, arguably providing evidence that women better learn from their mistakes (Richards, 2014). In line with Richards (2014), Zahra et al. (2005) argue that as people get older they demonstrate a decrease in risk-seeking, start to think more long-term and additionally become morally more developed. These developments arguably result in better supported decision-making (Zahra et al., 2005). Based on these assumptions, Zahra et al. (2005) argue that there should be a negative relation between fraud occurrence and age. However, other authors suggest that this relation is not this straightforward.

The ACFE (2016) and KPMG (2016) demonstrate that the relation between age and fraud occurrence tends to be shaped as a reverse U, with the top being represented by the age group 36 to 45. Wang and Hsu (2013) examined the effects of board composition on operational risk events, including internal and external fraud. The authors argue that there is a U-shaped relation between age heterogeneity and operational risks: little diversity results in few perspectives, but too much diversity results in a greater need for coordination. They find a significant positive relation between age diversity and operational risk events, which provides evidence that age diversity comes with coordination costs. However, no significant effect of age or age diversity on fraud occurrence was found. In line with

Wang and Hsu (2013), Davidson et al. (2015) do not find that the age of CEOs of fraud firms significantly differs from non-fraud firms.

In criminology, Tittle et al. (2003) argue that the effect of age depends on the type of crime, but generally follows "an inverted j-pattern" (p. 431). This means that the tendency to commit crime increases throughout adolescence until it reaches young adulthood, and decreases afterwards. However, in contrast with Zahra et al. (2005), it is argued that self-control theory cannot be applied to the age-crime relation because one's self-control hardly varies throughout one's life (Gottfredson & Hirschi, 1990; Tittle et al., 2003). In business ethics, Craft (2013) concludes that literature on age and ethics does not significantly contribute to understanding the relation between the two variables. Lehnert et al. (2015) argue that: "Researchers should look at not just the boundary conditions where age is concerned, but also the theoretical implications of age and ethical decision-making." (p. 202). An example could be that employees tend to be especially unethical when they are between the age of 25 and 55 due to the fact that this age category is typically associated with financial responsibility towards their children (CBS, 2016b; CBS, 2016c).

It can be concluded that age could be negatively related to risky behavior in general. However, there seems to be very little evidence of a linear relation between age and fraud occurrence. There is sufficient evidence that fraudsters tend to fall within a certain age category. However, whether there is a statistically significant overrepresentation of this category compared to non-fraud board members, is uncertain. There is no indication that the relation between fraud and age is different than the relation between facilitation and age. Therefore, the following hypotheses have been formulated:

Hypothesis 7a: Age is not related to facilitation probability.

Hypothesis 7b: Age category is not related to facilitation probability.

Hypothesis 7c: Age category is related to facilitation probability.

2.3.8 Education

Altman (2012) argues that from conventional economic perspective, education should not affect decision-making, since it assumes that "individuals have the physiological and psychological capabilities (…) to make optimal decisions" (p. 678). However, behavioral economics assumes that individuals are bounded in their rationality. Altman (2012) argues that this boundedness can be partially overcome through education: individuals that received some financial education tend to make better financial decisions. Additionally, people who have received more education in general, tend to prefer less risky investments (Cartwright, 2011).

Zahra et al. (2005) argue that education is negatively related to fraud occurrence, and that this relation possibly operates through the mediator moral development. In addition, they argue that receiving specifically *business* education decreases moral development because it arguably stimulates acting in self-interest. The authors refer to several papers in which it is argued that business education decreases moral decision-making. However, none of these papers provide quantitative and statistical significant results that support this argument (see e.g. Ferraro, Pfeffer, & Sutton, 2005; Ghoshal, 2005).

The ACFE (2016) found that 70% of the fraudsters in their sample have a university degree. Furthermore, a strong correlation between educational level and financial impact of the fraud is observed. This can be explained by the higher positions, and therefore larger resources and power, people with higher education typically hold. Since organizational hierarchy, financial impact and educational level are all positively related, it can be argued that compared to other forms of occupational fraud, financial statement fraud is more likely to be committed by fraudsters with a higher education (Padgett, 2014). However, the ACFE does not compare fraud with non-fraud firms.

Therefore, it can only be argued that fraudsters in the sample are highly educated; whether they are higher educated than their peers cannot be determined.

In line with Zahra et al.'s (2005) argument that the type of education plays a role in fraud occurrence, Firth et al. (2011) demonstrate that type of education has an effect. However, their results indicate an opposite relation: the authors find that that when a higher percentage of a firm's directors has an economic, accounting or finance background, the likelihood that a firm is obliged to restate its financial statements decreases[1]. Their explanation for this relation is that directors with more knowledge of these subjects, are more likely to object to certain accounting choices. However, an alternative explanation of this observed relation, could be that financially educated board directors are better capable of committing fraud without being detected. This could mean that financially educated board members do not commit fraud less often, but are only observed doing so less often.

Cumming, Leung and Rui (2015) hypothesize that board members who have received less education, are more risk averse. However, their findings indicate a negative relation between years of received education and fraud occurrence. Yet, the authors do not provide any explanation for this finding. It is notable though, that education is significantly and positively correlated with independent director ratio. It could be argued, that higher educated boards do not cause a decrease in fraud occurrence, but higher education is simply a byproduct of attracting more outside board members.

It can be concluded that education is likely to affect individuals' behavior and decreases their risk preference. Financial statement fraud is generally committed by highly educated fraudsters. However, whether board members with a higher or lower education compared to other board members are more or less inclined to commit fraud is unclear. There is some contradictive evidence which suggests that the field of education is related to fraud occurrence.

In the field of criminology there is little discussion about the negative relation between education and crime in general (Machin et al., 2011). However, it is unclear whether the relation between education and crime in general (such as violence and narcotics related crimes) can be generalized to financial statement fraud. The field of business ethics provides little additional insights (Craft, 2013; Lehnert et al., 2015). The effects of education on ethicality are unclear. There is some evidence that well-trained employees are more ethical. Contrarily, there is also evidence which indicates that type of education, level of education and grade point average do not affect ethicality (Craft, 2013; Lehnert et al., 2015).

The answer to the question whether facilitation is more similar to regular crime or white-collar crime, seems to determine the expected relation between education and facilitation. Since facilitation has been classified as a white-collar crime, no relation between education and facilitation occurrence would be expected. However, facilitation does stand closer to 'regular' crimes than e.g. financial statement fraud, which could still result in a negative relation between education and facilitation. The following hypotheses have been formulated:

Hypothesis 8a: There is no relation between level of education and facilitation probability.

Hypothesis 8b: There is a negative relation between level of education and facilitation probability.

2.3.9 Gender

Cartwright (2011) argues that, overall, gender does not affect general or economic behavior much. However, females prefer to avoid risk more than men, and are less overconfident (Thaler, 2005; Cartwright, 2011). This is exemplified in everyday life through e.g. traffic behavior, and in economics by females' tendency to invest in portfolios which consist of less risky assets. Furthermore, females are inclined to prefer non-competitive environments, which is in

[1] Though the researchers examine financial restatements, they limit their sample to deliberate distortions. Accidental misstatements are not included.

contrast to men. Evidence also seems to point to social differences between males and females concerning economics, such as attitudes to sharing. However, studies on this topic provide contradictive results and are unclear on the theoretical implications (Cartwright, 2011).

Zahra et al. (2005) argue that gender plays a different role depending on the type and the level of white-collar crime. However, they base this assumption on a very limited amount of literature and do not provide any additional explanations on the role of gender. The ACFE (2016) observes that the distribution of males and females among fraudsters has been quite stable for the past years. About two third of the fraud perpetrators is male. A large part of this distribution can be explained by the distribution of males and females among the total workforce. However, this does not fully explain the difference between the number of male and female fraudsters. The distribution of fraudsters among the genders also depends on the region, ranging from 96.8% males in Southern Asia to 55.7% males in the United States. In Western Europe, males represent 79.2% of the total number of perpetrators. Interestingly, whereas males tend to be overrepresented in fraud general, this is especially the case for financial statement fraud. Furthermore, when males commit fraud the financial impact tends to be larger. This effect is likely due to the tendency of males to fulfill upper echelon positions (ACFE, 2016).

KPMG (2016) also found that males are overrepresented in the total number of fraud cases. However, KPMG observes a small increase over time in the percentage of females: from 13% in 2010 to 17% in 2015. Taking into account the differences per region found by the ACFE (2016), differences between the findings of the ACFE and KPMG could be due to the differences between the used samples. KPMG examined 750 fraudsters over 81 countries, all provided by KPMG employees. The ACFE examined 2,410 cases over 114 countries that were provided by audit firms, law enforcement agencies and other organizations.

Cumming et al. (2015) found that the female director ratio and the presence of a female chairman are both negatively related to the occurrence of fraud. Besides statistical significance, the findings also indicate economic significance: raising the female director ratio from the average 13.2% to 22.2%, decreases the chance at fraud with 16.3%. However, the power of this effect decreases as the female director ratio increases, implying possibly a U-pattern instead of a linear relation. The authors argue that their findings provide evidence that fraud does not decrease because more women are on a board, but because the board has more gender diversity, which leads to more different perspectives. Furthermore, gender diversity is argued to lead to more conflict between board members, which in turn results in higher mutual supervision and therefore less fraud. Additionally, the authors found that the effect described above is stronger in male dominated industries. They argue that this stronger relation is due to the mitigating effect women would have on excessive masculine risk taking in the form of corporate fraud.

The findings on the effects of gender in the fields of criminology and business ethics are quite in line with those on fraud: males tend to be more criminal and unethical than females (Shover & Hochstetler, 2005; Miller, 2009; Craft, 2013). However, the field of business ethics provides an additional perspective: Lehnert et al. (2015) argue that it is likely that there are moderating or mediating constructs that affect the relation between gender and ethical decision-making. This argumentation follows McCabe et al. (2006) who found that not gender but gender attitudes and traits influenced ethicality. These authors argue that because certain attitudes and traits are typically present at one gender, this could create the illusion that gender itself influences ethicality. Suar and Gochhayat (2016) found evidence for McCabe et al.'s (2006) theory by demonstrating that people who embody a feminine role (regardless of their biological sex) tend to be more ethical than women in general.

In conclusion, overall, men seem to behave more risky, overconfident and competitive. Gender seems to play a role in fraud occurrence but little is known about the mediating and moderating constructs in this relation. Furthermore, men are more often involved in fraudulent behavior, but this can largely be explained by male overrepresentation in the workforce. Female representation on boards seems to be negatively related to fraud. This effect is possibly due

to the increase of diversity, which in turn results in additional perspectives and more feminine values. However, clear evidence is scarce and it is not clear if the discussed literature can be generalized to facilitation. As argued by Malm and Bichler (2013), opportunistic launderers are often the spouse of the career criminal. Since there is a clear positive relation between the male gender and 'normal' crimes, it could be argued that facilitation differs from fraud in general and has an opposite relation compared to regular crimes (Broidy & Agnew, 1997). This lead to the following hypotheses:

Hypothesis 9a: There is no relation between gender and facilitation probability.

Hypothesis 9b: There is a negative relation between the male gender and facilitation probability.

2.3.10 Criminal history

Age, education and gender seem to influence white-collar crime differently than regular crimes. However, Zahra et al. (2005) argue, in line with Gottfredson and Hirschi (1990), that lack of self-control is able to explain both white-collar and regular crimes. Therefore, self-control theory is sometimes also called a general theory of crime (Gottfredson & Hirschi, 1990). The underlying assumption is that individuals who lack self-control, tend to take high risks and prefer short-term satisfaction when possible. Zahra et al. (2005) point out that self-control theory possibly does not apply to corporate crimes because those who have climbed to the top of the corporate ladder, would unlikely have achieved this if they had very limited self-control.

The ACFE (2016) demonstrates that 93.8% of the fraudsters have never been convicted for a crime prior to the fraud. Padgett (2014) argues that the low criminal record of fraudsters is likely to be caused by the calculative decision-making process of the fraudsters. Arguably, fraudsters would differ from common criminals by only committing the fraud when they are virtually certain that they will not get caught. Alternatively, higher-echelon white-collar criminals know they are less likely to be convicted if they get caught because they can buy themselves out (Padgett, 2014).

Davidson et al. (2015) examined the relation between the criminal records of executives and their tendency to make financial statement errors (including financial statement fraud). Davidson et al. (2015) measure a board members' criminal record as "traffic violations, driving under influence of alcohol, and other drug and alcohol related charges, reckless endangerment, and domestic violence charges" (p. 9). The authors found that both the CEOs and the executives in general of fraud firms, have significantly more legal infractions prior to the fraud than those of non-fraud firms. No significant relation between legal infractions and financial statement errors in general was demonstrated. The limitations of this study are to be expected from a fraud-study: a limited sample size and only observed fraud is examined. However, another limitation is the limited number of crime types that was examined. Not taking into account the effect other types of crime, could lead to different or additional results. Davidson et al. (2015) provide evidence for self-control theory, and demonstrate in line with Blickle et al. (2006) that this theory is applicable to white-collar crime. Though the results of Davidson et al. (2015) are quite clear, the total amount of literature on this subject is very limited.

The field of white-collar criminology provides additional insights in the effects of criminal history. Weisburd and Waring (2001) found that low-frequency white-collar offenders tend to live respectable lives: married, no substance abuse, educated, employed, etc. The choice to commit a white-collar crime for this group was often based on a personal or work-related crisis, or simply because the opportunity suddenly emerged due to unusual circumstances. High-frequency white-collar offenders, on the other hand, tend to demonstrate low self-control and live less stabile lives. Their choice to commit a white-collar crime is often just another entry in their criminal record. Alalehto (2015) notes that whether a white-collar criminal tends to have a criminal past is dependent on the type of white-collar crime he has committed. The high-level corporate types of white-collar crime such as price-fixing is typically not associated with being preceded by a criminal record. This is in contrast with low-level white-collar crimes such as

credit card fraud and mail fraud, which is typically preceded with a criminal record. Perpetrators of these low-level white-collar crimes tend to have a criminal record in about 50% of the cases. Surprisingly, on the topic of having a criminal record prior to the offense, tax fraud is more equal to the low-level types of white-collar crimes than to the high-level types. However, it is not specified whether tax fraud consists of tax fraud at an individual level or at a top-firm level, or both. Additionally, Alalehto (2015) concludes that having a criminal record or not prior to the white-collar crime, tends to be affected by gender. Women who commit white-collar crimes tend to have a criminal record less often than men.

In conclusion, self-control theory has the potential to explain both fraud and facilitation. There is some evidence that financial statement fraud is preceded by a criminal record. However, top-level firm executives are less likely to have a criminal record compared to other white-collar criminals. The manner in which these findings should be generalized to facilitation seems to depend on whether facilitation is a type of crime committed by low-frequency high-level white-collar criminals, or high-frequency low-level white-collar criminals. In addition, Malm and Bichler (2013) argue that opportunistic launderers typically work with career criminals because they have previously met them through their social circle. Arguably, this makes it more likely that facilitators already had some criminal record, assuming that criminals know criminals. An alternative argumentation, is that that career criminals specifically choose facilitators with a limited criminal record because they are not known by the police, and are therefore less likely to be detected. This would result in a negative relation between criminal history and facilitation probability. However, this line of thought has, to the best knowledge of the author of this thesis, not yet been demonstrated in literature. The literature discussed in this sub paragraph leads to the following hypotheses:

> Hypothesis 10a: The criminal record of facilitators prior to the facilitation, is not related to facilitation probability.
>
> Hypothesis 10b: The criminal record of facilitators prior to the facilitation, is positively related to facilitation probability.

