



Financial Credibility, Financial Constraints and Rule of Law

- A quantitative study on international firms

Authors: Daniel Andersson
Jakob Kostet

Supervisor: Amin Salimi Sofla

Student
Umeå School of Business and Economics
Spring semester 2016
Bachelor thesis, 15 hp

-Abstract-

Reducing firms' financial constraints can be an important element for economic growth. Previous scholars have documented various factors that affect firms' ability to access finance (e.g. Lambert et al., 2007, p. 385). In this study, we investigate the impact of financial reporting credibility in reducing firms' financial constraints. In addition, we study the role that rule of law at a country level have on the above stated association. We hypothesize that financial reporting credibility decreases firms' financial constraints. Then, we propose that the ability of financial reporting credibility to reduce financial constraints weakens when rule of law (at a country level) decreases. This is the first study to investigate how the association between financial reporting credibility and financial constraints are affected by rule of law on a country level, to the authors' knowledge. The study uses 52,381 firms operating in 98 countries that responded to the World Bank's Enterprise Surveys between the time period 2006 to 2015. Financial constraints are measured through a variable that takes into consideration the perceived amount of obstacles firms are facing in their current operations and the proxy for financial credibility is whether firms have been audited or not. Our moderating term is the World Bank's rule of law index. By using both regression and matching analysis, we find a significant negative association between financial credibility and financial constraints. This indicates that increased financial reporting credibility leads to less financial constraints for firms. For the moderating effect of the rule of law, the results are insignificant. However, we observe that when the level of rule of law is high, increased financial credibility leads to minor improvements in access to external finance.

Key Words: *auditing, enterprise survey, financial credibility, financial constraints, information asymmetry, rule of law.*

Table of Contents

1. Introduction	1
1.1. Problem Background	1
1.2. Research Gap.....	2
1.3. Research Questions	2
1.4. Research Purpose and Contribution	3
1.5. Delimitations.....	3
1.6. Definitions of Main Variables	4
1.7.1. Financial Constraints	4
1.7.2. Financial Credibility	5
1.7.3. Rule of Law	5
1.8. Disposition.....	6
2. Theoretical Methodology	7
2.1. Preconceptions.....	7
2.2. Research theory	7
2.3. Ontological Considerations	8
2.4. Epistemological Considerations.....	8
2.5. Research Strategy	9
2.6. Research Design	9
2.7. Ethics in Business Research	10
2.7.1. Harm to Participants	10
2.7.2. Lack of Informed Consent.....	11
2.7.3. Invasion of Privacy	11
2.7.4. Deception.....	11
2.7.5. Authors' Comments on Ethics.....	11
2.8. Literature Review	12
2.8.1. Selection of Topic.....	12
2.8.2. Selection Method and Criticism	12
3. Theoretical Frame of Reference.....	14
3.1. Information Asymmetry	14
3.1.1. The Agency Theory	14
3.1.2. The Adverse Selection Theory	15
3.1.3. The Earnings Management Theory	15
3.2. Previous Research on Information Asymmetry	15
3.2.1. Previous Empirical Findings	16
3.2.2. Quality in Financial Reports.....	17
3.2.3. Financial Constraints and the Impact of Rule of Law	18
3.2.4. Summary of Empirical Findings.....	19
3.3. Research Hypotheses	20
3.3.1 The Association Between Financial Credibility and Financial Constraints ...	20
3.3.2. The Moderating Rule of Law	20
4. Practical Method.....	23

4.1. Data Collection	23
4.2. Sample Selection.....	23
4.3. Multivariate Model	24
4.3.1 Financial Constraint.....	26
4.3.2. Financial Credibility	27
4.3.3. Rule of Law	27
4.4. Control Variables.....	27
4.5. Regression Analysis.....	29
4.6. Testing for Multicollinearity	31
4.7. Fixed Industry and Year Effect	31
4.8. Propensity Score Matching (PSM)	31
5. Results.....	33
5.1. Descriptive Statistics	33
5.2. Variable Correlations	34
5.3. Regression Results.....	35
5.4. Margins for Financial Credibility	38
5.5. Testing for Multicollinearity	39
5.6. Testing for Heteroscedasticity.....	40
5.7. Propensity Score Matching (PSM)	40
6. Analysis and Discussion	42
6.1. The Negative Association Between Financial Credibility and Financial Constraints (H1).....	42
6.2. The Weakening Impact of Rule of Law (H2)	43
6.3. The Influence of the Control Variables.....	45
7. Conclusion	47
7.1. Answering the Research Questions	47
7.2. Limitations with the Study	48
7.3. Contribution	49
7.4. Further Research	50
7.5. Truth Criteria.....	50
7.5.1. Reliability	50
7.5.2. Replicability	51
7.5.3. Validity	51
Reference list	52
Appendix 1: Descriptive Statistics for Audited and Unaudited Firms Separately. 56	
Appendix 2: Additional Correlations	58
Appendix 3: Breusch-Pagan / Cook-Weisberg Test for Heteroscedasticity.....	59
Appendix 4: Industry Definition	60
Appendix 5: Year and Industry Dummies	61
Appendix 6: The Development of the Model	62

Appendix 7: Distribution of Audited and Unaudited firms Across Countries	64
Appendix 8: STATA File	69

Table of Tables

Table 1. <i>Summary of Previous Empirical Findings</i>	19
Table 2: <i>Variable Definition</i>	26
Table 3. <i>Descriptive Statistics</i>	34
Table 4. <i>Correlation Table Between the Main Variables</i>	35
Table 5. <i>Regression Results for All Firms (Audited and Unaudited)</i>	36
Table 6. <i>Regression Results for the Audited Firms</i>	37
Table 7. <i>Regression Results for the Unaudited Firms</i>	38
Table 8. <i>VIF Table</i>	40
Table 9. <i>Propensity Score Matching</i>	41
Table 10. <i>Descriptive Statistics for Audited Firms</i>	57
Table 11. <i>Descriptive Statistics for Unaudited Firms</i>	57
Table 12. <i>Additional Correlations</i>	58
Table 13. <i>Breusch-Pagan / Cook-Weisberg Test for Heteroscedasticity</i>	59
Table 14. <i>Industry Description</i>	60
Table 15. <i>Year Dummy Definition</i>	61
Table 16. <i>Industry Dummy Definition</i>	61
Table 17. <i>The Development of the Model</i>	63
Table 18. <i>Distribution of Audited and Unaudited Firms Across Countries</i>	64

Table of Figures

Figure 1. <i>The Main Variables on a Conceptual Level</i>	4
Figure 2. <i>Deductive Research Model</i>	7
Figure 3. <i>Summary of the Philosophical Standpoints</i>	10
Figure 4. <i>The Empirical Model</i>	25
Figure 5. <i>Predictive Margins for Financial Credibility</i>	39

1. Introduction

The aim of this chapter is to introduce the reader to the problem background that lies as a foundation for this study. This problem background will generate into a discussion regarding the present gap in knowledge and the research questions stated in the study.

1.1. Problem Background

Information asymmetry leads to higher financial constraints and therefore hinders firms' growth (Hope et al., 2011, p. 935). Classical theory in information asymmetry emphasizes the role of auditing to decrease information risk (Jensen & Meckling, 1976, p. 305). Therefore, it is predicted that getting audited reduces the firms' financial constraints (Hope et al., 2011, p. 935). A problematic situation can however occur for firms operating in economies with poor rule of law. Rule of law refers to the extent "...to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence" (World Bank, 2016). If the quality of disclosed information is affected by rule of law, will the ability of financial disclosure to decrease financial constraints change when the levels of rule of law differ? To our knowledge, very few (if any) prior research has answered this question. Given this, we investigate the impact of financial reporting credibility in reducing firms' financial constraints. We give particular attention to the role that rule of law (at a country level) play on the proposed association.

Previous scholars have argued for increased quality information sharing through auditing to decrease the constraints that firms face when searching for finance (e.g. Liu et al., 2015, p. 24; Hope et al., 2011, p. 935; Lambert et al., 2007, p. 385). A problematic situation exists when the shared information does not fulfill the quality aspect. If the distributed information lacks quality for external investors, the decrease in information risk will be smaller and the financial situation of firms improves in a lesser extent (Lambert et al., 2007, p. 410; Hope et al., 2011, p. 935). We argue that one possible reason for the unimproved situation can be linked to the governance¹ of economies (rule of law). For instance, prior research suggests that in order to have an efficient negative relationship between financial credibility and financial constraints, the legal environment (one dimension of rule of law) should be strong (Francis et al., 2003, p. 1).

Many scholars have investigated the impact governance indicators have on firms' financial constraints and the quality of information. For instance, Ball et al. (2000, p. 2) argues that the demand for disclosed information decreases with poor legal systems. In addition, Chen et al. (2011, p. 1259) suggest that legal systems can affect the quality of financial information. Moreover, La Porta et al. (2000) propose that the need for investor protections is essential to decrease firms' financial constraints and the size of capital markets is also determined by the legal environment (La Porta et al., 1997, p. 1131). Based on the lack of previous research of this association, we spotted a gap in existing knowledge. We suggest that the interests in studying the impact of rule of law and how this affects the association between financial constraints and financial credibility increases our understanding of how firms' are affected by the stability in the operating environment.

¹ Governance in the study refers to country level governance and not firm level.

1.2. Research Gap

The gap in research that is focused on is how rule of law affects the association between financial credibility and financial constraints. Research has found that increased financial credibility is a useful tool to decrease the information asymmetry between market actors and the financial constraints that firm face (e.g. Hope et al., 2011, p. 935; Liu et al., 2015, p. 24). Other researchers have found how financial constraints are affected by different governance indicators (e.g. Brown et al., 2009, p. 151; La Porta et al., 2000, p. 3). However, these previous researchers have focused mostly on investor protections, which is a relatively specific indicator for the investment environment. No known previous researcher has focused on how financial credibility and financial constraints are affected by the degree of rule of law within the operating market. Rule of law is an indicator focusing on the broader legal aspect of governance rather than a specific field. This can lead to a greater understanding in how firms are affected by increased financial credibility and decreased rule of law to get access to external finance. In order to try to fill this research gap, we set up the following research questions.

1.3. Research Questions

The need for quality in financial reports is essential to decrease information asymmetry, and the quality in financial information is diminishing in relation to decreasing country level governance (e.g. Hope et al., 2011, p. 935; Chen et al., 2011, p. 1259; Ball et al., 2000, p. 2). How do these factors interact with each other? There has been research between these factors individually, but no known research exists between the interaction. In the study, rule of law will be used as a country level indicator. This leads to the two research questions that will guide this study:

RQ1: Does financial credibility decrease the financial constraints faced by firms?

RQ2: Does a weak perception of rule of law weaken the negative association between financial credibility and financial constraints?