2.3.11 Culture

Zahra et al. (2005) discuss the effects of culture at societal, industry and organizational level, but not at an individual level. They argue, in line with Sutherland (1949), that when certain sub cultures' behavior deviates from the main culture, this is due to conflicting norms between the two. Furthermore, cultural differences between industries can exist which arguably results in higher fraud occurrence at firms with a certain industry. Though Zahra et al. (2005) distinguish leadership and organizational culture as different constructs, the author of this thesis argues that these two constructs strongly overlap. As they argue themselves: "leaders also shape their firms' culture" (Zahra et al., 2005, p. 814). Organizational cultures have the potential to facilitate or even encourage unethical and criminal behavior. However, organizational cultures that are characterized by high ethicality, can diminish the below-average ethicality certain industries and environments have (Zahra et al., 2005).

The argument of Zahra et al. (2005) that culture plays a role at multiple levels is widely confirmed in literature. Skousen and Twedt (2009) compared the likelihood of financial statement fraud across countries and found that the sensitivity to fraud varies across countries and industries. Especially firms from Turkey, the Philippines and Russia seem to be sensitive for financial statement fraud. The ACFE (2016) reports differences between regions, concerning representation of financial statement fraud within the full population of fraud cases. The lowest percentage is 5.6% in Sub-Saharan Africa, the highest is 17.3% in Western Europe. However, this cannot be interpreted as evidence that Western Europe has more financial statement fraud cases per firm than e.g. Sub-Saharan Africa. It only demonstrates that in the total population of fraud cases per country, the share of financial statement frauds differs.

In contrast with the effects of culture on financial statement fraud at a national level, the effects on firm and board level, have received more attention. Davidson et al. (2015) do not use the traditional dimensions of Hofstede (1984) to quantify culture, but instead measure corporate culture by the level of equity-based pay, whether there are social connections between the CEO and the independent board members, and the percentage of independent board members. A critical remark on this operationalization could be that even though these aspects can be part of a culture, culture envelops more aspects, such as religion, values, customs, etc. The authors find that off the job unfrugal behavior of the CEO, significantly influences corporate culture as an interaction effect with tenure: the longer an unfrugal CEO works at a firm, the more equity-based pay and social connections between the CEO and independent board members occur. A corporate culture that is characterized by equity-based pay and social ties between the CEO and independent board members, is more inclined to commit financial statement fraud.

The relation between CEO, corporate culture and financial statement fraud has been confirmed in more papers. Biggerstaff et al. (2015) find evidence which suggests a causal relation between unethical CEOs and unethical firm choices. Firms whose CEO is unethical, commit financial statement fraud more often. Furthermore, these CEOs tend to especially engage in acquisitions of *private* companies. The authors argue that this type of company creates better opportunity for the CEO to manipulate the (consolidated) financial statements, compared to public firms.

Hutton, Jiang and Kumar (2015) approach culture by making a distinction between Democrats and Republicans and their respective values. They find significant differences between the types of legal violations committed by either a Democratic or Republican firm (culture). Interestingly, though Republican firms generally commit more violations, Democrats are especially associated with security frauds. The authors argue that this is due to the difference in political ideals of both parties. Whereas Republicans focus on property rights and a free and healthy market, Democrats focus on rights concerning labor, equality and environment.

Reflecting upon the findings above, the field of business ethics has produced similar conclusions. Karaibrahimoglu and Cangarli (2016) found that the effect of culture on (firm) ethicality is mainly of a moderating and mediating nature. They demonstrate that the implementation of accounting standards affects culture, which in turn affects firm ethicality. However, the national culture of a state moderates how strong this effect is. Davis and Ruhe (2003) found that especially countries that are characterized by high collectivism, uncertainty avoidance, acceptance of power inequality and masculinity tend to be corrupt.

In conclusion, there is little doubt that culture is an important determinant for both firms' and individuals' behavior. Additionally, literature provides evidence for the upper echelons theory of Hambrick and Mason (1984), stating that the top of a firm determines the overall organization. Though it is clear that culture affects behavior, and specifically fraud, there is not sufficient evidence to predict which culture or cultures are more likely to fraud. Furthermore, there is no indication that culture could affect fraud differently than facilitation. Based on the literature discussed above, and on the earlier conclusion that culture in this thesis could only be practically examined at an individual's level, the following hypothesis is formulated:

Hypothesis 11: The cultural background of a board member affects facilitation probability.

2.3.12 Firm age

Firm age is a determinant that is regularly implemented by authors in their models when examining financial statement fraud. Though firm age seems to play some role, literature lacks clear theoretical implications. Both Davidson et al. (2015) and Biggerstaff et al. (2015) find that firms which commit financial statement fraud tend to be younger compared to their peers. However, these authors do not attempt to explain this relation. Lisic et al. (2015) also found a negative relation between firm age and fraud in general, but did not find that firm age could predict what type of fraud it would commit.

Though the authors above do not provide theoretical explanations of the found negative relations, Abbott et al. (2000) and Zahra et al. (2005) argue that younger firms experience a greater pressure to (out)perform on the stock exchange which makes them more inclined to fraud. However, Brazel et al. (2015) found that firm age is perceived as less relevant by investors as an indicator for fraud sensitivity.

In conclusion, firm age is a variable that has been regularly examined by authors and seems to be negatively related to fraud occurrence. However, why this relation occurs is unclear. The explanation by Abbott et al. (2000) and Zahra et al. (2005) cannot be applied to this thesis since their explanation concerns listed firms. However, it is still possible that firm age plays a role.

2.3.13 Firm industry

Zahra et al. (2005) argue that certain industries create an environment in which managers are more inclined to commit fraud. The authors list multiple determinants, which can be summarized as "challenging industry conditions" (Zahra et al., 2005, p. 808), that could cause this higher tendency to commit fraud. They conclude that there is a lack of empirical evidence to formulate well-supported theoretical explanations of the effects. Zahra et al.'s (2005) argument is generally in line with other literature, which also finds that industry has an effect on fraud occurrence, but offers little theoretical implications.

Bell & Carcello (2000) examine which indicators suggested by the Statements on Auditing Standards no. 53 (SAS 53) are truly effective in predicting fraud. They found that industries that are characterized by "inadequate or inconsistent relative profitability" (p. 175) tend to fraud more. The authors label the characteristics 'Rate of change in industry is rapid' and 'Industry is declining with many business failures' as non-significant indicators, even though they have a p-value of respectively 0.012 and 0.013. Why only factors that are significant at a 0.01 level are not labeled as non-significant, is not clearly explained by the authors. Beasley et al. (2000) found that the form of financial statement fraud significantly differs per industry. However, these differences are likely caused by differences between industries in board composition, presence of an internal audit function and presence of audit committees. The ACFE (2016) finds that several industries are overrepresented in general fraud occurrence: "banking and financial services, government and public administration, and manufacturing industries" (ACFE, 2016, p. 4). When examining specifically financial statement fraud, the industries 'services' and 'construction' overrepresented. However, no additional explanation for this finding is given (Bell & Carcello, 2000). The industry 'construction' possibly has greater opportunity to commit fraud due to the importance of work-in-progress accounts on the balance sheets in this industry. This account is typically more sensitive to manipulation.

In contrast with the other determinants discussed in this paragraph, there exists some literature on the relation between laundering and industry (Manning, 2010; Golden et al., 2011). Manning (2010) argues that laundering especially takes place in industries where cash is the standard. Cash transactions make it harder for auditors and authorities to check whether financial statement accounts represent the truth. Additionally, industry characteristics that attract laundering, are those which are vulnerable to skimming profits and obtaining a monopoly in an area, such as waste management (Golden et al., 2011). These characteristics respectively provide the criminal with additional income and above-normal returns through the businesses. The field of business ethics has examined the effect of industry on ethicality to a limited extent. Evidence suggests that industry affects the moral compass of employees (Craft, 2013).

In conclusion, literature provides sufficient evidence that industry plays a role in fraud. However, different literatures provide different explanations for this role. There is some evidence that especially industries that experience challenging environments tend to commit fraud, meaning that eventually every industry could be plagued by above-average fraud rates.

2.3.14 Firm size

Zahra et al. (2005) do not explicitly name firm size in their framework. However, they confirm that it is of influence on fraud occurrence. Arguably, larger companies are a more tempting environment to commit fraud because of their complexity and need to decentralize (Zahra et al., 2005). However, whether the relation between firm size and fraud occurrence is as simple as Zahra et al. (2005) state is to be doubted. The amount of literature on this determinant is limited because in financial statement fraud research, it is often a criterion to match fraud firms with non-fraud firms (e.g. Beasley, 1996; Beneish, 1999; Kaminski et al., 2006; Erickson et al., 2006; Biggerstaff et al., 2015). The literature that does address the relation between firm size and fraud occurrence, provides no clear results. Additionally, the research is characterized by a large variety of variables which measure firm size.

Beneish (1999) finds no significant differences in size (measured as total assets) between fraud and non-fraud firms. Davidson et al. (2015) do not find a significant relation between size (measured as the logarithm of market capitalization) and fraud occurrence either. However, they do find a significant negative relation between size and financial statement mistakes in general.

Khanna et al. (2015) demonstrate that fraud firms (measured as the logarithm of total assets) are larger than non-fraud firms. They argue that larger firms are more likely to be detected when committing fraud because they attract more outside attention from investors and other stakeholders. This line of thought is similar to that of the effects of leverage.

There are also authors who demonstrate a negative relation. Lisic et al. (2015) find in their Chinese sample that the mean company size (measured as total assets) is significantly smaller than the mean size of non-fraud firms. In line with Lisic et al. (2015), Wang et al. (2017) find that fraud firms are significantly smaller (measured as the logarithm of the total assets) than non-fraud firms. No clear explanation for these findings is given.

The findings of Brazel et al. (2015) on the perceived importance by investors of red flags for financial statement fraud, are in line with the authors that demonstrate that the relation between size and fraud is non-significant. Out of 21 indicators, investors perceive the size of the firm as the second-least important indicator. Only whether the firm is audited by a non-Big 4 auditor was perceived less important to indicate an increased chance of fraud.

The field of criminology provides no additional insights on this determinant. In business ethics, a pattern similar to the literature discussed above is observed. O'Fallon and Butterfield (2005) and Craft (2013) argue that findings on the relation between ethicality and firm size are unclear.

In conclusion, multiple authors demonstrate that the determinant firm size has at least some explanatory power. However, both the direction of the relation and its theoretical implications are unclear.

2.4 Conclusion

In this chapter, literature relevant to the topic of facilitation was reviewed. Firstly, facilitation was defined. Next, it was classified as a form of fraud, specifically: occupational fraud and financial statement fraud. Based on this classification, the paper of Zahra et al. (2005) was selected to function as a guideline when creating a theoretical framework that met the specific requirements of this thesis. Based on this theoretical framework, relevant determinants were selected and subsequently discussed, and hypotheses were formulated. The methodology used to test these hypotheses, is discussed in the next chapter.

3. Methodology

In this chapter, the methods applied to answer the main research question and hypotheses are discussed. First, the main research question and hypotheses are respectively presented. Then, the operationalization and measurement of the variables is discussed. The applied method, logistic regression, is treated in paragraph four. The topic of the last paragraph is the sample.

3.1 Main research question

What are the determinants of Dutch SMEs and managers that facilitate money laundering?

3.2 Hypotheses

The hypotheses formulated in the previous chapter, are presented in table 1.

Table 1 Hypotheses

Corporate governance	
Hypothesis 1a	There is no relation between board ownership and facilitation probability.
Hypothesis 1b	There is a positive relation between board ownership and facilitation probability.
Hypothesis 2	There is no relation between board tenure and facilitation probability.
Hypothesis 3	There is a negative relation between board size and facilitation probability.
Hypothesis 4a	Corporations are not more inclined to facilitate than other legal forms.
Hypothesis 4b	Corporations are more inclined to facilitate than other legal forms.
Financial constraint	
Hypothesis 5	Liquidity is negatively related to facilitation probability.
Hypothesis 6	Leverage is positively related to facilitation probability.
Behavioral economics	
Hypothesis 7a	Age is not related to facilitation probability.
Hypothesis 7b	Age category is not related to facilitation probability.
Hypothesis 7c	Age category is related to facilitation probability.
Hypothesis 8a	There is no relation between level of education and facilitation probability.
Hypothesis 8b	There is a negative relation between level of education and facilitation probability.
Hypothesis 9a	There is no relation between gender and facilitation probability.
Hypothesis 9b	There is a negative relation between the male gender and facilitation probability.
Hypothesis 10a	The criminal record of facilitators prior to the facilitation, is not related to facilitation probability.
Hypothesis 10b	The criminal record of facilitators prior to the facilitation, is positively related to facilitation probability.
Hypothesis 11	The cultural background of a board member affects facilitation probability.

3.3 Variables

The variables are presented in table 2. This includes the variable name, the type and the way it is measured. If applicable, the source from which this measurement was derived is mentioned. In this paragraph, the variables which require additional clarification are separately discussed.

3.3.1 Dependent variable

The dependent variable, facilitation, is a dichotomous variable that takes 1 if the firm or board member was involved in facilitation, and 0 if otherwise. The full sample of laundering cases supplied by the police, was first manually filtered for self-launderers and professional launderers, based on the definition of facilitation as mentioned in paragraph 2.1.2 of this thesis. The date on which the facilitation started was determined as the date on which the first suspicious act of the firm or board member was done according to the financial investigator responsible for the case. Examples of these acts are: the first cash deposit on the firm's bank account, the signing of the employment contract between the career criminal and the firm, or sending the first invoice by the career criminal to the firm.

3.3.2 Independent variables

Liquidity and debt

All financial ratios are measured at year's end in the year prior to the year in which facilitation started. For the ratios that measure liquidity, the most common measures are used (Hillier et al., 2012; Palepu et al., 2013; McLaney & Atrill, 2014):

1. Current ratio. Measured as (current assets / current liabilities);
2. Quick ratio. Measured as ((liquid assets + trade receivables) / current liabilities);
3. Cash ratio. Measured as (liquid assets / current liabilities).

Leverage is measured as (total debt / total assets) (Firth et al., 2011; Lisic et al., 2015).

Number of arrests and types of arrests

Davison et al. (2015) measure criminal past as a dummy variable which takes 1 if the CEO or board member has any entry on his record and 0 if he has none. In this thesis, a more precise measurement is used. The internal police systems (Bluespot) provide data on the number of times someone has been arrested. Additionally, it provides the dates of these arrests and a classification per crime the person was arrested for. The police classification is based on that of the CBS (2016a): property; weapons & munitions; narcotics; violence; traffic; sexual and other. The category 'traffic crimes' only includes major infractions such as driving under influence (i.e. minor speeding tickets are not considered crimes according to Dutch law). The category 'other' includes a variety of crimes from environmental crimes to insulting a civil servant. In this thesis, the police's categorization of crimes will be used.

The number of arrests is not a perfect measurement of someone's criminal history. A board member might have been arrested but not convicted. However, the opposite can also be true: possibly a judge thinks the evidence is not sufficient and does not convict the board member, this does not mean that the board member has not committed the crime. The choice for number of arrests has been made because this thesis is written for the police, and not for the court. The interest of the police lies at the cases where there is sufficient evidence to arrest and prosecute someone.

Culture

Culture is a construct which is difficult to observe by the police. However, as has become clear in the literature review, related variables can function as a proxy for culture. A very common way is by analyzing differences in culture per country (Hofstede, 1984; Davis & Ruhe, 2003; Metcalf et al., 2006). However, analyzing differences between countries has also been criticized: it does not take into account cross-border cultures and intra-national sub cultures (Lenartowicz & Roth, 1999; Au, 1999; Sivakumar & Nakata, 2001; Rarick & Nickerson, 2008; Chipulu et al., 2014). However, for the police, country is the only practically observable variable related to culture. Therefore, data on both country of birth and nationality (or nationalities) of the board members were gathered. Next, both variables were categorized by cultural clusters according to Gupta et al. (2002).

3.3.3 Facilitator-specific variables

In order to address the secondary request of the police to provide insight in the social link between the launderer and the career criminal, the underlying crimes and used methods, facilitator-specific variables are included. These variables are only implemented in this thesis as descriptive statistics and are left out in the initial bivariate and multivariate analyses.

Number of criminals and social link between facilitator and career criminal

The number of criminals the facilitator laundered for, as well as the social link between the facilitator and career criminal, was taken from the case files. This means that the conclusion of the financial investigator was used. Financial

investigators base their conclusions on interrogations, firm's records, visual observations, phone taps, social media, the municipal administration and a wide range of other sources.

Underlying crime

It is very difficult to know for certain what the exact source of the illegal proceeds is. To determine the underlying crime of the laundering, the author of this thesis has, in line with the financial investigator's reports, taken some liberty. For example: if the career criminal has a criminal record including an extensive number of accounts of narcotics trade prior and after the facilitation started, it is assumed that the laundered proceeds came from narcotics trade.

Method

The laundering method was measured in two different ways. Firstly, the method was categorized based on Manning's (2011) categorization consisting of balance sheet laundering, revenue laundering, cost laundering or shifting of income. Secondly, the method was categorized based on the financial investigator's description of the laundering method. Examples of these are: providing fictitious labor contracts, fictitious invoices and providing company bank accounts and company cars. The reason why two different categorizations of methods were used, is that the first is based on academic literature, and the latter is more specific and concrete.

Table 2 Variables

VARIABLE	TYPE	MEASUREMENT
Dependent variable		
FACILITATE	Dichotomous	1 = firm or board member facilitates; 0 = otherwise
Corporate governance		
BOARDOWN	Continuous	Percentage of the firm's shares (indirectly or directly) owned by board; firms also take a value of 100% when they are sole proprietorships or partnerships
BOARDTEN	Continuous	Average tenure of the board when facilitation started according to chamber of commerce
BOARDSIZE	Continuous	Number of board members when facilitation started according to chamber of commerce
LEGALSOLE	Dichotomous	1 = Firm is a sole proprietorship; 0 = otherwise
LEGALPART	Dichotomous	1 = Firm is a partnership; 0 = otherwise
LEGALLIMPART	Dichotomous	1 = Firm is a limited partnership; 0 = otherwise
LEGALPLLC	Dichotomous	1 = Firm is a private limited liability company; 0 = otherwise
LEGALOTHER	Dichotomous	1 = Firm's legal form is other; 0 = otherwise
Financial constraint		
CURRENTRAT	Continuous	Current assets / current liabilities at year's end prior to facilitating year (Palepu et al. 2013)
QUICKRAT	Continuous	(Trade receivables + liquid assets) / Current liabilities at year's end prior to facilitating year (Palepu et al. 2013)
CASHRAT	Continuous	Liquid assets / Current liabilities at year's end (Palepu et al. 2013)
LEVERAGE	Continuous	Total debt / total assets at year's end prior to facilitating year (Firth et al., 2011)
Behavioral economics		
AGE	Continuous	Board member age when facilitation started according to municipal administration
AGE18-25	Dichotomous	1 = board member belonged to this age category when facilitation started; 0 = otherwise
AGE26-35	Dichotomous	1 = board member belonged to this age category when facilitation started; 0 = otherwise
AGE36-45	Dichotomous	1 = board member belonged to this age category when facilitation started; 0 = otherwise
AGE46-55	Dichotomous	1 = board member belonged to this age category when facilitation started; 0 = otherwise
AGE55+	Dichotomous	1 = board member belonged to this age category when facilitation started; 0 = otherwise
EDUCATION	Dichotomous	1 = board member has an associate degree, Bachelor, Master or Doctorate; 0 = otherwise (European Commission, 2017)

GENDER	Dichotomous	1 = Male; 0 = Female
ARRESTNUMBER	Continuous	Number of crimes the board member has been arrested for, at the moment the laundering started
ARRESTPROPERTY	Dichotomous	1 = the board member has been arrested for a property crime before he started laundering; 0 = otherwise (CBS, 2016a)
ARRESTWEAPONS	Dichotomous	1= the board member has been arrested for a weapons and munitions crime before he started laundering; 0 = otherwise (CBS, 2016a)
ARRESTNARCOTICS	Dichotomous	1 = the board member has been arrested for a narcotics crime before he started laundering; 0 = otherwise (CBS, 2016a)
ARRESTVIOLENCE	Dichotomous	1 = the board member has been arrested for a violence crime before he started laundering; 0 = otherwise (CBS, 2016a)
ARRESTTRAFFIC	Dichotomous	1 = the board member has been arrested for a traffic crime before he started laundering; 0 = otherwise (CBS, 2016a)
ARRESTSEXUAL	Dichotomous	1 = the board member has been arrested for a sexual crime before he started laundering; 0 = otherwise (CBS, 2016a)
ARRESTOTHER	Dichotomous	1 = the board member has been arrested for another crime before he started laundering; 0 = otherwise (CBS, 2016a)
NATANGLO	Dichotomous	1 = Has Anglo nationality; 0 = Does not have this type of nationality (Gupta et al. 2002)
NATARAB	Dichotomous	1 = Has Arab nationality; 0 = otherwise (Gupta et al. 2002)
NATCONFUCASIA	Dichotomous	1 = Has Confucian Asian nationality; 0 = otherwise (Gupta et al. 2002)
NATEASTEUR	Dichotomous	1 = Has Eastern European type of nationality; 0 = otherwise (Gupta et al. 2002)
NATGERMANIC	Dichotomous	1 = Has Germanic nationality; 0 = otherwise (Gupta et al. 2002)
NATLATINEUR	Dichotomous	1 = Has Latin European nationality; 0 = otherwise (Gupta et al. 2002)
NATSOUTHASIA	Dichotomous	1 = Has Southern Asian nationality; 0 = otherwise (Gupta et al. 2002)
BORNANGLO	Dichotomous	1 = Born in Anglo country; 0 = otherwise (Gupta et al. 2002)
BORNARAB	Dichotomous	1 = Born in Arab country; 0 = otherwise (Gupta et al. 2002)
BORNCONFUCASIA	Dichotomous	1 = Born in Latin European country; 0 = otherwise (Gupta et al. 2002)
BORNEASTEUR	Dichotomous	1 = Born in Eastern European country; 0 = otherwise (Gupta et al. 2002)
BORNGERMANIC	Dichotomous	1 = Born in Germanic country; 0 = otherwise (Gupta et al. 2002)
BORNLATINEUR	Dichotomous	1 = Born in Latin European country; 0 = otherwise (Gupta et al. 2002)
BORNSOUTHASIA	Dichotomous	1 = Born in Southern Asian country; 0 = otherwise (Gupta et al. 2002)
Control variables		
FIRMAGE	Continuous	Firm age in years when facilitation started (Reach Database)
INDUSTRY	Dichotomous	Dummy variables representing the primary SBI code (Reach Database)
SIZEVERYSMALL	Dichotomous	1 = Firm size is very small; 0 = otherwise (Reach Database)
SIZESMALL	Dichotomous	1 = Firm size is small; 0 = otherwise (Reach Database)
SIZEMEDIUM	Dichotomous	1= Firm size is medium; 0 = otherwise (Reach Database)
Facilitator-specific variables		
NUMBERCRIM	Continuous	Number of criminals the board member facilitated (Malm & Bichler, 2013)
SPOUSE	Dichotomous	1 = Facilitator is career criminal's spouse; 0 = otherwise (Malm & Bichler, 2013)
FRIEND	Dichotomous	1 = Facilitator is career criminal's friend; 0 = otherwise
FAMILYMEMBER	Dichotomous	1 = Facilitator is career criminal's family member; 0 = otherwise
PREVIOUSLEGAL	Dichotomous	1 = Facilitator had previous legal dealings with career criminal; 0 = otherwise
UNDERNARCOT	Dichotomous	1 = The underlying crime for the laundering is narcotics; 0 = otherwise (CBS, 2016a)
UNDERFRAUD	Dichotomous	1 = The underlying crime for the laundering is fraud; 0 = otherwise (CBS, 2016a)
UNDERGAMBLING	Dichotomous	1 = The underlying crime for the laundering is illegal gambling; 0 = otherwise (CBS, 2016a)
UNDEROTHER	Dichotomous	1 = The underlying crime for the laundering is another crime; 0 = otherwise (CBS, 2016a)
LAUNDERAMOUNT	Continuous	Estimation of the total amount of money that has been laundered over the full laundering period presented in thousands of euro
BALANCELAUNDER	Dichotomous	1 = Facilitator used balance sheet laundering; 0 = otherwise (Manning, 2011)

REVLAUNDER	Dichotomous	1 = Facilitator overstated revenues to launder; 0 = otherwise (Manning, 2011)
COSTLAUNDER	Dichotomous	1 = Facilitator overstated costs to launder; 0 = otherwise (Manning, 2011)
SHIFTINCOME	Dichotomous	1 = Facilitator shifted income to launder; 0 = otherwise (Manning, 2011)
OTHERMAN	Dichotomous	1 = Used method could not be classified by Manning (2011)
FICTITIOUSLABOR	Dichotomous	1 = Facilitator laundered through fictitious labor contracts; 0 = otherwise
FICTITIOUSINVOICE	Dichotomous	1 = Facilitator laundered through fictitious invoices; 0 = otherwise
BANKACCOUNT	Dichotomous	1 = Facilitator laundered by providing company bank accounts; 0 = otherwise
COMPANYCAR	Dichotomous	1 = Facilitator laundered by providing company car; 0 = otherwise
REPORTINGTRANS	Dichotomous	1 = Facilitator laundered by not complying with regulations for reporting unusual transactions; 0 = otherwise
OTHER	Dichotomous	1 = Facilitator laundered through other method, 0 = otherwise

3.4 Logistic regression

The independent variables are dichotomous and continuous, whereas the dependent variable is dichotomous. Therefore, both logistic and probit regressions are suitable methods. Though these methods differ on a theoretical level, the results tend to be similar (Liao, 1994). Probit regressions have the advantage that they are relatively suitable when used to calculate chance per case, assuming that the parameters of the sample represent the parameters of the population (Maddala, 1991; Beasley, 1996). However, these parameters are not known. Though Unger et al. (2006) argue that the "most likely scenario" (p. 48) is that 10% of the fraud cases is detected, well-supported estimations of ratios are deemed unfeasible by the author of this thesis. Furthermore, logit regression is the most common method in financial statement fraud literature (Abbasi et al., 2012). For these reasons, a logistic regression is used in thesis. Logistic regression does not have requirements concerning homoscedasticity and normal distribution. Linearity between the independent variables and dependent variable is not an issue (Hair et al., 2009). Logistic regressions are often incorrectly presented in literature. In line with Hair et al. (2009), Ge and Whitmore (2010, p. 83) argue that the correct presentation is as presented in equation 1. This equation is applied in this thesis as presented in equation 2 and equation 3.

Equation 1 Logistic regression

$$"logit\ (p) = \ln\left(\frac{p}{1-p}\right) = \boldsymbol{X\beta}"$$

Equation 2 Firm level analysis

$$\ln\left[\frac{p(facilitate)}{1-p(facilitate)}\right] = \beta_0 + \beta_1 BOARDOWN + \beta_2 BOARDTEN + \beta_3 BOARDSIZE + \beta_4 LEGAL + \beta_5 CURRENTRAT + \beta_6 QUICKRAT + \beta_7 CASHRAT + \beta_8 LEVERAGE + \beta_9 FIRMAGE + \beta_{10} INDUSTRY + \beta_{11} FIRMSIZE + \varepsilon$$

Equation 3 Individual board member level analysis

$$\ln\left[\frac{p(facilitate)}{1-p(facilitate)}\right] = \beta_0 + \beta_1 AGE + \beta_2 AGECAT + \beta_3 EDUCATION + \beta_4 GENDER + \beta_5 ARRESTNUMBER + \beta_6 ARRESTPROPERTY + \beta_7 ARRESTWEAPONS + \beta_8 ARRESTNARCOTICS + \beta_9 ARRESTVIOLENCE + \beta_{10} ARRESTTRAFFIC + \beta_{11} ARRESTSEXUAL + \beta_{12} ARRESTOTHER + \beta_{13} NATANGLO + \beta_{14} NATARAB + \beta_{15} NATCONFUCASIA + \beta_{16} NATEASTEUR + \beta_{17} NATGERMANIC + \beta_{18} NATLATINEUR + \beta_{19} NATSOUTHASIA + \beta_{20} BORNCLUSTER + \beta_{21} FIRMAGE + \beta_{22} INDUSTRY + \beta_{23} FIRMSIZE + \varepsilon$$

A crucial part of logistic regressions, is selecting control cases and determining the size of the control samples. As a control sample, both a matched and a non-matched sample can be used. The advantage of the first is that it minimizes the variance caused by the matching selection criteria. These selection criteria are typically variables which have been thoroughly examined in literature and clearly have an effect on the independent variable. The disadvantage of a matched sample is that it cannot be used to examine the effects of its selection criteria. Since several determinants in this thesis are very likely to have an effect on facilitation probability, and the sample size is limited, matched samples are a logic choice. However, due to the exploratory nature of this thesis, a non-matched sample which examines the (relevant) selection criteria of the matched sample can also provide useful insights. Therefore, a matched and a non-matched sample is used, for both firm and individual level.

In financial statement fraud literature, the used ratios between fraud and control firms vary, but mainly lie between 1:1 (Beasley, 1996; Carcello & Nagy, 2004; Kaminski et al., 2004; Chen et al. 2006) to approximately 1:10 (Wang et al., 2017). Hair et al. (2009) argue that the sample size should be 400 when using a logistic regression. In this thesis, for every facilitating firm, 10 matched and 10 non-matched peers were selected. For every facilitating board member, 5 matched and 5 non-matched peers were selected.

3.5 Sample

3.5.1 Facilitators

The dataset contains data on 52 firms and 42 board members that have been prosecuted for facilitation between 2006 and 2016. The distribution of the facilitation years is presented in table 3. The data was gathered through an information request sent by the author of this thesis to financial investigators of the east district of the police. This means that the observations are possibly biased by regional differences in the examined data. The 52 firms represent approximately one tenth of the total population of facilitation cases handled by the complete Dutch police in this time-period.

Table 3 Year distribution

Year	Count	Percentage
2006	5	9.6%
2007	7	13.5%
2008	6	11.5%
2009	6	11.5%
2010	4	7.7%
2011	1	1.9%
2012	3	5.8%
2013	2	3.8%
2014	8	15.4%
2015	4	7.7%
2016	6	11.5%
Total	**52**	**100.0%**

The 42 board members were all on the boards of the 52 firms. Some board members were on the boards of multiple firms, and 2 board members were removed from the sample because no data was available on these board members.

The data on the firms and board members has been hand collected using a variety of public and non-public sources. The public sources are the Reach database (which collects data from the Chamber of Commerce), the firms' websites, Linkedin and other social media. The non-public sources are criminal records (Bluespot), the municipal administration and the police files on the facilitation cases. The police files include (among others) reports on interrogations, visual observations, phone taps, investigations of firms' books and information requested from the tax administration[2].