A higher degree of financial information leads to more transparent companies and lower required return among investors (Tsai & Hua, 2009, p. 265; Diamond & Verrecchia, 1991, p. 1348). It has been suggested that getting externally audited reduces information asymmetry between firms and external stakeholders. In particular, decreased information asymmetry enables external investors to receive validated insights of potential investment opportunities that the firm possesses and hence decreases the information risk. (e.g. Hope et al., 2011, p. 938; Diamond & Verrecchia, 1991, p. 1348). Therefore, to answer the first research question, we put up the first hypothesis:

H1: Financial reporting credibility reduces financial constraints

Prior research shows that in order to have an efficient negative relationship between financial credibility and financial constraints, the legal environment (which is one important dimension of rule of law) should be strong (Francis et al., 2003, p. 1). It has been shown that economies with weaker investor protections (one dimension of rule of law) lack demand of financial information (Ball et al., 2000, p. 1-2). This can affect the quality of the disclosed information (Chen et al., 2011, p. 1259). Therefore, to answer the second research question, the following hypothesis is stated:

H2: The ability of financial reporting credibility to reduce financial constraints decreases when Rule of Law (at country level) decrease

The hypotheses will be tested through regression and matching analysis. For the association between financial credibility and financial constraints, we will use regressions in which the dependent variable is financial constraints and the independent variable is financial credibility. An interaction term between financial credibility and rule of law will be included in the regression to test our second hypothesis (H2). For the interaction term, results from an interaction plot using a margins graph will be reported. Finally, a propensity score matching will be used to test the impact of financial reporting credibility to decrease financial constraints (H1).

It is important to study factors that affect financial constraints, since this is an essential element for firm growth and progress (Liu et al., 2015, p. 2). In addition, to study financial credibility's effect on financial constraints is also of importance. Cole and Dietrich (2014, p. 3) argues that increased financial credibility decreases firms' financial obstacles. Moreover, the moderating effect that rule of law has on the relationship between financial credibility is of interest. This is due to that the quality of disclosed information is affected by weaker legal systems (one dimension of rule of law) since the demand for financial information is lower (Ball et al., 2000, p. 1-2; Chen et al., 2011, p. 1259).

1.4. Research Purpose and Contribution

The purpose of the study is to investigate how firms are affected by the operating economy's rule of law, in relation to accessing finance through increased financial credibility. Can financial credibility play a substitute role to rule of law as it can do to investor protections? There are ambiguous results regarding this, since Brown et al. (2009, p. 169) found that investor protection, which is one type of a governance indicator, can play this role and other scholars (Ball et al., 2000, p. 2) argues that the demand for financial information can decrease depending on the legal environment. This can affect the quality of the disclosed information (Chen et al., 2011, p. 1259). However, to our knowledge, few (if any) previous researchers have investigated the direct link between financial credibility, financial constraints and how rule of law impacts this relationship. We aim to bring more clarity into this and investigate the association.

The aimed contribution in this thesis is the relationship between financial credibility, financial constraints and rule of law (at a country level). The results of this study can be relevant for policy makers that aim to improve firms operating environments. Firms can also be interested in the findings, since it can affect their choice of increasing their financial credibility to attract more external finance.

In order to answer the research questions in this study, we will be using 52,381 observations from private and public firms located in 98 economies worldwide. The results in this thesis will therefore provide a global indicator of how the association between financial credibility and financial constraints is affected by the governance of economies in terms of rule of law.

1.5. Delimitations

The research is limited to firms that gave full responses on the World Bank's Enterprise Surveys between the years 2006 and 2015. The total number of observations that we

started with was 114,093 operating in 129 countries. In order to be included in our analysis, the firm had to report a complete response to all variables in the study. Many of the observations in the database did not fulfill the requirements to be included in the analysis and the study is therefore based on 52,381 observations from 98 countries. The general missing response was connected to macroeconomic data attributed to some economies, along with a limited response to the variable financial constraints. A large proportion of firms and economies were excluded due to these requirements. The interpretation of the results should therefore be done with caution, as the findings might not reflect situations in all countries.

1.6. Definitions of Main Variables

In this section, the main variables used in the study will be presented and defined. In order to interpret the variables in a correct way, we would like to clarify their meaning and existence. The variables that will be defined are the dependent variable financial constraints, the independent variable financial credibility and the moderating term rule of law. Below, the conceptual level of the variables we aim to define and investigate in this study are presented. Our dependent variable in the study is financial constraints, the independent variable is financial credibility and the moderator for this association is rule of law (on a country level). These are presented in Figure 1, where the aim is to investigate the relationship between the dependent and the independent variable (H1). Second, the aim is to investigate how the moderator term is affecting the above proposed association (H2).

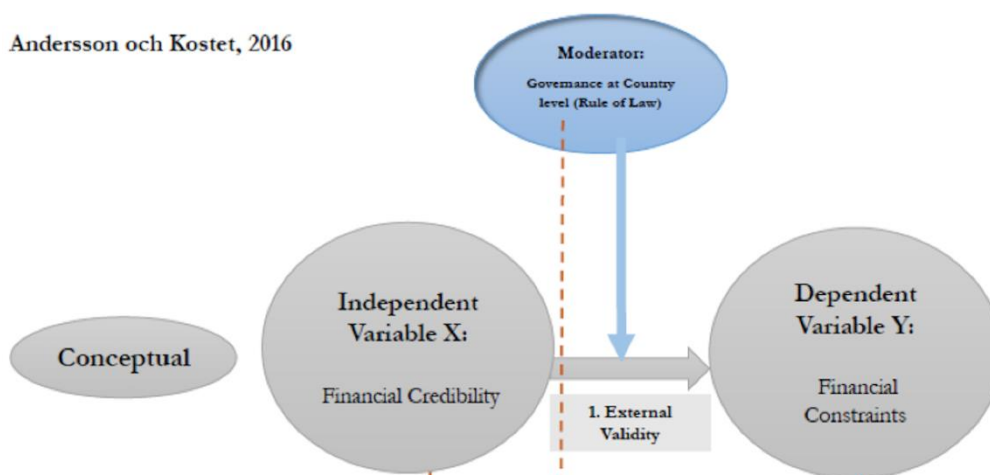


FIGURE 1. *THE MAIN VARIABLES ON A CONCEPTUAL LEVEL.*

In the following section, these variables are defined along with an explanation of their meaning in this study. Based on that the aim of this thesis is to increase the understanding how rule of law modifies the relationship between financial credibility and financial constraints, a discussion regarding the importance of study this moderator will take place.

1.7.1. Financial Constraints

The definition of financial constraints in the study is to which extent firms' access to external finance is perceived as an obstacle for current operations. Throughout the text, financial constraints can either be referred to as cost of capital, access to external financing or credit, internal rate of return or top managers' perception of the constraints

the firm faces when seeking for external finance. The reader should despite this keep in mind that the conceptual level in the study is the financial constraints.

1.7.2. Financial Credibility

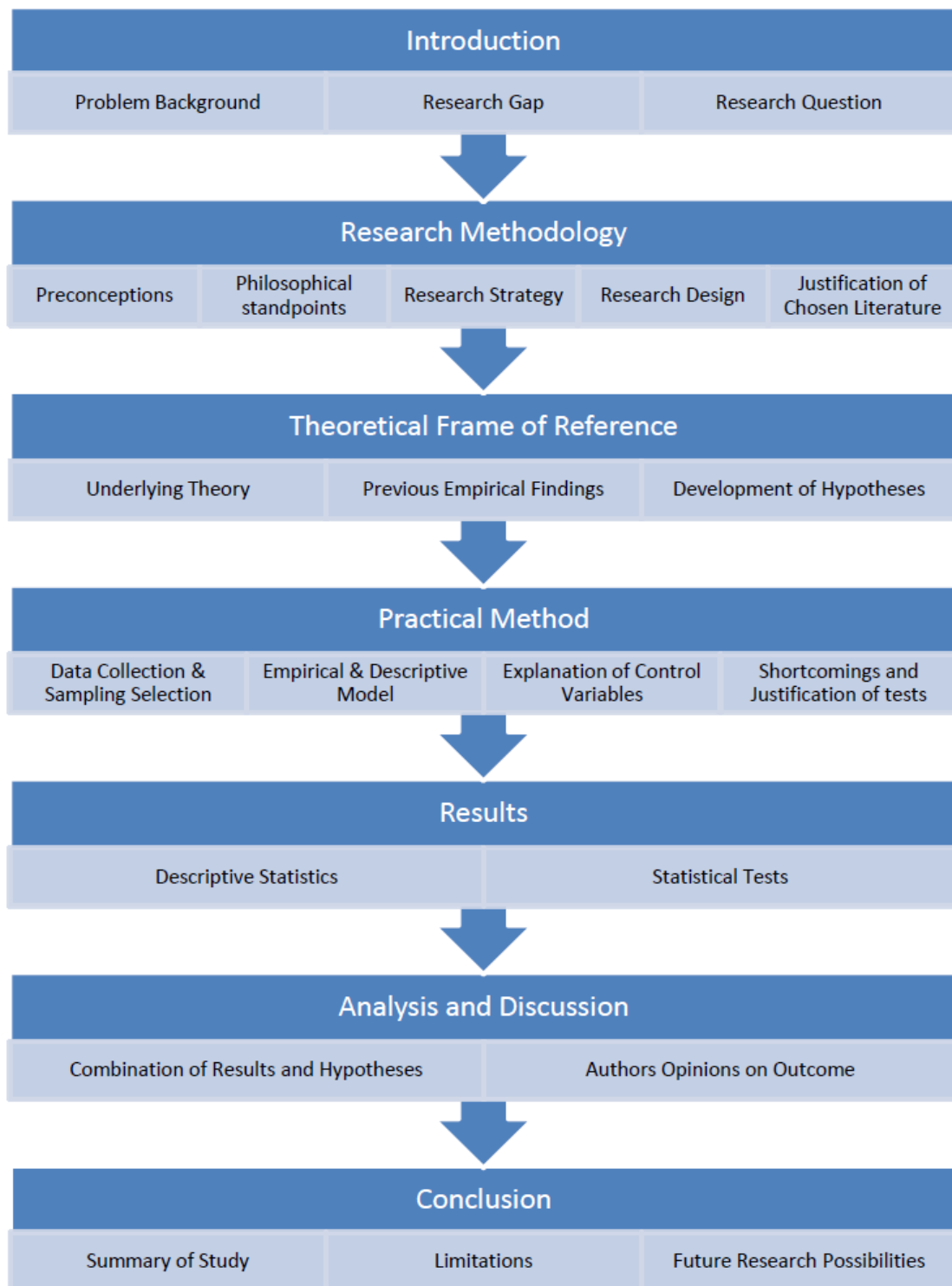
We define financial credibility as a decrease in information asymmetry between market actors. This means that we will refer to either a decrease in information asymmetry, increase in information disclosure, financial reporting quality or audited financial information. Different wordings can therefore occur when referring to this variable. The conceptual level of the variable is financial credibility and the other types of wordings can be seen as proxies for the conceptual level.