3.5.2 Control sample

The matched sample firms were matched using the following criteria:

1. Firm size. In line with Beasley (1996), Kaminski et al. (2004), Erickson et al. (2005), Chen et al. (2006), Firth et al. (2011) and Biggerstaff et al. (2015), firm size was used to match. These authors use various ways to measure size, but total assets and revenue seem to be the most common method. However, the sample of this thesis includes many firms that do not have the obligation to publish financial data. In order to include these firms in the analysis as well, the peers were matched based on the size categorization of the Reach

[2] The data on the independent variables in this thesis are either publicly available or freely accessible to police employees without permission if they deem it necessary for their task (Art. 8 Politiewet). Data acquired through more intrusive methods (e.g. phone taps) were only used in this thesis to describe the social link between facilitator and career criminal, the underlying crimes, the laundering methods and other data not needed for inferential testing. These data gathering methods can only be applied with permission from a prosecutor or judge.

database (based on estimated revenue). Using the number of employees as a proxy was considered but this idea was discarded because of the missing data on this variable, leading to the same conclusion as with total assets and revenue. Not for every medium-sized firm, 10 peer firms could be selected with the same size category. Therefore, 50% of the peers for medium firms were supplemented with small-sized firms;

2. Industry. In line with Beasley (1996), Beneish (1999), Carcello & Nagy (2004), Chen et al. (2006), Davidson et al. (2015) and Biggerstaff et al. (2015), the firms were matched based on industry. All authors use the Fama-French or SIC coding system for this. However, the number of digits varies between two and five. In this thesis, four to five digit SBI codes were used. SBI is the Dutch equivalent of the SIC coding system. 35 firms could be matched on a 5-digit code, the other firms on a 4-digit code. This was due to a scarcity among certain industry codes;
3. Legal form. Legal form is not used by any of the authors mentioned above to match because they all examine listed firms. However, based on the literature review it has become clear that legal form has the potential to affect firm behavior. Additionally, by using legal form, the ratio between firms with and without financial data of the facilitators' sample, should be equal to the ration in the matched sample;
4. Year. In line with Beasley (1996), Carcello and Nagy (2004), Kaminski et al. (2004), Erickson et al. (2005), Chen et al. (2006) and Biggerstaff et al. (2015) the firms were also matched based on year.

The non-matched sample firms were only selected based on year. Apart from the selection criteria, matched and non-matched firms were randomly selected from the Reach database. Matching at the individual level was based on the following criteria:

1. Industry. Industry serves in this context as a proxy for several individual level constructs. Industry could directly and indirectly affect the board members' criminal records. Certain industries demand that the board member has no criminal record (e.g. child care, banking, law firms, accounting firms, etc.). Additionally, certain industries demand a higher education, which also influences crime occurrence. Matching based on industry is in line with Davidson et al. (2015);
2. Age. There is strong evidence that age affects the chance of having a criminal record. Davidson et al. (2015) apply the same selection criterion. For each board member, the peer with the closest age was selected[3];
3. Gender. Though Davidson et al. (2015) do no match based on gender, it has become clear in the previous chapter, that gender is strongly related to crime. Therefore, this variable was used as a matching criterion;
4. Year. The facilitating board members were compared with their peers at the same moment in time.

The non-matched sample board members were only selected based on year. Apart from the selection criteria, matched and non-matched board members were randomly selected from the Reach database.

3.5.3 Outliers

However, before logistic regressions could be performed, the data was first prepared for analysis. After manually checking the data, it became clear that there were many extreme values in the financial ratios. Though Cook's distance is generally a suitable method to remove outliers in order to perform logistic regressions (Sarkar, Midi & Rana, 2011), after filtering based on this method multiple variables still included values that gave a distorting image (e.g. leverages above 80,000.00%). Therefore, the data has been winsorized at 5% - 95%. This technique has only been applied to the financial data. The non-financial data showed no abnormal values. The descriptive statistics after winsorization can be found in table 4. The frequency table per SBI code is separately presented in appendix II (firm level) and appendix III (individual board member level). The unwinsorized financial data can be found in appendix IV.

[3] T-tests and Mann-Whitney tests indicate that age does not significantly differ between the facilitators and their matched peers.

The data on the individual board members has not been winsorized. The descriptive statistics at individual board member level can be found in table 5.

3.5.4 Missing data

Multiple firm variables are characterized by a relatively large number of missing data. There are two main reasons for this. The first is the lack of an obligation for smaller firms to publish certain data. A second reason why data can be missing is because firms do not comply with their obligation to publish certain information. As can be seen in table 4, completeness strongly varies per variable, as well as per sub sample. Though the Reach database has the option to select firms based on whether certain data on the firm is available, the author of this thesis has chosen not to use this option because the results might be biased. For example, if the non-matched sample only consisted of firms that have 100% completeness on all the variables, this might result in a sample that only consisted of relatively large and well-organized private limited liability companies (PLLCs), leaving out the sole proprietorships and small firms.

3.6 Conclusion

The applied method in this thesis is logistic regression. The analysis is performed on firm and individual board member level. At both levels, a matched and non-matched sample is used. The dataset is characterized by outliers in the financial data. The possibly distorting effects of the outliers have been mitigated through winsorization. All presentations of data and analyses in the remainder of this thesis, are based on the winsorized data. The dataset is also characterized by high percentages of missing data. However, these percentages vary strongly per variable. The missing data can mostly be explained due to the lack of an obligation for certain firm sizes and legal forms to publish certain data.

Table 4 Descriptive statistics at firm level

Panel A: Corporate governance

	Facilitators						Matched sample						Non-matched sample					
	N	Mean	SD	Median	Min	Max	N	Mean	SD	Median	Min	Max	N	Mean	SD	Median	Min	Max
BOARDOWN	52	1.000	0.000	1.000	1.000	1.000	147	1.000	0.000	1.000	1.000	1.000	317	1.000	0.000	1.000	1.000	1.000
BOARDTEN	52	4.7	6.3	1.3	0.0	21.4	91	7.0	7.0	4.6	0.0	36.2	33	8.3	6.9	7.0	0.0	30.6
BOARDSIZE	52	1.1	0.5	1.0	1.0	4.0	432	1.6	1.1	1.0	1.0	7.0	518	1.1	0.6	1.0	1.0	13.0
LEGALSOLE	52	0.212	0.412	0.000	0.000	1.000	520	0.212	0.409	0.000	0.000	1.000	520	0.487	0.500	0.000	0.000	1.000
LEGALPART	52	0.019	0.139	0.000	0.000	1.000	520	0.019	0.137	0.000	0.000	1.000	520	0.123	0.329	0.000	0.000	1.000
LEGALLIMPART	52	0.077	0.269	0.000	0.000	1.000	520	0.077	0.267	0.000	0.000	1.000	520	0.002	0.044	0.000	0.000	1.000
LEGALPLLC	52	0.692	0.466	1.000	0.000	1.000	520	0.692	0.462	1.000	0.000	1.000	520	0.363	0.481	0.000	0.000	1.000
LEGALOTHER	52	0.000	0.000	0.000	0.000	0.000	520	0.000	0.000	0.000	0.000	0.000	520	0.025	0.156	0.000	0.000	1.000

Panel B: Financial constraint

	Facilitators						Matched sample						Non-matched sample					
	N	Mean	SD	Median	Min	Max	N	Mean	SD	Median	Min	Max	N	Mean	SD	Median	Min	Max
CURRENTRAT	21	1.201	1.328	0.767	0.063	4.898	284	6.569	12.731	1.551	0.063	53.471	124	10.468	16.288	2.750	0.063	53.471
QUICKRAT	21	1.126	1.356	0.624	0.044	4.898	284	6.160	12.752	1.173	0.044	53.471	124	10.325	16.346	2.572	0.044	53.471
CASHRAT	21	0.448	0.891	0.005	0.000	3.047	284	2.005	5.230	0.164	0.000	23.170	124	3.221	6.478	0.323	0.000	23.170
LEVERAGE	22	1.006	0.654	0.898	0.174	2.610	294	0.751	0.646	0.650	0.019	2.610	129	0.624	0.548	0.518	0.019	2.610

Panel C: Control variables

	Facilitators						Matched sample						Non-matched sample					
	N	Mean	SD	Median	Min	Max	N	Mean	SD	Median	Min	Max	N	Mean	SD	Median	Min	Max
FIRMAGE	52	8.0	10.5	3.5	0.0	40.9	520	14.4	19.1	8.2	0.0	110.4	520	13.1	15.9	8.2	0.0	111.7
SIZEVERYSMALL	52	0.750	0.437	1.000	0.000	1.000	520	0.754	0.431	1.000	0.000	1.000	520	0.900	0.300	1.000	0.000	1.000
SIZESMALL	52	0.192	0.398	0.000	0.000	1.000	520	0.217	0.413	0.000	0.000	1.000	520	0.088	0.284	0.000	0.000	1.000
SIZEMEDIUM	52	0.058	0.235	0.000	0.000	1.000	520	0.029	0.168	0.000	0.000	1.000	520	0.012	0.107	0.000	0.000	1.000

This table presents the descriptive statistics at firm level of the facilitators, the matched sample and the non-matched sample. It reports, per sub sample, for each variable the number of observations, mean, standard deviation, median, minimum value and maximum value. The operationalization per variable can be found in table 2.

Table 5 Descriptive statistics at individual board member level

Panel A: Behavioral economics

	Facilitators						Matched sample						Non-matched sample					
	N	Mean	SD	Median	Min	Max	N	Mean	SD	Median	Min	Max	N	Mean	SD	Median	Min	Max
AGE	42	41.2	11.4	41.8	22.6	69.4	210	40.6	11.4	41.2	21.3	72.2	210	51.6	10.6	52.2	26.2	78.4
AGE18-25	42	0.100	0.300	0.000	0.000	1.000	210	0.100	0.300	0.000	0.000	1.000	210	0.000	0.000	0.000	0.000	0.000
AGE26-35	42	0.262	0.445	0.000	0.000	1.000	210	0.262	0.441	0.000	0.000	1.000	210	0.081	0.273	0.000	0.000	1.000
AGE36-45	42	0.333	0.477	0.000	0.000	1.000	210	0.319	0.467	0.000	0.000	1.000	210	0.233	0.424	0.000	0.000	1.000
AGE46-55	42	0.214	0.415	0.000	0.000	1.000	210	0.238	0.427	0.000	0.000	1.000	210	0.290	0.455	0.000	0.000	1.000
AGE55+	42	0.119	0.328	0.000	0.000	1.000	210	0.095	0.294	0.000	0.000	1.000	210	0.395	0.490	0.000	0.000	1.000
EDUCATION	20	0.200	0.410	0.000	0.000	1.000	4	0.250	0.500	0.000	0.000	1.000	5	0.400	0.548	0.000	0.000	1.000
GENDER	42	0.857	0.354	1.000	0.000	1.000	210	0.857	0.351	1.000	0.000	1.000	210	0.886	0.319	1.000	0.000	1.000
ARRESTNUMBER	42	6.1	13.0	0.5	0.0	58.0	210	0.4	1.9	0.0	0.0	21.0	210	0.3	1.2	0.0	0.0	14.0
ARRESTPROPERTY	42	0.310	0.468	0.000	0.000	1.000	210	0.014	0.119	0.000	0.000	1.000	210	0.010	0.097	0.000	0.000	1.000
ARRESTWEAPONS	42	0.095	0.297	0.000	0.000	1.000	210	0.010	0.097	0.000	0.000	1.000	210	0.005	0.069	0.000	0.000	1.000
ARRESTNARCOTICS	42	0.167	0.377	0.000	0.000	1.000	210	0.038	0.192	0.000	0.000	1.000	210	0.014	0.119	0.000	0.000	1.000
ARRESTVIOLENCE	42	0.190	0.397	0.000	0.000	1.000	210	0.048	0.213	0.000	0.000	1.000	210	0.033	0.180	0.000	0.000	1.000
ARRESTTRAFFIC	42	0.119	0.328	0.000	0.000	1.000	210	0.038	0.192	0.000	0.000	1.000	210	0.024	0.153	0.000	0.000	1.000
ARRESTSEXUAL	42	0.000	0.000	0.000	0.000	0.000	210	0.005	0.069	0.000	0.000	1.000	210	0.005	0.069	0.000	0.000	1.000
ARRESTOTHER	42	0.381	0.492	0.000	0.000	1.000	210	0.048	0.213	0.000	0.000	1.000	210	0.067	0.250	0.000	0.000	1.000
NATANGLO	42	0.024	0.154	0.000	0.000	1.000	210	0.005	0.069	0.000	0.000	1.000	210	0.014	0.119	0.000	0.000	1.000
NATARAB	42	0.071	0.261	0.000	0.000	1.000	210	0.033	0.180	0.000	0.000	1.000	210	0.010	0.097	0.000	0.000	1.000
NATCONFUCASIA	42	0.000	0.000	0.000	0.000	0.000	210	0.000	0.000	0.000	0.000	0.000	210	0.005	0.069	0.000	0.000	1.000
NATEASTEUR	42	0.000	0.000	0.000	0.000	0.000	210	0.010	0.097	0.000	0.000	1.000	210	0.000	0.000	0.000	0.000	0.000
NATGERMANIC	42	0.976	0.154	1.000	0.000	1.000	210	0.976	0.153	1.000	0.000	1.000	210	0.957	0.203	1.000	0.000	1.000
NATLATINEUR	42	0.024	0.154	0.000	0.000	1.000	210	0.005	0.069	0.000	0.000	1.000	210	0.019	0.137	0.000	0.000	1.000
NATSOUTHASIA	42	0.000	0.000	0.000	0.000	0.000	210	0.005	0.069	0.000	0.000	1.000	210	0.000	0.000	0.000	0.000	0.000
BORNANGLO	42	0.000	0.000	0.000	0.000	0.000	210	0.005	0.069	0.000	0.000	1.000	210	0.019	0.137	0.000	0.000	1.000
BORNARAB	42	0.048	0.216	0.000	0.000	1.000	210	0.024	0.153	0.000	0.000	1.000	210	0.014	0.119	0.000	0.000	1.000
BORNCONFUCASIA	42	0.000	0.000	0.000	0.000	0.000	210	0.000	0.000	0.000	0.000	0.000	210	0.005	0.069	0.000	0.000	1.000
BORNEASTEUR	42	0.000	0.000	0.000	0.000	0.000	210	0.010	0.097	0.000	0.000	1.000	210	0.010	0.097	0.000	0.000	1.000
BORNGERMANIC	42	0.929	0.261	1.000	0.000	1.000	210	0.957	0.203	1.000	0.000	1.000	210	0.924	0.266	1.000	0.000	1.000
BORNLATINEUR	42	0.024	0.154	0.000	0.000	1.000	210	0.005	0.069	0.000	0.000	1.000	210	0.029	0.167	0.000	0.000	1.000
BORNSOUTHASIA	42	0.000	0.000	0.000	0.000	0.000	210	0.000	0.000	0.000	0.000	0.000	210	0.000	0.000	0.000	0.000	0.000

Panel B: Control variables

	Facilitators						Matched sample						Non-matched sample					
	N	Mean	SD	Median	Min	Max	N	Mean	SD	Median	Min	Max	N	Mean	SD	Median	Min	Max
FIRMAGE	42	9.1	10.3	4.3	0.0	40.9	210	16.2	15.9	13.2	0.0	89.9	210	14.3	13.4	11.2	0.0	91.2
SIZEVERYSMALL	42	0.690	0.468	1.000	0.000	1.000	210	0.848	0.360	1.000	0.000	1.000	210	0.929	0.258	1.000	0.000	1.000
SIZESMALL	42	0.238	0.431	0.000	0.000	1.000	210	0.138	0.346	0.000	0.000	1.000	210	0.052	0.223	0.000	0.000	1.000
SIZEMEDIUM	42	0.071	0.261	0.000	0.000	1.000	210	0.014	0.119	0.000	0.000	1.000	210	0.019	0.137	0.000	0.000	1.000

Panel C: Facilitator-specific variables

	Facilitators					
	N	Mean	SD	Median	Min	Max
NUMBERCRIM	36	2.3	4.3	1.0	1.0	27.0
SPOUSE	23	0.217	0.422	0.000	0.000	1.000
FRIEND	23	0.043	0.209	0.000	0.000	1.000
FAMILYMEMBER	23	0.217	0.422	0.000	0.000	1.000
PREVIOUSLEGAL	23	0.522	0.511	1.000	0.000	1.000
UNDERNARCOT	42	0.619	0.492	1.000	0.000	1.000
UNDERFRAUD	42	0.548	0.504	1.000	0.000	1.000
UNDERGAMBLING	42	0.095	0.297	0.000	0.000	1.000
UNDEROTHER	42	0.071	0.261	0.000	0.000	1.000
LAUNDERAMOUNT	10	591.0	979.3	216.3	8.9	3148.8
BALANCELAUNDER	42	0.286	0.457	0.000	0.000	1.000
REVLAUNDER	42	0.000	0.000	0.000	0.000	0.000
COSTLAUNDER	42	0.357	0.485	0.000	0.000	1.000
SHIFTINCOME	42	0.048	0.216	0.000	0.000	1.000
OTHERMAN	42	0.310	0.468	0.000	0.000	1.000
FICTITIOUSLABOR	42	0.310	0.468	0.000	0.000	1.000
FICTITIOUSINVOICE	42	0.119	0.328	0.000	0.000	1.000
BANKACCOUNT	42	0.238	0.431	0.000	0.000	1.000
COMPANYCAR	42	0.071	0.261	0.000	0.000	1.000
REPORTINGTRANS	42	0.048	0.216	0.000	0.000	1.000
OTHER	42	0.214	0.415	0.000	0.000	1.000

This table presents the descriptive statistics at individual board member level of the facilitators, the matched sample and the non-matched sample. It reports, per sub sample, for each variable the number of observations, mean, standard deviation, median, minimum value and maximum value. The operationalization per variable can be found in table 2.