1.7.3. Rule of Law

The definition of rule law in the study is “...to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence” (World Bank, 2016). Also, based on that country governance reflects how for instance courts and property rights are enforced, we claim that governance affect rule of law. In addition, investor protections can be reflected by the property rights in economies, so we argue that also this type of legal mean can be reflected in rule of law. Rule of law is a country-level variable in the study and not measured on a firm-level.

The importance of studying how rule of law modifies the relationship between financial credibility and financial constraints lies in how this index is a reflection of the operating environment. A potential consequence of various degrees of rule of law can be that firms’ growth potential can be affected, hence the degree of accessing external finance. For instance, an economy which has a poor degree of rule of law can hypothetically be worse in protecting the investors. This can affect the amount of external finance a firm can attract. An economy with a strong degree of rule of law can potentially prohibit invested capital to be expropriated. As an effect, a greater degree of investors can be drawn to economies with a higher degree of rule of law. (La Porta et al., 2000, p. 4). We therefore argue that the interest in studying the impact of rule of law on the association between financial credibility and financial constraints lies in a potentially greater understanding of how firms’ access to external finance is affected by the operating environment.

1.8. Disposition



2. Theoretical Methodology

In this chapter, the underlying perception of reality and knowledge will be discussed. This part will also cover how our previous life and professional experience might influence the results. In addition, the authors' process of searching for literature and justifications of the chosen literature will be discussed.

2.1. Preconceptions

When conducting research, the researchers are affected by previous experiences and beliefs, which can cause biased results. These biases can affect objectivity and therefore the validity of the research (Bryman & Bell, 2011, p. 29). The problem that occurs in quantitative research in terms of validity is that researches might present data and findings in a limited way (Bryman & Bell, 2011, p. 30). Both Andersson and Kostet grew up in Sweden, where the audit system is developed and widely used (Appendix 7). Our sample consists of data from countries worldwide and a potential bias can be that the authors use Sweden as a benchmark subconsciously when interpreting the results. The lack of practical knowledge can also cause limitations, since we have worked with neither auditing nor finance. A positive effect can be unbiased interpretation of the data, where previous professional experience will not guide our study into a predetermined direction. Since the risk of a negative effect on validity is lurking, the authors' background within the subject will be presented.

Both of the authors are currently attending their sixth semester in the International Business Program at Umeå School of Business and Economics (USBE). The emphasis within business administration has mainly been on accounting and finance for both of the writers, with a slightly higher focus on accounting. A background in business administration has enabled the authors to develop an understanding of business related phenomena in general terms and in more depth in accounting and finance. Their knowledge is mainly theoretical, deriving from studies at USBE for the writers, but also from Andersson's exchange semester at University of Wollongong, Australia, and Kostet's exchange semester at Lingnan University in Hong Kong.

2.2. Research theory

There are two ways to determine the relationship between theory and research: deductivism and inductivism. Deductivism is the line of study where hypotheses are developed from extensive search of previous theory within the subject (Bryman & Bell, 2011, p. 11). In order to be successful in deducing previous theory, the authors must be able to collect relevant and significant data to test their hypotheses. The process of deductive theory is linear and follows a chronological approach to the study (Bryman & Bell, 2011, p. 11). In Figure 2, the deductive research process is presented.



FIGURE 2. DEDUCTIVE RESEARCH MODEL

The other way of examining the relationship between theory and research is by using an inductive approach. An inductive approach is a result of observations that is generated into theory. The last step known as “revision of theory” is emphasized since inductive theory is more applicable on qualitative methods. (Bryman & Bell, 2011, p. 13). The chosen standpoint in this thesis is deductivism, since the authors aim to test pre-existing theory within the field of auditing and finance, rather than creating new ones.

2.3. Ontological Considerations

The philosophical consideration of ontology refers to whether social entities can be seen as external objects that affect social actors or as social constructions created by social actors (Bryman & Bell, 2011, p. 20). This philosophical position states that either the company shapes the individuals within it, or vice versa. Social ontology explains the relationship between social entities and social actors (Bryman & Bell, 2011, p. 20). The question at hand is whether or not these social entities are external towards social actors or if they are the creation of social actors. Within ontology, there are two positions to choose from: objectivism and constructionism. The two possible philosophical standpoints in terms of ontology will be discussed below.

An objectivistic position means that these entities are objective, in the sense that the actors within it do not affect it. The firm has its standards, visions and different appointments of jobs and services regardless of who works with it (Bryman & Bell, 2011, p. 21). As a counterpart, constructionism is concerned with whether the actors within an entity is the reason for change and revision, along with more general understandings on how it is supposed to operate (Bryman & Bell, 2011, p. 21).

Our chosen ontological position is an objectivistic position since we want to observe the effect financial credibility and rule of law have on financial constraints. In contrast, we do not aim to understand why some firms chose to be audited and why the financial constraints might increase or decrease. Within firms, respondents of the questionnaire are considered and assumed to be objective, answering from the firm's perspective rather than the personal.

2.4. Epistemological Considerations

The epistemological standpoint within the research profession provides authors with what is known as acceptable knowledge. It consists of two approaches where the main division is the relationship between the social sciences and natural sciences. A positivistic standpoint approaches the social aspect. This position means that one can use the traits and principles of the natural sciences when examining the social sciences (Bryman & Bell, 2011, p. 15).

Interpretivism is the opposite approach and puts doubt toward the positivistic approach. This position is more skeptical towards using natural sciences to explain the social sciences since it argues that social actors within society have different intellectual traditions from the natural sciences. (Bryman & Bell, 2011, p. 16-17)

In this study, the authors have chosen to use a positivistic approach because the research aims to be conducted value free and objective. The purpose of this study is to use theory to develop hypotheses, which again underlines the positivistic approach (Bryman & Bell, 2011, p. 15). We want to understand if a relationship between financial credibility and

financial constraints exist and if the country level indicator rule of law has an effect on this association, rather than understand why these might interact. This gives support why the chosen epistemological standpoint in this study is positivistic.

2.5. Research Strategy

There are two different methods within the research strategy that the authors can choose from. One of these can be referred to as the quantitative method. This method is used to measure existing and collected data. The objective is to draw conclusions from a sample to generalize an answer for a larger population. The use of the quantitative method is preferable when testing theory, compared to when the authors aim for generating new theory. (Bryman & Bell, 2011, p. 26-28).

The second method that authors can conduct is the qualitative study. This method aims to generate a deeper understanding about a question, with less focus on measurements. Here, the focus is rather on subjective values and emotions (Bryman & Bell, 2011, p. 26-28). A qualitative method is useful when the authors want to generate new theory and get a greater understanding of why something might be as it is (Bryman & Bell, 2011, p. 27).

Because the study is based on collecting data from a series of databases, the chosen strategy is to conduct a quantitative study. The aim of the study is to draw conclusions regarding the association between financial credibility, financial constraints and rule of law. From the used sample, we aim to answer and generalize the results for a larger population. The assumption is that the organizations that responded to the survey have done so in an objective manner. This correlates with our epistemological approach, positivism, since we use theory to arrive at hypotheses.

2.6. Research Design

This study will take on a deductive approach, where the aim is to test existing theory. In addition, the study will take an objectivistic position towards the ontological consideration, a positivistic approach towards the epistemology and this will be done through a quantitative study. Also, a regression model and a matching analysis will be conducted to find answers to the two research questions stated in the study. The regression model includes the dependent variable financial constraints, the independent variable financial credibility, the moderating term rule of law and 14 control variables. These variables and the regression model will be presented further in chapter 4: practical method.

In the following figure, a summary of the philosophical standpoints is presented. Figure 3 follows the same chronological order as this chapter has followed. This means that we derived from research theory and arrived with the research strategy.

RESEARCH DESIGN

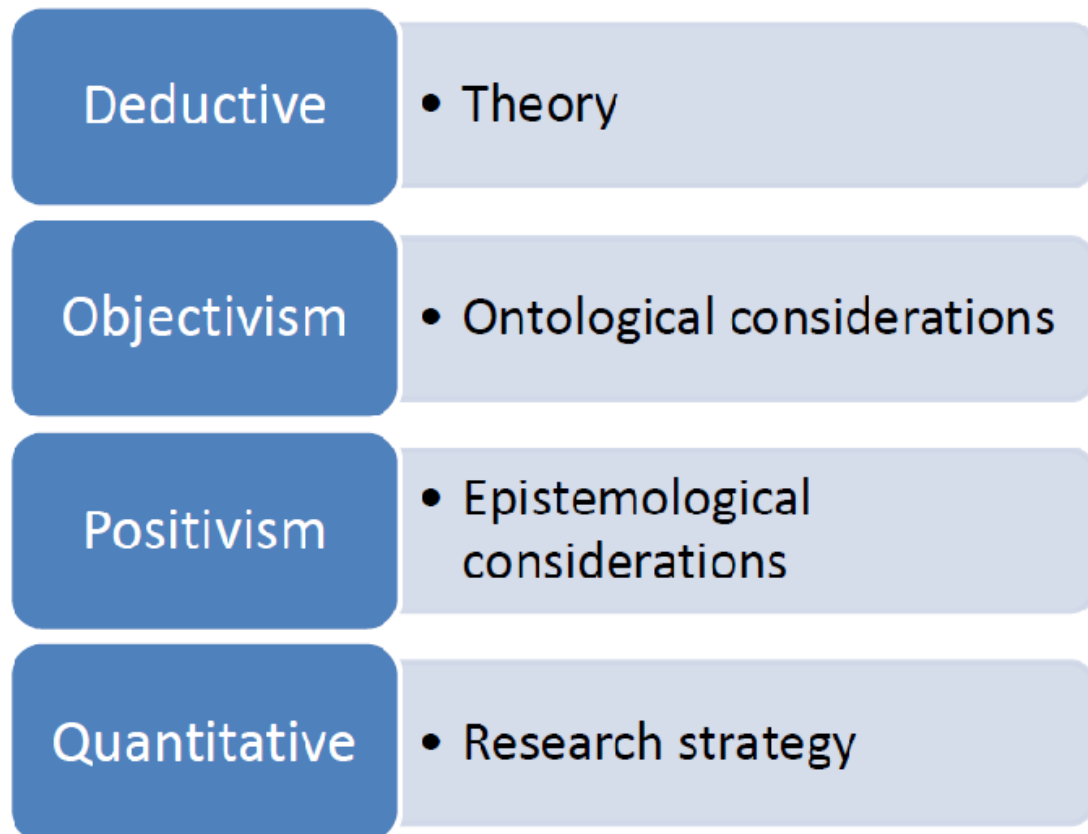


FIGURE 3. *SUMMARY OF THE PHILOSOPHICAL STANDPOINTS*

2.7. Ethics in Business Research

Ethics within the field of research is something that always should be addressed. There are four main principles of ethics that researchers should consider, according to Diener and Crandall (1978, cited by Bryman & Bell, 2011, p. 128), before starting the research process:

- harm to participants
- lack of informed consent
- invasion of privacy and
- deception

In the coming sections follows an explanation of what these mean and how we as authors acknowledge them in the study. These ethical considerations will be presented one by one and then discussed in relation to the study in “Authors’ comments on ethics in business research”.