4. Results

In this chapter, the univariate, bivariate and multivariate statistics are discussed. In the first three paragraphs, for each of these three analyses, first the firm level results are discussed. Then, the individual board member level is discussed. Paragraph 4 treats robustness checks of the multivariate firm results. In paragraph 5, the hypotheses, as formulated in chapter two, are discussed in light of the results. The last paragraph of this chapter discusses a number of additional analyses.

4.1 Univariate results

As can be seen in table 4, board ownership has a mean of 1.000 and standard deviation of 0.000 in all three sub samples. Data on this variable was 100% available in the facilitators' sample: all firms were fully owned by their board members. The limited partnerships in the facilitators sample were also (through other firms) indirectly owned by the board members. In the matched and non-matched samples, sole proprietorships and partnerships take a value of 1.000 on the variable BOARDOWN. Ownership data on other legal forms is not available. This results in a constant on this variable among all samples. Because of this, BOARDOWN cannot be implemented in the logistic regressions. The mean board size of facilitators is 1.1 which is below average compared to the matched sample: their peers have, on average, a board that consists of 1.6 board members. Facilitators have less often the legal forms sole proprietorship and partnership. Limited partnerships and PLLCs are more common among facilitators compared to the non-matched sample. Other legal forms are not present among the facilitators.

On the topic of financial variables, facilitators have lower current, quick and cash ratios compared to both their peers and non-matched firms. Facilitators' leverage is, on average, higher compared to both control samples. It is notable that the facilitators' mean leverage is 1.006, meaning that they have, on average, more debt than assets at the beginning of the year in which facilitation started.

When examining table 5, it becomes clear that facilitating board members are, on average, younger compared to the non-matched sample. Additionally, the age categories 18-25, 26-35 and 36-45 are overrepresented in the facilitators' sample compared to the non-matched sample. Surprisingly, of the 210 non-matched board members, not one falls within the age category 18-25. The number of values on education in the control samples is very limited due to availability of data[4]. Therefore, this variable will not be implemented in the logistic regressions. There are no notable differences in gender distribution between the sub samples. However, facilitators tend to have a more extensive criminal record compared to their matched and non-matched peers. They have been arrested more often in total, and have been arrested more for each specific type of crime. The only exception is the category sexual crimes. Though facilitators have slightly more often a non-Germanic nationality compared to the control samples, there are no notable differences in cultural variables between the samples.

On average, facilitators launder for 2.3 career criminals. However, this value is strongly driven by one value of 27 in the sample. When this value is left out, the average is 1.6 which gives, in combination with the median of 1.0, a better image of the distribution. It is most common that career criminals have met their facilitators through previous legal dealings. Additionally, in 21.7% of the cases, the facilitator is the career criminal's spouse. Also, in 21.7% of the cases, the board member facilitated a family member. Narcotics related crimes and fraud, are clearly the most common underlying crimes for the illegal proceeds which need to be laundered by the facilitators. Combinations of more than 1 underlying crime also occur. Common methods to launder are balance sheet laundering and cost laundering. More precise: facilitators tend to commonly support career criminals by providing fictitious labor contracts and invoices (cost laundering), and access to bank accounts (balance sheet laundering). Additionally, providing company cars (cost

[4] Though Linkedin proved to be a moderately useful source for this variable, it became clear that data was practically only available when the subject was highly educated, indicating biased observations.

or balance sheet laundering) and not complying with the legal obligation to report unusual transactions are methods to facilitate. Unsurprisingly, revenue laundering is not an applied method since this would transfer the illegal proceeds to the facilitator / shareholder himself. This method would be more common among self-launderers. Due to their descriptive nature, the facilitator-specific variables will not be applied or discussed in the following two paragraphs.

4.2 Bivariate results

In table 6, the correlation matrix of the variables at firm level is presented. Panel A displays correlations of the facilitators and the matched sample, panel B displays correlations of the facilitators and the non-matched sample. The variables BOARDOWN and LEGALOTHER are left out since the values on these variables are constant. No correlations are displayed between the various legal forms, and between the legal forms and financial data: only financial data on PLLCs is available.

As can be seen in panel A of table 6, the variables FACILITATE and BOARDSIZE are negatively correlated at a 0.01 significance level. Though there is a negative correlation between the liquidity variables and FACILITATE, and a positive correlation between LEVERAGE and FACILITATE, these are not statistically significant. In panel B, it becomes clear that there is a negative and significant correlation between FACILITATE and the legal forms LEGALSOLE and LEGALPART. The correlation is also significant, but positive, between FACILITATE and the legal forms LEGALLIMPART and LEGALPLLC.

The correlation between CURRENTRAT and QUICKRAT of 0.996 in panel A, indicates that firms in the sample tend to have little to no inventories. CURRENTRAT, QUICKRAT and CASHRAT have correlations above 0.7, indicating that multicollinearity might play a role (Hair et al., 2009). For this reason, in the logistic regressions, these variables are not implemented simultaneously.

Table 6 Correlation matrix firm level variables

Panel A Correlation matrix facilitators and matched sample

		1	2	3	4	5	6	7	8
1	FACILITATE	1							
2	BOARDTEN	-0.158	1						
3	BOARDSIZE	-0.130**	-0.031	1					
4	CURRENTRAT	-0.110	0.237*	-0.126*	1				
5	QUICKRAT	-0.103	0.250*	-0.130*	0.996**	1			
6	CASHRAT	-0.078	0.314**	-0.164**	0.790**	0.791**	1		
7	LEVERAGE	0.100	-0.222*	0.086	-0.350**	-0.345**	-0.291**	1	
8	FIRMAGE	-0.099*	0.551**	0.183**	-0.026	-0.026	-0.012	0.005	1

Panel B Correlation matrix facilitators and non-matched sample

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	FACILITATE	1														
2	BOARDTEN	-0.262*	1													
3	BOARDSIZE	0.019	0.266*	1												
4	LEGALSOLE	-0.159**	0.225*	-0.148**	1											
5	LEGALPART	-0.094*	0.005	-0.030		1										
6	LEGALLIMPART	0.232**	-0.174	-0.015			1									
7	LEGALPLLC	0.194**	0.279**	0.176**				1								
8	CURRENTRAT	-0.212*	-0.127	-0.096					1							
9	QUICKRAT	-0.210*	-0.118	-0.105					0.999**	1						
10	CASHRAT	-0.161	-0.082	-0.072					0.747**	0.748**	1					
11	LEVERAGE	0.234**	0.075	-0.044					-0.207*	-0.203*	-0.107	1				
12	FIRMAGE	-0.093*	0.561**	0.151**	-0.106*	0.163**	-0.015	-0.039	-0.021	-0.022	-0.041	-0.035	1			
13	SIZEVERYSMALL	-0.136**	-0.183	-0.187**	0.199**	-0.219**	-0.026	-0.050	0.128	0.133	0.103	0.036	-0.185**	1		
14	SIZESMALL	0.100*	0.219*	0.025	-0.175**	0.216**	0.032	0.024	-0.097	-0.101	-0.076	-0.063	0.140**	-0.920**	1	
15	SIZEMEDIUM	0.107*	-0.035	0.414**	-0.089*	0.043	-0.012	0.071	-0.089	-0.091	-0.075	0.052	0.138**	-0.353**	-0.042	1

This table reports Pearson correlations of the variables at firm level. Panel A reports correlations between the facilitators and the matched sample, panel B reports correlations between facilitators and the non-matched sample. * indicates significance at the 0.05 level (two-tailed). ** indicates significance at the 0.01 level (two-tailed). The operationalization per variable can be found in table 2.

Table 7 Correlation matrix individual board member level variables

Panel A Correlation matrix facilitators and matched sample

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	FACILITATE	1																							
2	ARRESTNUMBER	0.357**	1																						
3	ARRESTPROPERTY	0.451**	0.679**	1																					
4	ARRESTWEAPONS	0.210**	0.483**	0.386**	1																				
5	ARRESTNARCOTICS	0.203**	0.469**	0.416**	0.401**	1																			
6	ARRESTVIOLENCE	0.207**	0.503**	0.560**	0.159*	0.256**	1																		
7	ARRESTTRAFFIC	0.136*	0.588**	0.528**	0.317**	0.548**	0.423**	1																	
8	ARRESTSEXUAL	-0.028	0.049	-0.016	-0.010	0.251**	-0.018	0.271**	1																
9	ARRESTOTHER	0.408**	0.543**	0.607**	0.460**	0.411**	0.412**	0.452**	-0.021	1															
10	NATANGLO	0.080	-0.013	-0.023	-0.014	-0.023	-0.025	-0.021	-0.006	0.117	1														
11	NATARAB	0.073	0.029	0.030	0.102	0.207**	-0.056	0.228**	0.311**	0.265**	-0.018	1													
12	NATEASTEUR	-0.040	-0.021	-0.023	-0.014	-0.023	-0.025	-0.021	-0.006	-0.030	-0.008	-0.018	1												
13	NATGERMANIC	0.000	0.001	-0.066	-0.146*	-0.071	0.043	-0.081	0.010	-0.033	-0.279**	-0.235**	-0.573**	1											
14	NATLATINEUR	0.080	-0.013	-0.023	-0.014	-0.023	0.149*	-0.021	-0.006	-0.030	-0.008	-0.018	-0.008	-0.279**	1										
15	NATSOUTHASIA	-0.028	-0.015	-0.016	-0.010	-0.016	-0.018	-0.015	-0.004	-0.021	-0.006	-0.013	-0.006	0.010	-0.006	1									
16	BORNANGLO	-0.028	-0.015	-0.016	-0.010	-0.016	-0.018	-0.015	-0.004	-0.021	0.706**	-0.013	-0.006	-0.404**	-0.006	-0.004	1								
17	BORNARAB	0.054	-0.027	-0.044	-0.026	-0.043	-0.047	-0.039	-0.011	0.101	-0.015	0.584**	-0.015	0.026	-0.015	-0.011	-0.011	1							
18	BORNEASTEUR	-0.040	-0.021	-0.023	-0.014	-0.023	-0.025	-0.021	-0.006	-0.030	-0.008	-0.018	1.000**	-0.573**	-0.008	-0.006	-0.006	-0.015	1						
19	BORNGERMANIC	-0.050	0.042	0.058	0.035	0.056	0.062	0.052	0.014	-0.047	-0.190**	-0.432**	-0.400**	0.454**	-0.190**	0.014	-0.282**	-0.756**	-0.400**	1					
20	BORNLATINEUR	0.080	-0.021	-0.023	-0.014	-0.023	-0.025	-0.021	-0.006	-0.030	-0.008	-0.018	-0.008	-0.279**	0.496**	-0.006	-0.006	-0.015	-0.008	-0.400**	1				
21	FIRMAGE	-0.174**	-0.080	-0.151*	-0.087	-0.059	-0.066	-0.030	0.164**	-0.157*	-0.064	0.009	0.042	0.053	-0.051	0.095	-0.053	0.003	0.042	-0.011	0.016	1			
22	SIZEVERYSMALL	-0.147*	-0.042	-0.045	-0.128*	-0.011	-0.028	-0.076	0.030	-0.076	0.042	0.096	0.042	-0.074	0.042	0.030	0.030	0.017	0.042	-0.057	0.042	-0.031	1		
23	SIZESMALL	0.103	0.020	0.024	0.005	-0.015	0.009	0.049	-0.027	0.035	-0.038	-0.087	-0.038	0.067	-0.038	-0.027	-0.027	-0.072	-0.038	0.096	-0.038	0.067	-0.906**	1	
24	SIZEMEDIUM	0.119	0.055	0.055	0.290**	0.060	0.047	0.070	-0.011	0.101	-0.015	-0.034	-0.015	0.026	-0.015	-0.011	-0.011	0.118	-0.015	-0.076	-0.015	-0.074	-0.358**	-0.072	1

Panel B Correlation matrix facilitators and non-matched sample

		1	2	3	4	5	6	7	8	9	10	11	12
1	FACILITATE	1											
2	AGE	-0.341**	1										
3	AGE18-25	0.245**	-0.259**	1									
4	AGE26-35	0.215**	-0.574**	-0.039	1								
5	AGE36-45	0.086	-0.426**	-0.063	-0.204**	1							
6	AGE46-55	-0.063	0.044	-0.068	-0.219**	-0.358**	1						
7	AGE55+	-0.216**	0.783**	-0.080	-0.259**	-0.423**	-0.454**	1					
8	GENDER	-0.033	0.019	0.040	-0.026	-0.071	0.009	0.064	1				
9	FIRMAGE	-0.149*	0.074	-0.079	-0.069	0.025	0.026	0.016	-0.023	1			
10	SIZEVERYSMALL	-0.282**	0.127*	0.039	0.004	-0.117	-0.006	0.100	-0.052	-0.024	1		
11	SIZESMALL	0.250**	-0.105	-0.033	-0.015	0.124*	-0.027	-0.070	0.022	0.027	-0.853**	1	
12	SIZEMEDIUM	0.119	-0.067	-0.019	0.017	0.014	0.057	-0.073	0.062	-0.001	-0.478**	-0.051	1

This table reports Pearson correlations of the variables at individual board member level. Panel A reports correlations between the facilitators and the matched sample, panel B reports correlations of facilitators and the non-matched sample. * indicates significance at the 0.05 level (two-tailed). ** indicates significance at the 0.01level (two-tailed). The operationalization per variable can be found in table 2.

At the individual board member level, as presented in table 7, several variables are significantly related to FACILITATE. As can be seen in panel A of table 7, facilitating board members tend to have been arrested more often in total, and have been arrested more often per type of crime. An exception is ARRESTSEXUAL: facilitators have not been arrested significantly more often than non-facilitators. It is notable that none of the cultural variables are significantly correlated with FACILITATE. However, people with an Arabic nationality tend to have been arrested significantly more for narcotics crimes, traffic crimes and sexual crimes, as well as for crimes that fall within the category other.

Unsurprisingly, nationalities and country of birth are significantly and positively related with each other. Several have a correlation above 0.7, indicating that multicollinearity might play a role. Therefore, nationality and country of birth variables will not be implemented simultaneously in the logistic regressions. Apart from the cultural variables, only the correlation between AGE and AGE55+ is, logically, above 0.7. However, this means that age and age categories will not be implemented simultaneously in the logistic regressions.

In panel B of table 7, the correlations of the facilitators and the non-matched sample are presented. There is a highly significant and negative correlation between FACILITATE and AGE, indicating that younger people facilitate more often. Furthermore, board members that fall within the age categories 18-25 and 26-35 are significantly more present among facilitators. The opposite is observed for the age category 55+. There seems to be no significant correlation between the male or female gender and FACILITATE.

4.3 Multivariate results

The logistic regressions are reported in table 8 and table 9. Table 8 reports the analyses at firm level, whereas table 9 reports the analyses at individual board member level. The various models presented in these tables, follow the order of the hypotheses as displayed in table 1. Depending on which variable is tested (matching criterion or not), a matched or non-matched sample is used.