2.7.1. Harm to Participants

When conducting research, harm to participants occurs when the respondents or actors in a study are affected negatively by the researchers handling or presentation of data. Harm is considered more than just physical injury and can also refer to the respondents’ personal lives and careers. Confidentiality within the research profession is therefore important to maintain. The use of anonymous respondents can be one way to solve the problem. In

some cases, it is too obvious who the respondent is anyway if the respondent is a large corporation or has distinctive characteristics. Researchers can also be affected by this ethical dilemma if their identities are made public when the study is released. (Bryman & Bell, 2011, p. 128-130)

2.7.2. Lack of Informed Consent

The issue of informed consent is argued to be the most difficult ethical principle to account for. The question is about how much knowledge the participant should have in order to make a decision to take part in the study or not. Often in quantitative methods, the respondent knows that he or she is taking part in a research. In qualitative methods, the recipient might be under observation without his or her knowledge and the researcher might not state the purpose beforehand. Lack of informed consent occurs as soon as the study takes place without the recipients' full knowledge of the study and how the findings will be used. (Bryman & Bell, 2011, p. 132-133)

2.7.3. Invasion of Privacy

Participants always have a right to normal privacy and respect when accepting participation in a study. Respondents have the right to refuse answering questions if their privacy is invaded. What is important to bear in mind when it comes to privacy is that every case is unique in the sense that the researcher does not know how different respondents will value privacy. A general guideline is to use caution and sensitivity as well as giving respondents a clear option to walk away from the study at any point. (Bryman & Bell, 2011, p. 136)

2.7.4. Deception

The art of deception within business research occurs when the researcher withholds information or poses the study to be something different from what it is. The AoM Code of Ethical Conduct mentioned in Bryman & Bell (2011, p. 137) state that "Researchers should carefully weigh the gains achieved against the cost in human dignity" (Bryman & Bell, 2011, p. 137). Deception has the potential to ruin the whole research profession if it becomes normative, hence it should be done with caution (Bryman & Bell, 2011, p. 137-138).

2.7.5. Authors' Comments on Ethics

Our study is done by using secondary data and the authors have not been in contact directly with the respondents. Potential for ethical dilemmas can therefore be present. Regarding harm of the participants, the data originates from sources made available to the public, meaning that access to it is a constitutional right which stands above the personal data act (Retriever Business, 2015, p. 3). For us authors, it is important that our study is ethically viable regardless of the legal backing. There is no harm to participants or invasion of privacy, considering no names of respondents are disclosed. The lack of informed consent is present in this study, due to that no organization is aware of its participation. However, participation in Enterprise Surveys data collection makes their responses available to the public. This empathizes that the firms in the sample know that outside researchers will use their responses. No known deception is taking place from the authors' point of view since we use secondary data.

2.8. Literature Review

The purpose of the literature review is to introduce the reader to how the topic was chosen, how the authors searched for literature and explain why some areas in research was not included. This part will be followed by the Theoretical Frame of Reference chapter.

2.8.1. Selection of Topic

The selected topic for this research was chosen based on the authors' interest in accounting and finance. We wanted to increase our understanding in how the choice of being audited affects firm financing opportunities and how this is affected by the legal environment. One reason for why we decided to conduct a research that covers firms around the world is due to the globalization that has taken place during the last years, mainly rooted in the increase of internet usage. It is now easier than ever before to get in contact with firms that operate on the other side of the world and invest in these. In order to invest wisely, a need for understanding firms operating environments is essential.

The use of the country level indicator rule of law to investigate firms operating environment enables the authors' and readers to develop an understanding in how some firms' access to financing are affected by other factors than the profitability itself. There were many articles covering the benefit of being audited, how the legal situation affects firms' access to financing and the need for quality in financial reports. No known article included the direct link between financial credibility, financial constraints and the rule of law. This is where we saw the gap in knowledge. Since rule of law can work as an indicator if economies possess or lack fundamental stability, this can affect the growth potential of firms. The topic was therefore chosen to increase the understanding of the direct link between these factors.

2.8.2. Selection Method and Criticism

The literature review started with searching for keywords that covered "financial credibility" and "financial constraints". Keywords that were used to find articles for financial credibility include:

- financial credibility
- auditing
- disclosure
- information asymmetry
- information distortion

Articles relevant for financial constraints were accessed searching for:

- financial constraints
- access to finance (financing)
- cost of capital
- rate of return
- internal rate of return

The search word "Enterprise Surveys" was inserted into these formulations of financial credibility and financial constraints. A reason for this is that we intended to find previous articles using the same database that is used in this study. When searching for articles relevant for the moderating variable rule of law, this concept together with "governance" and "investor protections" were used. The reason for this is due to the definition of rule of law in this study. We define rule of law as "...to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement,

property rights, the police, and the courts, as well as the likelihood of crime and violence” (World Bank, 2016). Both governance and investor protections are dimensions in this definition, since governance are the foundation of a stable legal environment and investor protection are a dimension of property rights. Therefore, these two search words were used to find articles that were related to rule of law and firms’ financial constraints.

The references used in the *Theoretical Framework* and in the *Practical Method* are primarily based on scholarly articles and are to the highest degree peer-reviewed. However, in order to validate the statistical measurements and philosophical standpoints in this study, textbooks in econometrics and business research was included as references. These textbooks are mainly used in the *Theoretical Methodology*, the *Practical Method* and in the *Results* chapters. Presented articles in this study are mainly accessed through EBSCO (Business Source Premier) and Google Scholar. We received access to these two scholarly search engines via the library at Umeå University.

We limited the search for literature to articles that mainly explain the information asymmetry aspect of the financial credibility and financial constraints interaction. Articles relevant to firms’ choice of capital structure will therefore not be included in this thesis. Even if the firms’ choices of increasing either debt or equity can affect the cost of capital in different ways, this study will bundle these two means of raising capital into one. This means that we will not differentiate between the two methods of raising capital and this is something that the reader should keep in mind when reading this thesis.

3. Theoretical Frame of Reference

This chapter presents theories relevant for this research, which should allow the reader to understand our standpoint from a theoretical point of view. The chapter continues with previous empirical findings regarding the association between financial credibility and financial constraints. Previous empirical findings are summarized and followed by the hypotheses developed in the study, including the reasoning behind them.

3.1. Information Asymmetry

This part will present relevant theories that are linked to information asymmetry. When information asymmetry exists between two or more groups or individuals, it means that these possess different sets of knowledge regarding an event or a product. A distortion in information is often referred to as an increase in uncertainty and increased risk in an investment setting. The theories that will be presented and linked to the study are: the agency cost theory, the adverse selection theory and the earnings management theory. All these will be discussed in the following sections.

3.1.1. The Agency Theory

Jensen and Meckling (1976, p. 305) contributed to the theory of information asymmetry by combining relatively undiscovered causal links between the theory of agents, theories in finance and property rights. Information asymmetry can occur when a principal hires an agent to perform tasks on his or her behalf. The association between the agent and principal can be referred to the relationship between equity or debt holders and managers of firms. Equity and debt holders assign a manager that will act on their behalf in the firm, but these two parties might differ in objectives and how tasks should be carried out. (Jensen and Meckling, 1976, p. 305). A potential for differences in objectives can lead to uncertainty and an increased risk for the investors, which can be referred to the agency cost. Agency cost is utilized based on the two parties' utility maximizing behavior, which incentivizes increased personal gain at all cost. (Jensen & Meckling, 1976, p. 308). A consequence of this information asymmetry between the parties can lead to a higher required return among the investors, since they bear the excess risk of uncertainty.

In a business setting, coping with the agent-principal interaction and the agency cost includes auditing, implementing formal systems of control and implementation of incentive oriented compensations for the agent (Jensen & Meckling, 1976, p. 323). These suggestions of coping with the asymmetric information between agents and principals include an increased predictability of the agents' incentives. Giving the agent incentives to act in a particular way can decrease the gap of objectives between the two parties, and as a consequence decreasing the information risk associated with the agent-principal interaction.

In this study, the main focus lies on the auditing aspect for decreasing information asymmetry. This is also an aspect that is emphasized by Healy and Palepu (2001, p. 415:431). They argue for decreased information risk in capital markets, as a result of the increased level of information sharing contributed by external auditors. An increase in credibility can therefore take place, which gives investors validated information that can underline the investment decisions.

3.1.2. The Adverse Selection Theory

Adverse selection is a theory caused by information asymmetry and can be linked to the agency theory. Before two parties have entered a contract, the risk for information asymmetry can cause uncertainty regarding which incentives the agent has. (Akerlof, 1970, p. 489-492). A classic example of adverse selection takes place in the insurance industry. Individuals and firms in need of insurances are often those who have incentives to enter an insurance agreement, which causes adverse selection. These individuals also possess more information regarding their physical state or the state of the insured item. A consequence is that the companies, or principals, cannot price and calculate the risk involved with the insured individual. The companies will therefore price their insurances in a non-optimal manner, to cover the potential excess risk caused by uncertainty. (Akerlof, 1970, p. 489-490:500). Akerlof (1970, p. 500) and Healy and Palepu (2001, p. 489-492) argues that adverse selection is caused by the missing trust aspect within markets which in turn leads to market inefficiency. Good and bad products are therefore more difficult to distinguish between. The theory of adverse selection can be applied to any market where the incentives of the agent, before a contract is entered, cannot be calculated with certainty.

3.1.3. The Earnings Management Theory

The theory of earnings management can also be linked to asymmetric information. Earnings management is the practice of manipulating financial numbers to be more beneficial for the firm or the manager. A negative consequence of manipulated disclosed financial information is that the information can deviate from reality, which causes a resource allocation problem. (Healy & Wahlen, 1999, p. 366:368). Earnings management occurs since information that are distributed to investors are in many cases based on estimates, where lack of regulations opens up for manipulation of accounts. In many cases, accrual earnings and research and development (R&D) costs can be recognized prematurely to increase the value of firms and benefit managers that are rewarded based on performance. This can result in less credibility in financial reporting. (Healy & Wahlen, 1999, p. 366:368). When the credibility is distorted, the potential for financial reporting to influence investors and decrease information asymmetry might weaken.

It has been argued that earnings management is more common in countries with weaker legal environments. A suggestion to cope with earnings management is to promote strong minority shareholder rights, which can decrease the incentives for managers to manipulate financial numbers. Additional disclosed information of firms can also decrease the potential for earnings management, if the reporting information is combined with strong minority shareholder rights. (Burgstahler et al., 2006, p. 1012-1013). Based on the potential for earnings management to decrease the credibility of disclosed information, this should be something to prevent to decrease the information risk and cost of capital.