The analyses at firm level are presented in table 8. As can be seen in model 1a of table 8, BOARDTEN is not significant. However, BOARDSIZE is highly significant (p = 0.01). The relation is negative indicating that facilitating firms tend to have smaller boards. Based on model 1a, it can be concluded that (ceteris paribus) when a board's size increases from 1 to 2, a firm's odds that it will facilitate become $(1/(e^{-2.331}) =)$ 10.29 times smaller. However, BOARDTEN is a variable that is characterized in the used dataset by very little available data on non-PLLC firms. Therefore, it could be argued that the results in model 1a are driven by the high percentage of PLLCs in this model. To include more sole proprietorships in the model, BOARDTEN of sole proprietorships in the dataset is supplemented with FIRMAGE. This means that it is assumed that sole proprietorships tend to 'be born and die' with their owner and do not change owners/boards. This supplemented BOARDTEN is used in model 1b. As can be seen, the negative relation between BOARDSIZE and FACILITATE remains significant at a 0.01 significance level.

In order to test the relation between legal form and facilitation, a non-matched sample is used in model 2a. Compared to the legal form sole proprietorship, the legal form PLLC is significantly and positively related to FACILITATE, at a 0.01 significance level. BOARDTEN is not included in this model due to the lack of data on this variable for sole proprietorships. Based on model 2a, it can be concluded that (ceteris paribus) when a firm is a PLLC, the odds that it facilitates become $(e^{2.360} =)$ 10.59 larger than when it is a sole proprietorship. Following the same method as with BOARDSIZE, BOARDTEN of sole proprietorships is supplemented with FIRMAGE in model 2b. This makes it possible to include BOARTEN in the model. LEGALPLLC remains significant at a 0.01 significance level. However, it is notable that BOARDSIZE is no longer significant in both model 2a and 2b.

In model 3, 4, 5 and 6, the financial variables are examined. Legal form is not included in these models since only PLLCs publish financial data, making the legal form variables constant. Model 3 only includes financial variables and control variables. In this model, CURRENTRAT is not significant but LEVERAGE is positively and significantly related to FACILITATE at a 0.10 significance level. In tests not reported in this thesis, CURRENTRAT was substituted with QUICKRAT and CASHRAT in model 3. No additional insights were gained from this.

In models 4, 5 and 6, corporate governance variables are included and test the relation between the various liquidity measures and FACILITATE. Only in model 5, both the liquidity measure (QUICKRAT) and LEVERAGE are significant at a 0.05 significance level. QUICKRAT is negatively related to FACILITATE, whereas LEVERAGE is positively related to FACILITATE. Based on model 5 it can be concluded that (ceteris paribus) an increase of a firm's quick ratio from 1 to 2, makes the odds that it facilitates $(1/(e^{-0.494}) =)$ 1.64 times smaller. An increase in leverage of 0.10 (e.g. from 70% to 80%) makes a firm's odds that it will facilitate $(e^{0.2443} =)$ 1.28 larger (ceteris paribus).

CASHRAT is not significantly related to FACILITATE as can be seen in model 6. Since CURRENTRAT and QUICKRAT are both significantly related to FACILITATE, and CASHRAT is not, it becomes clear that the difference between these ratios (i.e. whether or not trade receivables are included) determines whether the liquidity measure is significant.

Though BOARDSIZE is highly significant in models 1a and 1b, the overall model is moderate. Model 1a fails the HL-test, meaning its goodness of fit is below the desirable value. Additionally, both model 1a and 1b have relatively low pseudo R squared values, compared to model 2a, 2b, 4, 5 and 6, meaning they are less capable of explaining the variance in the models. This is exemplified by the below-average capability to predict when a firm facilitates and when it does not facilitate. Models 2a and 2b, and models 4 and 5, however, both have high pseudo R squared values ranging from 0.687 to 0.797. Additionally, these models are capable of predicting correctly that a firm will facilitate, in 59.6% and 85.7% of the cases.

In table 9, the individual board member level analysis is performed. In model 1 and 2 of table 9, board members' age, age category and gender are tested for their relation to FACILITATE. As can be seen in model 1, age is negatively related to FACILITATE at a 0.01 significance level, indicating that younger board members have a greater tendency to facilitate. Model 2 reports a positive relation, at a significance level of 0.01, between the age category 26-35 and FACILITATE. Gender is not statistically significant in model 1 nor 2.

When specifically examining the relation between self-control, proxied by criminal history, and FACILITATE, in model 3, it becomes clear that facilitators have been arrested significantly more prior to the facilitation. This is especially the case for crimes that fall within the category 'other'. Violence crimes, are significantly negatively related to FACILITATE.

Culture seems to affect facilitation probability to a limited extent as can be seen in model 4. Only when people have an Arabic nationality they are significantly more inclined to facilitate. In a performed test not reported in this thesis, nationality was substituted with country of birth. The results indicated that none of the countries of birth were significantly positively or negatively related with FACILITATE, including Arabic countries of birth.

Table 8 Logistic regressions at firm level

	Dependent variable: FACILITATE							
	Model 1a	**Model 1b**	**Model 2a**	**Model 2b**	**Model 3**	**Model 4**	**Model 5**	**Model 6**
	Matched	Matched	Non-Matched	Non-Matched	Matched	Matched	Matched	Matched
	Unst. Coef (Z)	Unst. Coef (Z)	Unst. Coef (Z)	Unst. Coef (Z)	Unst. Coef (Z)	Unst. Coef (Z)	Unst. Coef (Z)	Unst. Coef (Z)
Corporate governance								
BOARDTEN	-0.034	0.013		-0.194		0.175	0.153	0.019
	(0.351)	(0.057)		(1.581)		(1.882)	(1.544)	(0.044)
BOARDSIZE	-2.331***	-1.779***	-0.593	-0.976		-3.451**	-3.500**	-3.564**
	(12.699)	(7.824)	(0.525)	(0.355)		(6.496)	(5.822)	(6.007)
LEGALSOLE	0.503	-22.436						
	(0.000)	(0.000)						
LEGALPART	3.735	3.146	-17.524	-41901				
	(0.000)	(0.000)	(0.000)	(0.000)				
LEGALLIMPART			22.480	42.289				
			(0.000)	(0.000)				
LEGALPLLC	-20.346	-20.723	2.360***	3.572***				
	(0.000)	(0.000)	(10.300)	(6.843)				
LEGALOTHER			-14.902	-4.533				
			(0.000)	(0.000)				
Financial constraint								
CURRENTRAT					-0.311	-0.628**		
					(1.789)	(4.985)		
QUICKRAT							-0.494**	
							(4.313)	
CASHRAT								-0.044
								(0.110)
LEVERAGE					1.035*	2.402*	2.443**	3.034**
					(3.157)	(3.627)	(4.111)	(6.567)
Control variables								
FIRMAGE	-0.030	-0.049	-0.040	0.162	-0.041*	-0.015	-0.027	-0.026
	(0.834)	(1.391)	(2.609)	(1.258)	(3.039)	(0.045)	(0.157)	(0.213)
SIZESMALL	-0.096	0.059	2.206***	1.429	1.705*	3.363*	2.931*	2.054
	(0.011)	(0.004)	(8.250)	(2.498)	(3.255)	(3.801)	(3.261)	(1.928)
SIZEMEDIUM	42.496	22.653	2.554	38.696	21.128	24.542	24.758	24.519
	(0.000)	(0.000)	(0.687)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	23.464	23.078	-20.358	-20.024	-3.524**	-0.233	-0.237	-1.370
	(0.000)	(0.000)	(0.000)	(0.000)	(4.587)	(0.004)	(0.004)	(0.116)
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
HL-test	0.000	0.685	0.987	0.794	0.970	0.969	0.994	0.988
Pseudo R^2	0.593	0.396	0.687	0.797	0.329	0.744	0.726	0.668
N	143	210	570	293	305	105	105	105
Correctly predicted								
Non-facilitate	90.1%	94.7%	98.5%	98.4%	99.6%	95.2%	95.2%	95.2%
Facilitate	69.2%	38.5%	59.6%	76.9%	0.0%	85.7%	81.0%	71.4%
Overall	82.5%	84.3%	94.9%	95.6%	92.8%	93.3%	92.4%	90.5%
Correctly predicted by null model								
Non-facilitate	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Facilitate	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Overall	80.0%	81.4%	90.9%	86.7%	93.1%	80.0%	80.0%	80.0%

This table reports logistic regressions with FACILITATE as the dependent variable. Per model, the unstandardized coefficients, Z-values, Hosmer and Lemeshow goodness of fit test, pseudo R squared, number of observations, predictive capabilities of the model and predictive capabilities of the null model are reported. Models 1a and 1b compare legal form to LEGALLIMPART. No firms have the legal form LEGALOTHER in these models. Models 2a and 2b compare legal form to LEGALSOLE. All models compare size to SIZEVERYSMALL. * indicates significance at a 0.10 level. ** indicates significance at a 0.05 level. *** indicates significance at a 0.01level. The operationalization per variable can be found in table 2.

Based on models 1 to 4, it seems that especially age, gender and crime-related variables have explanatory power. Culture seems less capable of predicting facilitation. Therefore, age categories, gender and crime-related variables are combined in models 5 (non-matched) and 6 (matched). As can be seen in model 5, when including crime-related variables, the age category 26-35 remains significant, but its significance decreases from a 0.01 to a 0.10 significance level. Gender, however, is negatively and significantly, related to FACILITATE, at a 0.05 significance level, indicating that females have a greater tendency to facilitate. Using a matched sample in model 6, the positive relation between 'other' crimes and FACILITATE is again confirmed, as well as the negative relation between violence and FACILITATE. Using all variables simultaneously in model 7 and 8, with respectively a non-matched and matched sample, it becomes again clear that females are significantly more inclined to facilitate, that facilitating board members have been arrested more often prior to facilitation compared to their peers, and have significantly more often an Arabic nationality. Additionally, only in model 8 the variable ARRESTNARCOTICS is significant at a 0.10 significance level, indicating that facilitators have been arrested more often for narcotics related crimes compared to their peers.

Every model in table 9 passes the HL-test of goodness of fit. However, the models strongly differ in how well they can explain variance and how well they can predict whether a board member is a facilitator or not. Models 1 and 2 score high on pseudo R squared values (respectively 0.888 and 0.875) and predictive capabilities. When controlling for the already known explanatory power of age and gender, in model 3 and 4, explanatory power of the models drops to pseudo R squared values of 0.493 and 0.176, when only examining respectively criminal history and culture. However, when combining age category, gender and criminal history, pseudo R squared values in the non-matched and matched analyses are demonstrated to be respectively 0.956 and 0.519. The limitations of culture to explain variance, is again confirmed in models 7 and 8, when all variables (save for age) are included. When adding culture variables to models 5 and 6, resulting in models 7 and 8, pseudo R squared values respectively remain equal at 0.956, and increase from 0.519 to 0.577.

Table 9 Logistic regressions at individual board member level

	Dependent variable: FACILITATE							
	Model 1 Non-matched	**Model 2** Non-matched	**Model 3** Matched	**Model 4** Matched	**Model 5** Non-matched	**Model 6** Matched	**Model 7** Non-matched	**Model 8** Matched
	Unst. Coef (Z)	Unst. Coef (Z)	Unst. Coef (Z)	Unst. Coef (Z)	Unst. Coef (Z)	Unst. Coef (Z)	Unst. Coef (Z)	Unst. Coef (Z)
Behavioral economics								
AGE	-0.235***							
	(8.622)							
AGE18-25		25.480			23.928	1.140	23.772	1.382
		(0.000)			(0.000)	(0.732)	(0.000)	(0.951)
AGE26-35		5.207***			15.121*	0.965	13.778*	0.640
		(7.623)			(3.723)	(0.997)	(3.027)	0.399)
AGE36-45		2.664			-0.310	0.053	-0.690	-0.206
		(2.306)			(0.008)	(0.003)	(0.039)	(0.039)
AGE46-55		1.832			2.482	0.952	2.469	1.066
		(1896)			(0.866)	(0.859)	(0.881)	(0.957)
GENDER	-1.483	-1.556			-15.030**	-1.309*	-13.818*	-1.343*
	(1.273)	(1.325)			(4.000)	(3.646)	(3.145)	(3.565)
ARRESTNUMBER			0.444**		1.091	0.475	1.210	0.619**
			(4.862)		(0.000)	(4.776)	(0.000)	(6.086)
ARRESTPROPERTY			38.813		28.150	39.275	11.669	71.528
			(0.000)		(0.000)	(0.000)	(0.000)	(0.000)
ARRESTWEAPONS			-2.294		6.470	-2.188	-4.637	-0.906
			(1.802)		(0.000)	(1.585)	(0.000)	(0.210)
ARRESTNARCOTICS			1.656		-35.622	1.745	-32.373	2.481*
			(1.953)		(0.000)	(2.089)	(0.000)	(3.496)
ARRESTVIOLENCE			-5.908**		-18.810	-6.572**	-14.911	-38.880
			(4.434)		(0.000)	(4.115)	(0.000)	(0.000)
ARRESTTRAFFIC			-42.602		-3.643	-42.848	-16.225	-44.874
			(0.000)		(0.000)	(0.000)	(0.000)	(0.000)
ARRESTSEXUAL			20.155		-2.438	20.215	5.571	18.768
			(0.000)		(0.000)	(0.000)	(0.000)	(0.000)
ARRESTOTHER			2.643**		3.592	2.772**	18.436	0.939
			(5.890)		(0.000)	(5.566)	(0.000)	(0.403)
NATANGLO				2.474			25.461	18.980
				(1.885)			(0.000)	(0.000)
NATARAB				2.331**			0.312	2.922**
				(5.448)			(0.000)	(4.744)
NATCONFUCASIA				-16.736			19.564	
				(0.000)			(0.000)	
NATEASTEUR								15.520
								(0.000)
NATGERMANIC				2.488			19.633	35.711
				(2.298)			(0.000)	(0.000)
NATLATINEUR				22.214			-9.862	57.504
				(0.000)			(0.000)	(0.000)
NATSOUTHASIA				-17.849				-19.466
				(0.000)				(0.000)
Control variables								
FIRMAGE	-0.297***	-0.267**	-0.035	-0.067***	-1.995*	-0.041*	-1.841*	-0.054**
	(6.963)	(5.757)	(2.686)	(9.099)	(3.502)	(3.253)	(2.811)	(4.148)
SIZESMALL	6.950***	6.536***	1.631***	1.226**	36.148*	2.062***	33.594*	2.065***
	(10.165)	(10.305)	(7.497)	(6.256)	(3.817)	(9.570)	(3.093)	(7.883)
SIZEMEDIUM	1.930	2.572	1.996**	1.660	4.065	2.278**	3.392	1.958*
	(0.125)	(0.282)	(3.776)	(3.562)	(0.000)	(4.202)	(0.000)	(2.963)
Constant	-7.906	-21.167	-1.527	-4.238**	-11.91	-1.466	-32.52	-36.644
	(0.000)	(0.000)	(1.301)	(4.474)	(0.000)	(0.715)	(0.000)	(0.000)
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
HL-test	1.000	1.000	0.207	0.951	1.000	0.800	1.000	0.67
Pseudo R^2	0.888	0.875	0.493	0.176	0.956	0.519	0.956	0.577
N	252	252	252	252	252	252	252	252
Correctly predicted								
Non-facilitate	98.1%	98.1%	98.1%	98.1%	99.5%	97.1%	99.5%	97.6%
Facilitate	85.7%	83.3%	42.9%	4.8%	97.6%	45.2%	97.6%	52.4%
Overall	96.0%	95.6%	88.9%	82.5%	99.2%	88.5%	99.2%	90.1%
Correctly predicted by null model								
Non-facilitate	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Facilitate	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Overall	83.3%	83.3%	83.3%	83.3%	83.3%	83.3%	83.3%	83.3%

This table reports logistic regressions with FACILITATE as the dependent variable. Per model, the unstandardized coefficients, Z-values, Hosmer and Lemeshow goodness of fit test, pseudo R squared, number of observations, predictive capabilities of the model and predictive capabilities of the null model are reported. All models compare age category to AGE55+ and size to SIZEVERYSMALL. Not all nationalities are included in every model because not all nationalities are present in each sub sample. * indicates significance at the 0.10 level. ** indicates significance at the 0.05 level. *** indicates significance at the 0.01 level. The operationalization per variable can be found in table 2.