3.2. Previous Research on Information Asymmetry

Many scholars have investigated the impact of a decrease in information asymmetry and how this affects the degree of access to external finance for firms. Previous findings show similar results, where empirical results provide the positive effect of decreasing information asymmetry to lower financial obstacles for firms. However, the need for quality in disclosed information and a well-functioning political and legal environment are some criteria that need to be fulfilled to reduce the information risk.

The following sections are divided into previous empirical findings on the association between decreased information asymmetry and the effect on financial constraints that the firm might face. The need for quality will be followed where we highlight that disclosed information itself is not the only reason for decreasing information asymmetry. To end our theoretical framework, the importance of a legally and politically reliable situation within the operating economies for firms will be presented. After these sections, the stated hypotheses in the study will be presented. Throughout the text, *information asymmetry* is sometimes referred to as *information risk*, *agency cost*, *information disclosure* and *financial credibility*. *Financial constraints* are referred to as *cost of capital*, *access to finance and credit* and *internal rate of return*.

3.2.1. Previous Empirical Findings

Cole and Dietrich (2014, p. 3) found empirical support that information disclosure lead to an increasing availability of credit and financing for firms. These authors argue for the benefit of decreasing the asymmetric information through auditing. A reason suggested is that audited firms often get loan applications approved, based on that lenders have a validated indicator of the financial situation of the firms. The choice of being audited can also be linked to the need for loans. Firms that perceive that loans are not necessary do not often get externally audited (Cole & Dietrich, 2014, p. 3). This argument between auditing and need for loans can therefore explain why some firms chose to get externally audited and some do not.

Diamond and Verrecchia (1991, p. 1325:1348) further argues for the impact of financial credibility and the effect this has on firms cost of capital. Disclosed information can lead to a higher degree of access to liquid markets and decrease the financial constraints faced by firms. As a consequence, transparent markets have a higher degree of competition and lower volatility. (Diamond & Verrecchia, 1991, p. 1348). An article by Tsai and Hua (2009, p. 265) supports these findings with empirical support for a decrease in cost of capital when firms were externally audited.

Decreased information risk leads to less financial obstacles and lower required return by investors. One suggestion for this is that investors know to a greater extent where they are placing their capital. (Hope et al., 2011, p. 935). Factors that affect the degree of decreased information risk are the ownership condition of the firms and creditor rights in economies. When firms have a controlling owner, the benefit of financial information disclosure is greater compared to when firms have minority shareholders. This effect of the ownership structure is stronger for firms operating in economies with weaker creditor rights. (Hope et al., 2011, p. 951-952). The benefit of increasing information disclosures can therefore depend on the ownership structure and legal means.

The empirical findings of Hope et al. (2011, p. 935) are supported by Liu et al. (2015, p. 24). These authors found empirical evidence that increased information disclosures decreases financial constraints. However, increased distributed information is not only beneficial. Liu et al. (2015, p. 24-25) argues that information disclosure leads to increased corruption expenses, since firms can be exposed to state officials seeking bribes. The reason behind this is that these officials know the financial situation and which firms to pressure for bribes. (Liu et al., 2015, p. 24). The findings of Hope et al. (2011, p. 935) and Liu et al. (2015, p. 24) emphasize the need for a functioning legal environment and regulations for financial disclosure to be beneficial for firms.

It has also been argued that information disclosure is beneficial despite the economies legal environment. In countries with weaker investor protections and company laws, sharing financial information can be used as a substitute for investors (Brown et al., 2009, p. 151-152). Increased financial disclosure can lead to lower cost of external credit and firms that are less transparent are gaining the most when distributed information increases (Brown et al., 2009, p. 151-152). Easley and O'Hara (2004, p. 1571) support the findings by Brown et al. (2009, p. 151-152). These authors found evidence that less transparent companies have higher cost of capital. In contrast, disclosure of private information will lead to a significantly higher decrease in cost of finance for the less transparent firms compared to firms that are more open to the public, *ceteris paribus* (Easley & O'Hara, 2004, p. 1571). The findings by Brown et al. (2009, p. 151-152) and Easley and O'Hara (2004, p. 1571) emphasizes that just disclosing information might not be the single mean to decrease information risk. This gives indications that the quality aspect in distributed financial information is necessary to decrease information asymmetry. Previous findings suggest that the quality is an essential factor and this will be discussed in the following text.

3.2.2. Quality in Financial Reports

In order to decrease the information asymmetry among actors, the quality of information that is distributed plays a major part. Hope et al. (2009, p. 177) argues that increased compensation to external auditors might affect the quality aspect in the disclosed information. As a consequence, the need for unbiased behavior of the auditor might not be fulfilled and the information risk does not decrease. Alternatively, the information risk can decrease in a lesser extent. (Hope et al., 2009, p. 177). Increased compensation to auditors can therefore increase firms' internal rate of return (IRR) and the association is even stronger in economies with strong investor protections (Hope et al., 2009, p. 177). There are therefore indications of a higher degree of financial obstacles when the quality aspect in financial reports is decreasing.

Lambert et al. (2007, p. 385) also emphasizes the need for quality in financial information. When the quality aspect improves, the cost of capital for firms will decrease, *ceteris paribus*. Reasoning behind this causal effect is that investors trust in the disclosed information increases and lowers the information risk. There is also an indirect effect on firms with improved quality. Based on the more reliable numbers increased quality can bring, firms real operating decisions can improve. This enhances the company's future cash flows, which is an important aspect for decreasing the cost of capital further. (Lambert et al., 2007, p. 410-411). Quality in disclosed financial information can therefore affect external investors required return and the improved situation can lower cost of capital even further.

Other aspects of improving the quality in disclosed information include efficiency of investments. Chen et al. (2011, p. 1283) argue that firms invest more wisely and efficient when financial reporting quality improves. It is suggested that the reason for this is based on the close connection between managerial and financial accounting, which improves the internal decisions within firms (Chen et al., 2011, p. 1283). This suggestion is in line with Lambert et al. (2007, p. 410-411) that argued for improved operating decisions with increased quality in financial information.

Chen et al. (2011, p. 1259) also argue that the quality aspect in financial information can be affected by market demand for financial information. This argument is linked to Ball

et al. (2000, p. 2) that found a decreasing demand for financial information in relation to poor legal systems. There is therefore an indication that the legal system within economies can affect the need for quality in firms disclosed information. Previous findings have investigated how the legal environment affects firms' financial obstacles. Some of these findings will be presented in the following text.

3.2.3. Financial Constraints and the Impact of Rule of Law

In addition to the need for quality in financial information, a need for strong rule of law is essential for investors. There are many definitions for the rule of law. However, it appears that a country with a strong rule of law is a country that possess "sound political institutions, a strong court system, and provisions for orderly succession of power...", as well as "...citizens [who] are willing to accept the established institutions and to make and implement laws and adjudicate disputes" (PRS Group, 1996; Oxley and Yeung, 2001, p. 708).

It has been argued that the absence of institutions and regulations can cause information distortion (Jaffee and Russell, 1976, p. 664). As a consequence, firms will possess a higher degree of information regarding their default risk compared to if regulations controlled and distributed this type of information. This can lead to higher information risk for investors. It has been suggested that the information risk can decrease and lead to more efficient markets with the help of strong rule of law. (Jaffee & Russell, 1976, p. 664-665). Our argument is that weak legal systems can therefore lead to increased distorted information between firms and investors.

The rule of law in a country shapes the investment environment and strong governance leads to an increased availability for external investments (La Porta et al., 2000, p. 4). However, weak rule of law can have negative effects for firms in need of financing. In countries with weaker creditor rights, small firms face greater obstacles in competing with larger firms. A reason why this can occur is that larger firms can take a majority share of banks lending capital. An indirect effect can be that new entrants might be limited in the market, due to the lack of starting capital. (La Porta et al., 2000, p. 21). This can lead to inefficient markets where oligarch firms hinder competition and affect the future growth within economies. We argue that a causal effect can be decreased access to external financing for both smaller and larger firms in the long run.

A country with weak rule of law is less likely to protect creditors and investors. If investor protections are absent in economies, expropriation can increase (La Porta et al., 2000, p. 4). There are arguments that investors can face increased transfer pricing, asset stripping and investor dilutions from firms when the legal environment is non-preferable for investors. An increase in required return can therefore be demanded by investors or these might lose willingness to invest at all. It can therefore be argued that strong rule of law results in a high level of external investments. (La Porta et al., 2000, p. 4). This can benefit firms since the availability of external finance increases.

The risk of being expropriated is more severe for external investors compared to internal stakeholders. This is due to the limited participation of external investors in firms' operations. It has been argued that the lack of participation of external investors limits the incentives for firms to pay back the invested capital. (La Porta et al., 2000, p. 6). We argue, as countries are shaped and governed by laws, that weaker investor protections would lead to a decrease in external financing. A more efficient and investor focused

legal environment will decrease the possibility of expropriation and force firms to pay external investors dividends to attract financing. (La Porta et al., 2000, p. 5-6). This can lead to increased external investments for firms', since a higher degree of external investors are willing to invest in firms that do not expropriate the invested capital.

The proportion of debt or equity can give an indicator of how extensive investor protections and how developed capital markets are within economies. Increased stability and developed legal environments leads to stronger stock markets and firms operating in economies with stronger legal systems have greater proportions of equity. In these developed markets, a greater degree of equity finance is preferable for firms. (La Porta et al., 1997, p. 1132). A consequence of well-functioning legal systems can lead to attracting higher degrees of external investors. This can lower firms cost of capital further (La Porta et al., 1997, p. 1149). In contrast, firms operating in economies with lower levels of trust towards rule of law are less efficient than its counterpart. (La Porta et al., 1997, p. 1132:1150). The impact of the legal environment on a country level can therefore affect firms' access to financing.

3.2.4. Summary of Empirical Findings

In Table 1, previous studies and findings presented in this chapter are listed. A negative association between financial credibility and financial constraints means that an increase in credibility decreases firms' financial constraints. A negative association between the governance indicators and financial constraints means that an increase in rule of law decreases firms financial constraints.

TABLE 1. *SUMMARY OF PREVIOUS EMPIRICAL FINDINGS*

The association between Financial Credibility and Financial Constraints	
Liu et al (2015)	Negative
Cole & Dietrich (2014)	Negative
Hope et al (2011)	Negative
Chen et al (2011)	Negative
Hope et al (2009)	Negative
Brown et al (2009)	Negative
Lambert et al (2006)	Negative
Easley & O'Hara (2004)	Negative
Diamond & Verrecchia (1991)	Negative
The impact of Rule of Law on Financial Constraints	
Brown et al (2009)	Negative
La Porta et al (2000)	Negative
La Porta et al (1997)	Negative
Jaffee & Russell (1976)	Negative

3.3. Research Hypotheses

The stated hypotheses regarding financial credibility and financial constraints will be based on theory as well as previous empirical findings within the field. As discussed before in the thesis, we will test whether financial reporting credibility reduces firms' financial constraints. In addition, we will test if rule of law acts as a moderator on the proposed association. In the proposed hypotheses, information asymmetry is an underlining event. Based on that increased financial credibility can decrease firms' financial constraints and hence the information asymmetry, potential consequences can be that the agency cost, the risk with adverse selection and the risk for earnings management can decrease. The two hypotheses are presented in the coming text and reasoning behind these will be following along these.