4.4 Robustness checks

Due to the large number of sole proprietorship in this thesis' sample, a somewhat less conventional firm size measure was used in the initial analyses. Therefore, in order to check the robustness of the multivariate results at firm level, additional analyses are performed using the variable lnTOTALASSETS. This variable represents the natural logarithm of total assets at the end of the year prior to the year in which facilitation started. Additionally, FIRMAGE is replaced with the natural logarithm of FIRMAGE: lnFIRMAGE. The results are presented in table 10. It should be noted that the samples used in these regressions, only consist of PLLCs. The variable lnBOARDTEN demonstrated multicollinearity (0.7) with lnFIRMAGE. However, implementing the regular BOARDTEN variable simultaneously with lnFIRMAGE was not considered a viable option since BOARDTEN and FIRMAGE are highly correlated (0.551) and follow the same right-skewed distribution. Therefore, neither BOARDTEN nor lnBOARDTEN was implemented in table 10.

As can be seen in model 1, BOARDSIZE is still negatively and significantly related to facilitation probability. However, the significance level has dropped from 0.01 to 0.05.

When comparing model 2 of table 10 with model 3 of table 8, it is again confirmed that a model that only includes financial variables (and control variables) has little explanatory power. Additionally, the 0.10 significance level of LEVERAGE is no longer present. CURRENTRAT was also replaced with QUICKRAT and CASHRAT. This did not result in additional insights.

Based on models 3 and 4, it can be concluded that liquidity and leverage remain respectively negatively and positively related to FACILITATE, at statistically significant levels. However, in contrast with model 4 of table 8, when implementing BOARDSIZE, CURRENTRAT and LEVERAGE simultaneously in model 5 of table 10, the financial variables are no longer significant. BOARDSIZE remains negatively and significantly related to FACILITATE throughout all models.

Table 10 Robustness checks

	Dependent variable: FACILITATE				
	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**
	Matched	Matched	Matched	Matched	Matched
	Unst. Coef (Z)	Unst. Coef (Z)	Unst. Coef (Z)	Unst. Coef (Z)	Unst. Coef (Z)
Corporate governance					
BOARDSIZE	-1.370**		-1.627**	-1.744***	-1.670**
	(6.429)		(6.143)	(7.494)	(6.165)
Financial constraint					
CURRENTRAT		-0.426	-0.503**		-0.421
		(2.048)	(4.020)		(2.491)
LEVERAGE		0.270		1.401***	0.435
		(0.160)		(6.767)	(0.337)
Control variables					
lnFIRMAGE	-0.388	-0.714**	-0.554*	-0.665**	-0.602*
	(2.520)	(6.131)	(3.093)	(5.417)	(3.363)
lnTOTALASSETS	-0.424***	-0.392**	-0.416**	-0.219	-0.352*
	(8.960)	(6.173)	(6.212)	(1.921)	(3.227)
Constant	3.350*	2.303	4.916*	0.768	3.778
	(3.072)	(0.735)	(3.490)	(0.732)	(1.141)
Industry dummies	Yes	Yes	Yes	Yes	Yes
HL-test	0.998	0.919	0.606	0.879	0.643
Pseudo R^2	0.355	0.383	0.492	0.406	0.494
N	278	302	268	278	268
Correctly predicted					
Non-facilitate	98.8%	99.6%	99.2%	99.2%	99.2%
Facilitate	18.2%	19.0%	28.6%	18.2%	28.6%
Overall	92.4%	94.0%	93.7%	92.8%	93.7%
Correctly predicted by null model					
Non-facilitate	100.0%	100.0%	100.0%	100.0%	100.0%
Facilitate	0.0%	0.0%	0.0%	0.0%	0.0%
Overall	92.1%	93.1%	92.2%	92.1%	92.2%

This table reports logistic regressions with FACILITATE as the dependent variable. Per model, the unstandardized coefficients, Z-values, Hosmer and Lemeshow goodness of fit test, pseudo R square, number of observations, predictive capabilities of the model and predictive capabilities of the null model are reported. * indicates significance at a 0.10 level. ** indicates significance at a 0.05 level. *** indicates significance at a 0.01level. lnFIRMAGE and lnTOTALASSETS report the natural log of the respective variables. The operationalization of the other variables can be found in table 2.

4.5 Discussion of results

In this paragraph, the hypotheses are discussed in light of the results. If possible, the hypotheses are confirmed or rejected.

4.5.1 Corporate governance

Hypothesis 1a: There is no relation between board ownership and facilitation probability.
Hypothesis 1b: There is a positive relation between board ownership and facilitation probability.

Due to a lack of data, no inferential tests could be performed to either confirm or reject these hypotheses. It can only be concluded that the univariate statistics on BOARDOWN demonstrate that all facilitating boards owned the firms they managed for 100%, which points more to hypothesis 1b than to 1a. Hypotheses 1a and 1b are not confirmed nor rejected.

Hypothesis 2: There is no relation between board tenure and facilitation probability.

The results from the logistic regressions indicate that BOARDTEN is not significantly related to facilitation in any of the models. Since almost every board in the facilitators' sample consisted of 1 board member (CEO), this finding is in line with Beasley (1996). Hypothesis 2 is confirmed.

Hypothesis 3: There is a negative relation between board size and facilitation probability.

This thesis provides evidence that there is a significant negative relation between BOARDSIZE and FACILITATE. However, the relation is no longer present when controlling for legal form. This finding is in line with the theory that board members are more inclined to fraud or facilitate, when they are alone on the board, and are therefore not monitored at all. This arguably provides evidence for agency theory. Additionally, or alternatively, it provides evidence that both the board member and the career criminal, prefer to respectively facilitate alone and be facilitated by one-man boards in order to decrease the risk of getting caught. Hypothesis 3 is confirmed.

Hypothesis 4a: Corporations are not more inclined to facilitate than other legal forms.
Hypothesis 4b: Corporations are more inclined to facilitate than other legal forms.

There is a highly significant and positive relation between the legal form PLLC and FACILITATE. This finding arguably provides evidence for Ireland's (2008) theory that the legal form PLLC encourages board members / shareholders to engage in irresponsible behavior. Additionally, or alternatively, it provides evidence for the theory that firms' shareholders and managers *perceive* that they are limited in their liability for prosecution due to the separate legal entity of the PLLC. Another, but less likely explanation, is that owners and managers of PLLCs are more inclined to risk debt holders' capital by engaging in the very risky project of facilitation. Hypothesis 4a is rejected in favor of hypothesis 4b.

4.5.2 Financial constraint

Hypothesis 5: Liquidity is negatively related to facilitation probability.

Though CURRENTRAT and QUICKRAT are both significantly and negatively related to facilitation probability, the purest measure of liquidity, CASHRAT, is not significantly related to it. Since CURRENTRAT and QUICKRAT almost correlate with 1.000 in this thesis' cases, it can be concluded that the account trade receivables determines significance. Because facilitators have significantly less trade receivables, it could be argued that they choose to facilitate because they do not foresee any positive cash flows in the foreseeable future. Another explanation could be that the lack of trade receivables is simply a sign of less economic activity in the firm. Hypothesis 5 is carefully confirmed.

Hypothesis 6: Leverage is positively related to facilitation probability.

Facilitators' firms are more leveraged than their peers. This provides evidence for the theory that firms which suffer from financial constraint, and are not able to attract additional financing, are more inclined to engage in facilitation. A less likely, but still possible, explanation from an agency theory perspective, is that highly leveraged firms are better monitored by debt holders and are therefore more often *observed* when facilitating.

4.5.3 Behavioral economics

Hypothesis 7a: Age is not related to facilitation probability.
Hypothesis 7b: Age category is not related to facilitation probability.
Hypothesis 7c: Age category is related to facilitation probability.

Surprisingly, results suggest that age is negatively related to facilitation. This finding provides evidence, based on this variable, for the argument that facilitation is more like a 'common' crime instead of a white-collar crime and, therefore, typically committed at younger ages (Farrington, 1986). Additionally, multivariate results indicate that the age category 26-35 is overrepresented. This finding is in line with the ACFE (2016) because there seems to be a reverse U-pattern. However, the top of the reverse U in this thesis is between the ages of 26 and 35, instead of the ACFE's (2016) 36-45. Hypotheses 7a and 7b are rejected. Hypothesis 7c is confirmed.

Hypothesis 8a: There is no relation between level of education and facilitation probability.
Hypothesis 8b: There is a negative relation between level of education and facilitation probability.

Due to a lack of data and suspected observation bias on this variable, the relation between education and facilitation could not be examined.

Hypothesis 9a: There is no relation between gender and facilitation probability.
Hypothesis 9b: There is a negative relation between the male gender and facilitation probability.

The findings of this thesis provide evidence that females are significantly overrepresented among facilitators. Combining this result with the finding that 21.7% of the facilitators laundered for their spouse, this thesis provides evidence in line with Malm and Bichler (2013) who argue that their "opportunistic launderers" (p. 374) often launder for their "boyfriends" (p. 374). Hypothesis 9a is rejected in favor of hypothesis 9b.

Hypothesis 10a: The criminal record of facilitators prior to the facilitation, is not related to facilitation probability.
Hypothesis 10b: The criminal record of facilitators prior to the facilitation, is positively related to facilitation probability.

This thesis provides clear results that facilitators tend to have a more extensive criminal record prior to facilitation. However, evidence points to the direction that this history mostly consists of crimes that fall in the category 'other'. These are, compared to e.g. violence, weapons and sexual crimes, less severe crimes such as environmental crimes or insulting a civil servant. This finding arguably provides, in line with Davidson et al. (2015), evidence for Gottfredson and Hirschi's (1990) self-control theory. Additionally, it provides evidence that career criminals specifically select board members that are not career criminals themselves. Hypothesis 10a is rejected, hypothesis 10b is confirmed.

Hypothesis 11: The cultural background of a board member affects facilitation probability.

Though people with an Arabic nationality have a greater tendency to facilitate, the explanatory power of cultural variables in general is very low. Therefore, hypothesis 11 is neither rejected nor confirmed.

4.6 Additional analyses

Based on the initial analyses and discussion of the hypotheses in light of these analyses, a number of additional questions have come up. These are discussed and tested in this paragraph.

Firstly, as discussed in chapter 3, the firm level data is characterized by high variations in data availability. Though the initial explanation for this was that certain legal forms and firm sizes do not have the obligation to publish financial data at the chamber of commerce, the question arises whether there is a relation between the variable FACILITATE and the availability of data. Put differently: do firms that facilitate have a greater tendency to fail in publishing their financial data? Under Dutch law, PLLCs have the obligation to publish at least a balance sheet[5] (Kamer van Koophandel, 2017). In order to answer the question above, all PLLCs in the facilitators sample and matched control sample are assigned a 1 for the variable FAILPUBLISH when they should have published financial data (specifically: a balance sheet) of the year facilitation started, but failed to do so.

Secondly, as has become clear, females have a greater tendency to facilitate. To test whether this is because females tend to (or are used to) facilitate their spouses, the variable SPOUSE from the facilitator-specific variables, is used as a dependent variable, and the variable GENDER as an independent variable.

Thirdly, since there is a positive relation between having been arrested for narcotics related crimes and facilitation, and the most common underlying crime for laundering is narcotics related crime, the question rises whether facilitators with a criminal record including narcotics related crimes have a greater tendency to facilitate the laundering of narcotics proceeds. This would arguably provide evidence for Malm and Bichler (2013) who argue that opportunistic launderers meet their career criminals through their social circle. Therefore, a test is performed where UNDERNARCOTIC is the dependent variable, and ARRESTNARCOTIC is the independent variable.

The descriptive statistics of the variables discussed above are presented in table 11. As can be seen, facilitators fail to publish their financial statements in 44.4% of the cases. This is higher than the average of their peers, which is 18.9%. In panel B, it becomes clear that when the facilitator and career criminal are spouses, the facilitator is only in 20% of the cases male. With non-spouse relationships, the facilitator tends to be male in 94.4% of the cases. In panel C, it can be seen that facilitators that launder narcotics proceeds have, on average, more often a criminal record including narcotics related crimes.

Table 11 Descriptive statistics additional analyses

Panel A: Failure to publish financial data in the year of facilitation

	Facilitators						Matched sample					
	N	Mean	SD	Median	Min	Max	N	Mean	SD	Median	Min	Max
FAILPUBLISH	36	0.444	0.504	0.000	0.000	1.000	360	0.189	0.392	0.000	0.000	1.000

Panel B: Gender and whether the facilitator and the career criminal were spouses

	SPOUSE = 0						SPOUSE = 1					
	N	Mean	SD	Median	Min	Max	N	Mean	SD	Median	Min	Max
GENDER	18	0.944	0.236	1.000	0.000	1.000	5	0.200	0.447	0.000	0.000	1.000

Panel C: Criminal record including narcotics crimes and whether the facilitator laundered narcotics proceeds

	UNDERNARCOT = 0						UNDERNARCOT = 1					
	N	Mean	SD	Median	Min	Max	N	Mean	SD	Median	Min	Max
ARRESTNARCOTIC	16	0.063	0.250	0.000	0.000	1.000	26	0.231	0.430	0.000	0.000	1.000

This table presents the descriptive statistics. Statistics are separately reported for facilitators and the matched sample (Panel A), spouse relationships and non-spouse relationships between facilitator and career criminal (Panel B), and facilitators that laundered narcotics proceeds and facilitators that did not launder narcotics proceeds (Panel C). The panels report for each variable the number of observations, mean, standard deviation, median, minimum value and maximum value. FAILPUBLISH takes a 1 if the firm failed to publish financial data in the year of facilitation, despite its obligation to publish, it takes a 0 if it complied with its publication obligation. The operationalization of the other variables can be found in table 2.

[5] A few exceptions on this rule exist such as the 'Stamrecht B.V.' or PLLCs that function as a personal pension fund for an individual. There were no such firms in the facilitators' sample or control sample.

In table 12, the logistic regressions performed to address the three questions stated above, are presented. Model 1 is based on the firm level dataset, models 2 and 3 are based on the individual board member level dataset. In model 1 BOARDTEN and BOARDSIZE are included, as well as the regular control variables. Legal form is left out since model 1 is only based on PLLCs. In model 3, the age of the individual board member is included since it became clear in the initial analyses, that it plays an important role. Firm age and firm size are also included in model 2 and 3 as control variables. However, due to the very limited sample size of respectively 23 and 42, industry dummies are not included in model 2 and 3. In similar models, not reported in this thesis, which included industry dummies, the variables were all statistically insignificant.

As can be seen in model 1, there is a positive relation between failing to publish one's financial statements and one's tendency to facilitate. The relation is statistically significant at a 0.01 level. This result arguably provides evidence that board members try to avoid detection of their illegal activities by not providing data to the chamber of commerce. Alternatively, it could be that firms that facilitate, experience such a deteriorating financial situation (as demonstrated in table 8), that they are no longer able or willing to practice decent bookkeeping. However, it should be noted that model 1 fails the HL-test, meaning that its goodness of fit is below desirable values. It is likely that this is due to the extremely small sample size (N=23).