3.3.1 The Association Between Financial Credibility and Financial Constraints

There are many types of risks associated with investments that can cause financial constraints. During recent years, researchers have found information risk to be influential (e.g. Hope et al., 2011, p. 938; Lambert et al., 2007, p. 385). Consequences of increased information risk leads to decreasing willingness of investors to invest in firms or to a higher demanded return to compensate for this excess risk (Hope et al, 2011, p. 935). Increased financial information can be used as a solution to decrease this type of risk. A higher degree of financial information leads to more transparent companies and lower required return among investors (Tsai & Hua, 2009, p. 265; Diamond & Verrecchia, 1991, p. 1348). Decreasing the information risk should therefore be attractive for firms to accomplish.

One solution to decrease the information risk is auditing (Hope et al., 2011, p. 938). It has been suggested that getting externally audited reduces information asymmetry between firms and external stakeholders. In particular, decreased information asymmetry enables external investors to receive validated insights of potential investment opportunities that the firm possesses and hence decreases the information risk (e.g. Hope et al., 2011, p. 938; Diamond & Verrecchia, 1991, p. 1348). As a consequence, firms can reduce financial constraints.

The role of auditors is to be independent entities to confirm the authenticity of the financial information. Direct added value by the auditor includes the credibility and transparency of disclosed information that the firm provides. Indirect effects in the added value include the signal firms provide investors when accepting the auditing process. (Hope et al., 2011, p. 936). Research shows that this increase in credibility leads to a higher degree of access to external finance (Hope et al., 2011, p. 935; Liu et al., 2015, p. 24). Therefore, we formulate the following hypothesis:

H1: Financial reporting credibility reduces financial constraints

3.3.2. The Moderating Rule of Law

Hypothesis two states that when rule of law decreases, the negative association between financial credibility and financial constraints weakens. The meaning of hypothesis two is that firms operating in economies with weaker rule of law will gain less on increasing financial credibility to decrease financial constraints. We argue that investor protections can be seen as a lower dimension of rule of law. This is based on that rule of law reflects "sound political institutions, a strong court system, and provisions for orderly succession

of power..., " and "...citizens [who] are willing to accept the established institutions and to make and implement laws and adjudicate disputes" (PRS Group, 1996; Oxley and Yeung, 2001, p. 708). In contrast, investor protections have been referred to "...the nature and effectiveness of financial systems around the world can be traced in part to the differences in investor protections against expropriation by insiders, as reflected by legal rules and the quality of their enforcement" (La Porta et al., 1997, p. 1131). We therefore argue that investor protections and governance of economies can reflect how legal rules are perceived and enforced within economies, which can reflect and be traced to rule of law.

Investors are affected in various ways by the governance (one dimension of rule of law) of countries. For transparent reporting to have an effect, the business environment must be governed by the rule of law. When rule of law is absent or low, credit (capital) markets are more likely to be less developed. For instance, La Porta et al. (1997, p. 1131) found support for smaller capital markets in terms of equity and debt when investor protections (as one of the dimensions of the rule of law) are low. Due to the narrower markets that are caused by low investor protections, an increase in the cost of capital will take place for firms (McLean et al., 2012, p. 313). As a consequence, low investor protections leads to higher financial constraints and results in a more problematic situation in obtaining finance for firms. In addition, the perceived feeling of fairness within the legal system (one dimension of rule of law) is one essential factor for the economies and hence the credit markets (Scalia, 1989, p. 1178). If a country's rule of law is low, the perceived feeling of fairness would decrease. As a result, creditors and investors are less likely to provide finance for the firms.

Given a low level of rule of law, it is reasonable to think that financial credibility can play a substitute effect in attaining finance. This relationship has also been studied and concluded by Brown et al. (2009, p. 151-152). These authors found empirical evidence that in markets where investor protections are low, an increase in information sharing among banks can in fact play a substituting role. This is based on the increased credibility that banks face despite the lack of protections. However, it is also argued that countries cannot simply adopt better accounting standards to reach this development, given that the level of the perceived rule of law is low. For instance, prior research shows that in order to have an efficient negative relationship between financial credibility and financial constraints, the legal environment (one dimension of rule of law) should be strong (Francis et al., 2003, p. 1). This needs to be present on the actual level of protection as well as the perceived level. It is therefore worth noticing that improving the reporting system is not the single solution to coping with weak financial markets. There is an underlying need for well-functioning legal systems in combination with trust (Francis et al., 2003, p. 26-27).

Previous studies have shown that economies with weaker investor protections lack demand of financial information (Ball et al., 2000, p. 1-2). This can affect the quality of the disclosed information (Chen et al., 2011, p. 1259). As discussed earlier in the text, the quality of financial reporting is essential to decrease the information risk (e.g. Lambert, 2007, p. 385; Hope et al., 2009, p. 177). This means that countries with weak governance can lack credibility in their financial reporting, which in turn can lead to a decrease in access to external financing. While the importance of rule of law in the proposed association in H1 seems apparent, no previous studies, to the authors' knowledge, have focused on or answered how the perceived rule of law affects the association between

financial credibility and financial constraints. Therefore, we formulate the following hypothesis:

H2: The ability of financial reporting credibility to reduce financial constraints decreases when Rule of Law (at country level) decreases

4. Practical Method

This chapter presents the data collection, sample selection and the empirical research design. The aim is to present the reader with an understanding how we collected the data, designed the empirical method and analyzed the data, making it easier to replicate. Variables used in the study will be presented and justified.

4.1. Data Collection

The used data in this study originates from the following resources: World Bank Enterprise Survey (WBES), World Bank's World Governance Indicators (WGI) and the World Bank (WB). The dataset from WBES² contained detailed firm level information regarding firms operating situations, including financial aspects, perception of the operating environment etcetera. We gained access to WBES by contacting the World Bank Group and the data were collected by using external researchers working on behalf of the World Bank (Enterprise Surveys, 2016). Macroeconomic data was accessed from WGI and WB, which enabled us to analyze and control for the economic environment in which firms are operating. Data from WGI and WB were available from the World Bank's webpage³. Questions and variables in the study covers all aspects of the firms' business environments and to control for possible exposure, the respondents and researchers are anonymous.

These datasets were later merged together in the statistical software STATA to run the tests. The tests and the programming file can be seen in Appendix 8. After the tests were conducted, the results were transferred into Excel to create the tables that are presented in the study. Drawbacks with merging different datasets together include the loss of observations, due to the lack of responses by firms to some variables and the coverage of the macroeconomic data. This will be discussed further in sample selection.

4.2. Sample Selection

The original sample before adjustments and merging of the data consisted of 118,206 firms operating in 135 economies. However, some of the firms did not have complete data for all the required variables, so the sample was narrowed down to those firms who had made a full response to the used variables. Firms' operating in some economies lacked macroeconomic data, which lead to exclusion. In the merged sample, 129 economies and 114,093 firms were available.

The sample was then adjusted for extreme outliers in the variables; we recoded the data to be more suitable for the analysis and then adjusted for false responses. For instance, some responses regarding the survey year were incorrect and excluded from the sample and these actions were conducted in STATA. Our purpose in the study is not to differentiate between public or private firms, so both of these types are included in the

² Data from WBES:

<https://www.enterprisesurveys.org/Portal/Login.aspx?ReturnUrl=%2fportal%2felibrary.aspx%3flibid%3d14&libid=14> (retrieved 16-06-07)

³ Data for rule of law: <http://info.worldbank.org/governance/wgi/index.aspx#home> (retrieved 16-05-22)

Data for total GDP: <http://data.worldbank.org/indicator/NY.GDP.MKTP.CD> (retrieved 16-05-22)

Data for GDP per capita: <http://data.worldbank.org/indicator/NY.GDP.PCAP.CD> (retrieved 16-05-22)

Data for GDP growth: <http://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG> (retrieved 16-05-22)

Data for consumer price index: <http://data.worldbank.org/indicator/FP.CPI.TOTL> (retrieved 16-05-22)

Data for domestic banking credit: <http://data.worldbank.org/indicator/FS.AST.DOMS.GD.ZS> (retrieved 16-05-22)

model. After these adjustments, the final sample size in relation to the regression model consists of 52,381 firms operating in 98 economies. This is the number of observations that the analysis will be based on. A potential negative impact of removing some observations is the generalization aspect. The results in the study should therefore be interpreted with caution, since only firms in 98 economies are covered and the findings might not reflect the situations for all firms' in all economies. We urge the reader to keep this in mind. The variables that were included in the regression can be seen in Table 2.

4.3. Multivariate Model

Figure 4 visualizes the empirical model that will be tested. As discussed previously in the hypotheses, the aim of the study is to test the relationship between financial credibility and financial constraints. We will also test the impact rule of law has on this association. This will be done by using the proxies for financial credibility, whether the firms have been audited or not, and for financial constraints, which measures to which extent the firm perceives access to finance to be an obstacle. The proxy for rule of law is the World Bank's index. This index measures the perceived feeling of trust in the (World Bank, 2016):

- rules of society
- quality of contract enforcement
- property rights
- domestic police
- domestic courts
- likelihood for crime and violence

A more thorough explanation of the variables in the model will be presented in Table 2. Information regarding the dependent and independent variable as well as the used control variables in the model will be justified later in the text.

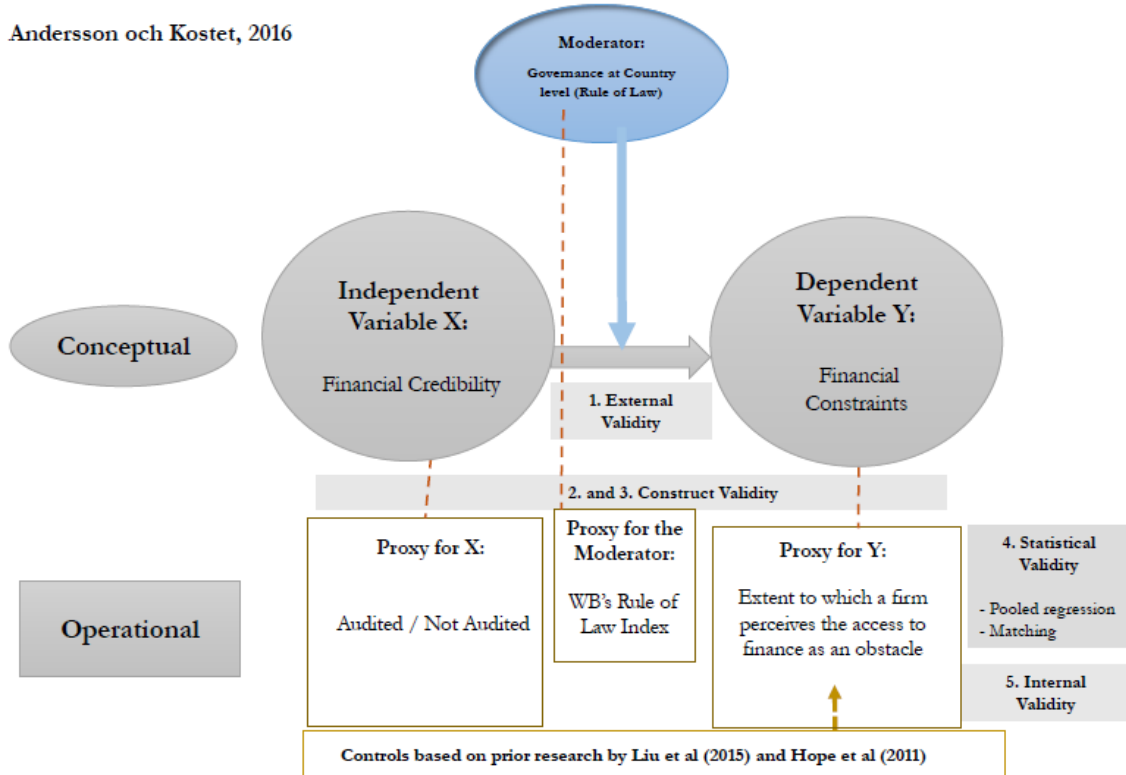


FIGURE 4. THE EMPIRICAL MODEL

Descriptive model for the used regression:

$$\begin{aligned}
 FinCon = & \alpha + \beta_1 FinCred_{ij} + \beta_2 RuOfLaw_{ij} + \beta_3 FinCred * RuOfLaw_{ij} \\
 & + \beta_4 CorruptionObstacles_{ij} + \beta_5 InfrastructureObstacle_{ij} + \beta_6 FirmSize_{ijnt} + \beta_7 FirmAge_{ij} \\
 & + \beta_8 Experience_{ij} + \beta_9 Government_{ij} + \beta_{10} Foreign_{ij} + \beta_{11} Exporter_{ij} + \beta_{12} Compete_{ij} + \\
 & \beta_{13} Priv_j + \beta_{14} MacroVariables_j + \gamma Year_{ij} + \gamma Industry_i + \varepsilon_{ij}
 \end{aligned}$$

In the model above, the dependent variable is firms' financial constraints (*FinCon*). This variable takes a value between 0 and 4, depending on how severe firms perceive financial constraints to be. We also include an interaction term between financial credibility and rule of law (*FinCred*RuOfLaw*) in the model to test the second hypothesis. In addition, α is the models intercept, β are the coefficients for variable 1 to 14, γ is the fixed effect coefficient for firms sampling year (*Year*) and operating industry (*Industry*) and ε is the models error term. *i* represent each firm respectively and *j* is the operating country for the firm.

Table 2 defines the used variables in the model, including the macro variables. The left column describes the variable name, the middle column defines the used variables and the interpretation of these, and the right column defines where the data and variables are collected from.

TABLE 2: VARIABLE DEFINITION

Variables		
Variable	Definition: <i>t</i> is the survey year	Original Source
FinCon	Takes values between 0, no obstacle, and 4, very severe obstacle (WBES variable 'k30')	WBES
FinCred	Dummy variable equals 0, unaudited firm, and 1, audited firm	WBES
RuOfLaw	Takes a value between 0 (low) and 100 (high)	WGI
CorruptionObstacle	Takes values between 0, no obstacle, and 4, very severe obstacle (WBES variable 'j30f')	WBES
InfrasObstacles	Takes a value between 0, no obstacle, and 4, very severe obstacle, in relation to firms' operating activities (WBES variable 'd30a')	WBES
FirmSize	The logarithm of firms's sales in <i>t</i> -1 (WBES variable 'd2')	WBES
FirmAge	The logarithm of age = survey year - firm founding year (WBES variable 'b5')	WBES
Experience	Amount of years the top manager has work in the sector (WBES variable 'b7')	WBES
Government	Dummy variable that equals 0, no government ownership, or 1, government ownership (WBES variable 'b2c')	WBES
Foreign	Dummy variable that equals 0, no foreign ownership, or 1, foreign ownership (WBES variable 'b2b')	WBES
Compete	Dummy variable that equals 0, no competition from informal sector, or 1, competition from informal sector (WBES variable 'e11')	WBES
Exporter	Dummy variable that equals 0, not an exporter, or 1, an exporter	WBES
GDP	The average in the logarithm of GDP (USD) in 2014, 2013 and 2012	WB
GDPPerCapita	The average in the logarithm of GDP per capita (USD) in of 2014, 2013 and 2012	WB
GDPGrowth	The average GDP growth in 2014, 2013 and 2012	WB
Inflation	The average logarithm difference of consumer price index in 2014, 2013 and 2012	WB
Priv	Domestic banking credit to the private sector over GDP	WB
* Sources of data: WBES = World Bank Enterprise Surveys; WGI = World Governance Indicators; WB = World Bank		

4.3.1 Financial Constraint

The dependent variable in this study (*FinCon*) will be based on the perceived degree of obstacles firms meet when accessing external finance. Perceived obstacles in accessing external finance is derived from top managers' responses from WBES. Responses take either a value of 0, no obstacle, 1, minor obstacle, 2, moderate obstacle, 3, major obstacle or 4, very severe obstacle. Previous research has used this proxy to measure financial constraints (Liu et al., 2015, p. 34; Hope et al., 2011, p. 941). A possible limitation with the proxy is the probability that people can have a tendency to complain, without reflecting the actual situation (e.g. Bertrand & Mullainathan, 2001, p. 929; Hope et al.,

2011, p. 940). This should not be a problem for the study as long as the tendency of complaints does not correlate with the used independent variable and the moderator in this study (Hope et al., 2011, p. 940-941). Perception can also be affected by comparative thinking. Comparative thinking means that what we see and feel is affected by our environment (Markman & McMullen, 2003, p. 244). There is therefore a risk for measurement error in this variable, based on the risk of the tendency to complain and comparative thinking among the firms.

4.3.2. Financial Credibility

The explanatory variable financial credibility (*FinCred*) will be based on whether the firm has been audited or not. This measurement of financial credibility has been used in previous studies (e.g. Liu et al., 2015, p. 33; Hope et al., 2011, 941). If the firm has been externally audited, the variable will take a value of 1 and 0 otherwise.

4.3.3. Rule of Law

The moderating variable in the model is rule of law. To investigate if this moderating term has a weakening effect on the association between financial credibility and financial constraints, we use the World Bank's rule of law (*RuOfLaw*) as our proxy. *RuOfLaw* takes values between 0 (low) and 100 (high). The World Bank collected the data from enterprises, citizens and experts in survey responses in the economies (World Bank, 2015).

4.4. Control Variables

We expanded the model by using a variety of control variables. Previous research presented us with valuable information in terms of control variables that can affect the relationship between the main variables (Hope et al., 2011, p. 944:956; Liu et al., 2015, p. 34). In the following text, each control variable will be explained and how they are measured. These are stated along with a justification to why they are included and the potential impact they might have on firms' financial constraints.

Corruption Obstacles

It is argued that firms that are audited are more exposed to the possibility to be asked for bribes (Liu et al. 2015, p. 24). The act of corruption affects firms in various ways, since corruption faced by firms is relative to the environment in which it operates. Increasing corruption expenses is an obstacle firms face, along with the negative impact corruption has on growth (Tanzi & Davoodi, 2000, p. 22). This variable has been used in studies by Hope et al. (2011, p. 956) and Beck et al. (2005, p. 149), which along with the above stated arguments is why the variable corruption (*CorruptionObstacle*) is included in the model. The variable corruption (*CorruptionObstacle*) measures the amount of perceived obstacles corruption has on current operations for any given firm. This variable takes values of 0, no obstacle, 1, minor obstacle, 2, moderate obstacle, 3, major obstacle or 4, very severe obstacle.

Obstacles in Infrastructure

One of the major obstacles for firm growth is infrastructure and well functioning infrastructure is essential for growth and firms' access to finance (Pradhan & Bagchi, 2013, p. 147; Mukka & Tervo, 2012, p. 1516). This will be controlled for in the model. The variable obstacles in infrastructure (*InfraObstacles*) measures if the firm perceives the transportation of goods, supplies and inputs to be an obstacle for current operations.

InfraObstacles takes values of 0, no obstacle, 1, minor obstacle, 2, moderate obstacle, 3, major obstacle or 4, very severe obstacle.

Firm Size

Size can reflect the choice of being audited and will be controlled in the sample (Hope et al., 2011, p. 941). The size of firms has direct effects on access to finance and credit since smaller firms face greater difficulties in accessing finance, hence constraining growth (Beck et al., 2005, p. 148). The variable size (*FirmSize*) is therefore included to control for the possibility that auditing is depending on the size of the firm. *FirmSize* is measured as the logarithm of the firm's total sales in year t-1. The logarithm is applied to control for potential extreme outliers, which is in line with Liu et al. (2015, p. 33). Liu et al. (2015, p. 33) using the size of the firm as a control variable for financial constraints.

Firm Age

Younger firms tend to grow faster than mature firms and their need for finance is greater (Dunne et al., 1988, 513-514). Although need for finance is higher in younger firms, they face more difficulties accessing it and it has been argued that these firms have more difficulties in repaying debt compared to older firms. This is one reason why accessing finance is one of the major obstacles for newly established firms (Weinberg, 1994, p. 28). Based on the differences in accessing finance caused by firm age, we will control for this in our model. The variable firm age (*FirmAge*) is measured as the natural logarithm of a firm's survey year subtracted by the founding year. To control for potential outliers, we take the logarithm of the firm age, which is in line with Liu et al. (2015, p. 8). This control variable is used by Liu et al. (2015, p. 33) to explain firms' financial constraints.

Experience

Some scholars argue that top managers experience in the firms operating sector are positively correlated with profit and a higher number of years working in a sector leads to a better understanding and efficiency in business related tasks, all else equal (Bosma et al., 2004, p. 232; Liu et al., 2015, p. 9). Therefore, the variable experience (*Experience*) will be included in the model. *Experience* measures the amount of years' top managers has worked within the current sector and the variable takes on the numerical value of actual years of experience. The experience of the top managers have been used as a control variable in previous studies to explain the constraints firms' face when searching for external finance (e.g. Liu et al., 2015, p. 33).

Government

It has been argued that government ownership in firms are related to worse performance and can therefore affect access to financing (e.g. Megginson & Netter, 2001, p. 330; Liu et al., 2015, p. 9). To account for the differences that can be caused by the ownership structure, *Government* will be included in the model. *Government* measures if any part of the firm is owned by the domestic government. This is measured through a dummy variable, which takes a value of 1, the firm has government ownership in some degree, 0 otherwise. This variable has been used in a study by Liu et al. (2015, p. 33) to explain firms' financial constraints.