Table 12 Logistic regressions additional analyses

	Dependent variable: FACILITATE	Dependent variable: SPOUSE	Dependent variable: UNDERNARCOT
	Model 1 Matched	**Model 2** Facilitators only	**Model 3** Facilitators only
	Unst. Coef (Z)	Unst. Coef (Z)	Unst. Coef (Z)
Corporate governance			
BOARDTEN	-0.003		
	(0.003)		
BOARDSIZE	-1898***		
	(7.955)		
Additional analyses			
FAILPUBLISH	2.703***		
	(7.723)		
GENDER		-4.441***	3.675**
		(6.733)	(5.630)
ARRESTNARCOTICS			0.578
			(0.223)
AGE		-0.033	0.055
		(0.275)	(1999)
Control variables			
FIRM AGE	-0.021	0.032	0.055
	(0.398)	(0.233)	(0.857)
SIZESMALL	0.221	-0.462	-0.359
	(0.048)	(0.052)	(0.134)
SIZEMEDIUM	42.502	-18.735	-22.664
	(0.000)	(0.000)	(0.000)
Constant	0.994	2.600	-5.032**
	(0.322)	(0.683)	(4.380)
Industry dummies	Yes	No	No
HL-test	0.042	0.738	0.894
Pseudo R^2	0.511	0.624	0.482
N	127	23	42
Correctly predicted			
Dependent variable = 0	92.3%	94.4%	62.5%
Dependent variable = 1	63.9%	80.0%	96.2%
Overall	84.3%	913%	83.3%
Correctly predicted by null model			
Dependent variable = 0	100.0%	100.0%	0.0%
Dependent variable = 1	0.0%	0.0%	100.0%
Overall	717%	78.3%	619%

This table reports logistic regressions with three different dependent variables. Model 1is based on the firm dataset, models 2 and 3 are based on the individual board member dataset. Per model, the unstandardized coefficients, Z-values, Hosmer and Lemeshow goodness of fit test, pseudo R squared, number of observations, predictive capabilities of the model and predictive capabilities of the null model are reported. All models compare size to SIZEVERYSMALL. * indicates significance at a 0.10 level. ** indicates significance at a 0.05 level. *** indicates significance at a 0.01level. FAILPUBLISH takes a 1if the firm failed to publish financial data in the year of facilitation, despite its obligation to publish, it takes a 0 if it complied with its publication obligation. The operationalization of the other variables can be found in table 2.

Model 2 uses the variable GENDER to predict whether the relation between the facilitator and career criminal is a romantic one. The relation between GENDER and SPOUSE is highly significant and negative. This indicates that females in the facilitators sample, tend to facilitate their boyfriends / husbands. To check this, model 5 and model 7 of table 9 were generated again, excluding cases where SPOUSE = 1. In these tests GENDER was no longer (positively or negatively) significantly related to FACILITATE. This finding is in line with Malm and Bichler (2013).

In the third model, it is tested whether facilitators with a criminal record including narcotics related crimes, have a greater tendency to launder narcotics proceeds. However, though the relation between ARRESTNARCOTICS and UNDERNARCOT is positive, it is non-significant.

5. Conclusion

Fighting crime by focusing on the financial aspects of crime has become significantly more important over the past years. By combating money laundering, the police make it more difficult for career criminals to spend, invest or hide their illegal proceeds. This makes it less attractive to engage in the underlying crimes. Criminals who launder their own money, and professional launderers such as accountants and off-shore bankers who provide legal and financial services, are well-known phenomena. However, it becomes more popular for career criminals to use legitimate SMEs and their board members for their laundering. In order to be more able to combat these facilitators, as well as the career criminals involved, they need to be better understood. Therefore, the following main research question has been addressed in this thesis: What are the determinants of Dutch SMEs and managers that facilitate money laundering?

In order to answer this research question, data on both firm and individual board member level has been used. At both levels, the facilitators have been compared to a matched and a non-matched sample, using the method of logistic regression. The results demonstrate that several variables at both firm level and individual board member level are related to facilitation probability. At firm level, especially firms with small or one-man boards, having the legal form PLLC are indicators. Additionally, being financially constrained is an indicator that a firm is more likely to facilitate. Facilitating firms also have a greater tendency to not comply with the obligation to publish their financial statements. At the individual level, falling in the age category 26-35, being female and having an above average criminal history consisting of non-severe crimes, are indicators that a person is more likely to facilitate. Culture does not play an important role in predicting facilitation probability.

Career criminals most commonly meet their facilitators through previous legal dealings. Additionally, facilitators are often career criminals' spouses or family members. Females especially tend to launder for their spouses. It is most common that facilitators launder for one career criminal. The underlying crimes for the laundering are commonly narcotics related crimes and fraud. The most common methods are balance sheet laundering and cost laundering, specifically: providing fictitious labor contracts and company bank accounts.

There are several limitations of this thesis. Due to the limited amount of available literature on (facilitation of) money laundering at a micro level, the theoretical framework was based on fraud literature. This could result in incorrect conclusions drawn from both findings and non-findings. The firm level data is characterized by high variations in missing data per variable. This results in a limited number of facilitating and control firms per model. Furthermore, the ratio between facilitators and control firms does not represent the underlying population. This limits the generalizability of the predictive capabilities of the models to the population. Similar to (financial statement) fraud research, the cases in this thesis' sample are *observed* perpetrators. Lastly, due to limitations in data availability, firm level and individual board member level variables could not be analyzed simultaneously in one model.

While selecting suitable cases for this thesis' sample, the author of this thesis encountered many other firms that were not involved in laundering, but were accused of other crimes such as subsidy, mortgage and bankruptcy fraud. However, the characteristics of these firms were often similar to the cases discussed in this thesis: PLLCs, small boards, financially constrained, board members with a criminal history, etc. Therefore, future research should also address other types of corporate crimes. There is especially a gap in the literature concerning corporate crimes committed by SMEs. Not only should researchers try to predict or detect various corporate crimes, but they should also consider how board members / entrepreneurs ended up in a situation where they were willing to risk their firm, reputation and freedom.

Appendix I: Classifications

Classification by Centraal Bureau voor de Statistiek
Vermogensmisdrijven
Vernielingen en misdrijven tegen openbare orde en gezag
Gewelds- en seksuele misdrijven
Overige misdrijven Wetboek van Strafrecht
Verkeersmisdrijven
Drugsmisdrijven
(Vuur)wapenmisdrijven
Misdrijven overige wetten

Classification by United Nations Office on Drugs and Crime
Acts leading to death or intending to cause death
Acts leading to harm or intending to cause harm to the person
Injurious acts of a sexual nature
Acts against property involving violence or threat agains a person
Acts against property only
Acts involving controlled psychoactive substances or other drugs
Acts involving fraud, deception or corruption
Acts against public order, authority, and provisions of the state
Acts against public safety and state security
Acts against the natural environment
Other criminal acts not elsewhere classified

Classificaton by Gottschalk

	Financial crime		
Fraud	Theft	Manipulation	Corruption
Advance fee	Art	Bankruptcy	Bribery
Bank	Cash	Bid	Kickbacks
Check	Identity	Competition	Organization
Click	Intellect	Computer	Public
Consumer	Inventory	Currency	
Credit card		Cyber	
Embezzlement		Extortion	
Hedge fund		Ghost	
Identity		Invoice	
Mortgage		Laundering	
Occupation		Tax	
Subsidy			

Appendix II: Frequency table industry - Firms

	Facilitators	Matched sample	Non-matched sample		Facilitators	Matched sample	Non-matched sample		Facilitators	Matched sample	Non-matched sample
SBI Code	N	N	N	SBI Code	N	N	N	SBI Code	N	N	N
111	0	0	1	46421	1	10	0	7112	1	10	11
112	0	0	1	46424	0	0	1	7311	0	0	3
113	0	0	1	46473	0	0	1	7320	0	0	5
1131	0	0	1	46498	0	0	1	74103	0	0	1
1134	0	0	1	4651	0	0	2	74201	0	0	8
119	0	0	1	46731	1	10	0	7430	0	0	5
1192	0	0	1	46737	1	10	0	7490	0	0	1
1396	0	0	1	46739	0	0	1	77111	1	10	0
141	0	0	3	46741	0	0	1	7721	0	0	2
1411	0	0	1	46772	0	0	2	7732	0	0	1
1412	0	0	1	47	0	0	9	7740	0	0	1
1413	0	0	1	4711	0	0	3	7810	0	0	2
1414	0	0	1	47192	0	0	1	78201	0	0	1
1415	0	0	1	4730	0	0	2	78202	0	0	1
1416	0	0	1	47431	1	10	0	7911	0	0	2
1420	0	0	1	47521	1	10	0	8121	1	10	1
1421	0	0	1	47595	0	0	1	8130	0	0	1
1422	0	0	1	47641	0	0	2	8131	0	0	1
1451	0	0	1	47712	0	0	3	8132	0	0	1
1452	0	0	1	47762	0	0	1	8219	0	0	2
147	0	0	2	47789	0	0	3	8411	0	0	1
150	0	0	2	47811	0	0	1	85201	0	0	3
161	0	0	5	47899	0	0	2	85202	0	0	1
1629	0	0	1	47918	3	30	1	85521	0	0	2
18123	0	0	1	47919	1	10	1	85522	0	0	1
18129	0	0	1	47999	0	0	1	8553	0	0	1
1813	0	0	1	4941	1	10	4	85592	2	20	6
2221	0	0	1	50401	0	0	3	85599	0	0	2
2511	0	0	1	52109	0	0	3	8621	0	0	6
2562	0	0	3	5222	0	0	1	86221	0	0	1
31011	1	10	2	53202	0	0	1	86231	0	0	1
3102	0	0	1	55101	0	0	1	86232	0	0	1
3109	1	10	2	56101	1	10	5	86911	0	0	1
311	0	0	2	56102	1	10	3	86913	0	0	5
32501	0	0	1	5621	0	0	1	86919	0	0	1
33123	0	0	2	5630	0	0	5	86920	0	0	1
3811	1	10	0	5814	0	0	1	86921	0	0	1
4120	0	0	13	59111	0	0	2	86922	0	0	2
42112	0	0	1	5920	0	0	2	86923	0	0	1
4299	0	0	1	6201	0	0	5	86924	0	0	1
4312	0	0	2	6203	0	0	2	86925	0	0	1
4321	1	10	3	6209	0	0	1	86926	0	0	1
43221	0	0	3	6312	0	0	2	86927	0	0	1
4329	0	0	2	6391	0	0	1	86928	0	0	1
4332	0	0	1	6420	1	10	0	86929	0	0	3
4333	0	0	3	6420	6	60	93	88101	0	0	3
4334	0	0	5	64301	0	0	1	88992	0	0	2
4335	0	0	1	64302	0	0	1	88999	0	0	2
4336	0	0	1	64303	0	0	10	90011	0	0	3
4337	0	0	1	64922	1	10	0	90012	0	0	3
43993	0	0	1	6612	0	0	1	90013	0	0	2
45112	5	50	4	66193	0	0	1	9002	0	0	5
45192	1	10	0	6630	1	10	1	9003	0	0	11
45194	1	10	0	6810	0	0	1	90041	0	0	1
45204	0	0	1	68201	0	0	2	91011	0	0	1
45311	1	10	0	68203	0	0	1	91022	0	0	1
45312	1	10	1	68204	1	10	1	93112	0	0	1
46	0	0	8	6831	2	20	6	93125	0	0	1
4612	0	0	1	69101	0	0	1	9313	0	0	1
4614	0	0	1	69102	0	0	1	93299	0	0	2
4615	0	0	1	69202	0	0	1	94997	0	0	1
4616	0	0	1	69203	3	30	7	9523	0	0	1
4619	1	10	1	69204	0	0	2	96021	0	0	5
46218	1	10	0	69209	0	0	2	96022	0	0	11
4631	0	0	1	70102	1	10	12	9609	0	0	3
46383	1	10	0	70221	2	20	24				
4642	0	0	1	70222	1	10	3				

This table reports the number (N) of times each industry, operationalized through SBI codes, is present among the firms in the dataset. The table presents the frequencies separately for the facilitators, the matched sample and the non-matched sample.

Appendix III: Frequency table industry - Board members

SBI Code	Facilitators N	Matched sample N	Non-matched sample N	SBI Code	Facilitators N	Matched sample N	Non-matched sample N
119	0	0	1	46737	2	10	0
141	0	0	5	46751	0	0	1
142	0	0	1	46771	0	0	1
161	0	0	1	46901	0	0	1
1413	0	0	1	47221	0	0	1
3109	1	5	0	47291	0	0	1
3315	0	0	1	47431	1	5	0
3811	3	15	0	47591	0	0	1
4120	0	0	9	47642	0	0	1
4311	0	0	1	47713	0	0	1
4321	1	5	1	47761	0	0	1
4332	0	0	3	47781	0	0	1
4334	0	0	2	47792	0	0	1
4619	1	5	0	47793	0	0	1
4651	0	0	1	47819	0	0	1
4666	0	0	1	47891	0	0	1
4723	0	0	1	47892	0	0	1
4741	0	0	1	47911	0	0	1
4941	0	0	3	47918	1	5	0
5630	0	0	1	47919	1	5	0
5811	0	0	1	47999	0	0	1
6201	0	0	7	56101	0	0	3
6202	0	0	2	56102	1	5	1
6209	0	0	1	59111	0	0	1
6420	5	25	29	64303	0	0	5
6612	0	0	2	64922	2	10	0
6630	1	5	0	66191	0	0	3
6810	0	0	1	68204	0	0	1
6831	1	5	0	69101	0	0	1
7111	0	0	2	69103	0	0	3
7112	0	0	2	69104	0	0	1
7311	0	0	2	69203	2	10	5
7320	0	0	1	69204	0	0	2
7410	0	0	2	69209	0	0	1
7490	0	0	1	70102	1	5	9
8010	0	0	1	70221	2	10	6
8121	1	5	2	70222	1	5	2
8130	0	0	1	74201	0	0	3
8720	0	0	1	77299	0	0	1
9003	0	0	2	81221	0	0	1
9511	0	0	1	85519	0	0	1
9609	0	0	2	85522	0	0	1
31011	1	5	1	85592	1	5	3
43993	0	0	1	85599	0	0	1
43999	0	0	1	86221	0	0	1
45112	4	20	3	86231	0	0	2
45192	0	0	1	86232	0	0	1
45194	1	5	0	86913	0	0	2
45201	0	0	1	86919	0	0	1
45311	1	5	0	86922	0	0	1
45312	2	10	0	88911	0	0	2
46218	1	5	0	90011	0	0	3
46382	0	0	1	90013	0	0	1
46383	1	5	0	91021	0	0	1
46421	1	5	1	93212	0	0	1
46471	0	0	1	93299	0	0	1
46492	0	0	1	96011	0	0	1
46499	0	0	1	96021	0	0	3
46696	0	0	2	96022	0	0	5
46731	1	5	0				

This table reports the number (N) of times each industry, operationalized through SBI codes, is present among the board members in the dataset. The tables present the frequencies separately for the facilitators, the matched sample and the non-matched sample.

Appendix IV: Unwinsorized financial data

	Facilitators						Matched sample						Non-matched sample					
	N	Mean	SD	Median	Min	Max	N	Mean	SD	Median	Min	Max	N	Mean	SD	Median	Min	Max
CURRENTRAT	21	1.2	1.3	0.8	0.0	4.9	284	74.8	852.4	1.6	-8.9	13908.4	124	103.8	897.1	2.7	-248.0	9873.3
QUICKRAT	21	1.1	1.4	0.6	0.0	4.9	284	74.4	852.4	1.2	-8.9	13908.4	124	103.6	897.1	2.6	-248.0	9873.3
CASHRAT	21	0.4	0.9	0.0	0.0	3.0	284	6.4	36.8	0.2	-8.4	457.5	124	4.5	31.9	0.3	-242.9	180.1
LEVERAGE	22	21.2	91.4	0.9	0.2	430.0	294	5.0	54.9	0.7	0.0	892.7	129	1.1	4.2	0.5	0.0	44.8

This table presents the unwinsorized descriptive statistics of the financial variables at firm level. The data is statistics are separately presented for facilitators, the matched sample and the non-matched sample. It reports, per sub sample, for each variable the number of observations, mean, standard deviation, median, minimum value and maximum value. The operationalization per variable can be found in table 2.

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