Foreign

Liu et al. (2015, p. 24) and Greenaway et al. (2012, p. 681) argue that firms with foreign ownership perform better and attracts higher degrees of external finance, compared to firms with governmental ownership. Firms who have foreign ownership can also gain

from their technical knowledge and get access to new markets. (Liu et al., 2015, p. 9). Therefore, we also include the variable *Foreign* for firms that have foreign ownership. *Foreign* is measured as a dummy variable and takes the value 1, the firm has foreign ownership, and 0 otherwise. This control variable is in line with Liu et al. (2015, p. 33).

Exporter

The variable exporter (*Exporter*) is a dummy variable which explains if the firm is an exporter or not. Therefore, this variable will take either a value of 1, the firm exports goods or services, or 0 otherwise. Many firms are export dependent, which can affect the growth potential positively (Cooper & Kleinschmidt, 1985, p. 37). The exporting aspect can therefore explain the financial constraints firms face and exporter will be controlled for in the model. Also, Liu et al. (2015, p. 33) are using this control variable for the same purpose as we do in the study.

Compete

Competition is an important aspect in relation to the firm performance, due to the increased risk in market exit and a high degree of competition can also lead to greater constraints in accessing finance for firms (Liu et al., 2015, p. 9-10; Beck et al., 2005, p. 148). Based on the impact competition can have on firm performance and the access to finance, we chose to include this control variable. The variable competition (*Compete*) takes into account the amount of competition firms faces in their operations from the informal sector. This variable takes either the value 1 if the firm faces competition from the informal sector, or 0 otherwise.

Priv

Priv measures the domestic banking credit that is lent to the private sector in any given country. This is in turn divided by the total GDP in the given economy. By doing this, we get an index that correspond to how big the proportion of banking credit is in relation to GDP. A benefit of expressing the domestic banking credit in relation to GDP, compared to the total value, includes the increase in interpretation and understanding in the magnitude of the given value. This variable is used by Liu et al. (2015, p. 10) and Beck et al. (2005, p. 149). They propose that this variable measures countries financial and institutional development. To account for the development of firms' operating economies, this variable will be included.

Macro Variables

To control for macroeconomic effects in the proposed association we include four control variables for this aspect. These are as follows: *Inflation*, *GDP*, *GDPPerCapita* and *GDPGrowth*. Inflation (*Inflation*) is calculated by taking the logarithm of consumer price indexes in 2014, 2013 and 2012. A country's GDP (*GDP*) is the logarithm of GDP in USD over the years 2014, 2013 and 2012. The variable for GDP per capita (*GDPPerCapita*) is the logarithm of GDP per capita in USD over the years 2014, 2013 and 2012. The growth in GDP (*GDPGrowth*) is the average GDP growth over 2014, 2013 and 2012. Reasons for including these variables are that the macro environment affects firm performance in various ways (Liu et al., 2015, p. 11). This enables us to control for the business environment in which firms are operating.

4.5. Regression Analysis

The association between financial credibility and financial constraints will be analyzed using a linear regression, also known as Ordinarily Least Square (OLS). The OLS has

many preferable properties, for instance minimizing the sum of squares and give the highest R². It is argued that the OLS is a popular regression model and are often used as a reference estimator (Kennedy, 1998, p. 44-46).

A potential drawback with the OLS is the regressions sensitivity for violating assumptions. This can affect the statistical tests and give inaccurate results. (Kennedy, 1998, p. 45-46). The data used in the study was collected under different points in time and in different economies, which can lead to violation the basic assumption of homoscedasticity. When the basic assumption of a homoscedastic variance is violated, the distributions among the variables do not match and are not uniform (Kennedy, 1998, p. 43). This means that the variables might correlate with each other and the error term is hypothetically drawn from different distributions for each observation individually (Kennedy, 1998, p. 43). Potential shortcomings with a mean value in the error term that is different from zero can lead to a tilted regression line. It is therefore important to control for heteroscedastic tendencies in the regression model. To validate the model in the study, the potential violation in homoscedasticity will be tested.

In the study, a Breusch-Pagan / Cook-Weisberg test will be conducted for the potential heteroscedasticity. Kennedy (1998, p. 120) describes the test to be relatively general for violations in the basic assumption, which is one of the strengths. The null hypothesis stated for the Breusch-Pagan / Cook-Weisberg is that the error term has a constant variance and the alternative hypothesis is that the error term has a non-constant variance. If the null hypothesis is rejected, this indicates that the model might be affected by heteroscedasticity.

In order to cope with the lurking drawback of violation in the homoscedastic assumption, this will be controlled by making the regression robust. This can lead to better control for influential observations that can be the reason for the violating assumption. (Kennedy, 1998, p. 32:298-299). Reasoning behind this is that the robust regression minimizes the absolute values in the error term and therefore decides whether to exclude influential observations or keep them in the OLS model. This leads to more resistance for influential outliers in the dependent variable and these are not unnecessary excluded in the model. (Kennedy, 1998, p. 300-301:305). Based on these reasons, the regressions used in the study were made robust.

In addition to the robustness of the regression, the sample was divided into clusters with similar characteristics. A benefit of a cluster analysis includes better control for similar patterns between homogenous variables (Kaufman & Rousseeuw, 2009, p. 2-3). The clusters that were created are based on United Nations (UN) identification number, which means that each cluster represent one economy. Reasons why we decided to divide observations in clusters based on the operating market, is that firms within the same economy can share similar legal and operating possibilities. These might differ between one economy and another. The cluster analysis will enable us to control for these differences in a greater extent.

A pooled regression model was also conducted. Following the same reasoning as discussed above, the pooled regression was made robust and with clusters. This regression was divided into two groups: audited and unaudited firms. Conducting this type of regression allows us to detect differences between the groups in a greater extent. While the robust cluster regression will give results covering the whole sample, the

pooled robust cluster regression will give us more details how the moderating variable and control variables might differ between audited and unaudited firms.

4.6. Testing for Multicollinearity

One assumption with a linear regression is that there is no exact linear association between the explanatory variables (Kennedy, 1998, p. 183; Alin, 2010, p. 370). When the variables in the model cover much of the same fluctuations in the dependent variable, it is possible that the regression is affected by multicollinearity. Possible effects that can be caused by multicollinearity in regression models are that correlations between variables might give insignificant results, despite that these are significant towards one another (Cuddington, 1983, p. 119). Therefore, significant multicollinearity should be avoided in the regression model.

In order to detect multicollinearity, the Variance Inflation Factor (VIF) values in the model will be tested. Large VIF-values are problematic because they show signs of multicollinearity within the model and values over ten should be taken into consideration (Alin, 2010, p. 372; Kennedy, 1998, p. 190). Therefore, if VIF values above ten appear, the model might need to be revised.

4.7. Fixed Industry and Year Effect

We also included the fixed effect for industries and survey years to control for variances that are caused by these factors. Potential differences between industries can be specific shocks that do not affect the entire economy and all industries. By using fixed effect modeling, we can control for unknown variables that might have an impact on the study (Kennedy, 1998, p. 226-227). The dummies that were created for the survey years and industries are defined in Appendix 5 and the definitions of the industries are defined in Appendix 4.

4.8. Propensity Score Matching (PSM)

The impact of financial credibility on financial constraints can be affected by other aspects in the model, e.g. non-random effects and unobservable factors (Liu et al., 2015, p. 3-4; Dehejia & Wahba, 2002, p. 151). To control for the real impact of auditing, the authors of this thesis conducted a propensity score matching (PSM). This is a type of treatment effect and matching analysis. The basic idea with the treatment effect is to test if a cure has an effect on the outcome and remove potential observable bias (Rosenbaum & Rubin, 1983, p. 41). In our case, the cure is being audited and the outcome is the financial constraints the firm faces. This can give us an insight of the effect of auditing on financial constraints in the model and removes potential bias. The sample is therefore divided into two groups when conducting this test, one group consisting of audited firms and the other group with unaudited firms. This can reveal valuable information regarding the impact the independent variable financial credibility (*FinCred*) has on the constraints.

There are arguments regarding potential negative aspects of using the PSM for the matching analysis. For instance, King and Nielsen (2016, p. 27) argue that the PSM analysis can oversee aspects that it intends to reduce, e.g. bias. So, according to King and Nielsen (2016, p. 27), the PSM is not the optimal matching analysis even though it is one of the most widely used. Arguments regarding the suitability of using the PSM can therefore be questioned. The reader should keep in mind that matching analysis is a

preferable method to reduce potential observable bias, but the PSM might not be the most optimal analysis.

5. Results

In this chapter, the aim is to present the reader with the results from this study. The results originate from the tests introduced in the previous chapter. These tests will be presented objectively along with descriptive statistics. A discussion and an interpretation of the results will take place in chapter 6.

The statistical tests conducted in the study are interpreted through the conceptual level with financial credibility and financial constraints. Behind these concepts lie the proxies, which are how the variables are measured in the study. For financial credibility, the proxy auditing is used and for financial constraints, the perceived level of accessing external finance for firms' is used.

5.1. Descriptive Statistics

The descriptive statistics regarding the dependent, the independent and the controls variables used in the study are summarized in Table 3. This table visualizes the number of observations that are available for each variable along with mean values for these.

As can be seen in Table 3, the variable financial credibility (*FinCred*) has a mean value of 0.53. This indicates that slightly more than half of the firms are reviewed by an external auditor. The variable financial constraints (*FinCon*) has a mean value of 1.52 and the average response regarding the financial obstacles firms face is between 1, "minor obstacle", and 2, "moderate obstacle". The mean for *FinCon* presented in Table 3 covers both audited and unaudited firms.

Rule of law (*RuOfLaw*) has a mean value of 40,69 out of 100. The average firm is therefore operating in an economy which has a response on rule of law that is just below half. The third quartile for the same variable is 54,33. An interpretation of this is that 75% of the sample operates in economies which have a perception regarding the rules of society that is just over half on the 100 scale.

When dividing the sample into audited and unaudited firms, it is visible that audited firms perceive less constraint in accessing external finance, *ceteris paribus*. The mean value in financial constraints for audited firms is 1.42, while it is 1.63 for unaudited firms. Audited firms are slightly better off in terms of less financial constraint on average (Appendix 1). The two groups also differ in the mean for rule of law (*RuOfLaw*), where this variable's value for audited firms is 43.29 and 37.79 for unaudited firms (Appendix 1). The mean value for rule of law (*RuOfLaw*) means that audited firms operates in economies with slightly higher perception of different rules in society compared to unaudited firms.

TABLE 3. *DESCRIPTIVE STATISTICS*

Variable	Observations	Descriptive Statistics						
		Mean	Std. Dev	Minimum	First Quantile	Median	Third Quantile	Maximum
FinCon	93693	1.52	1.34	0.00	0.00	1.00	3.00	4.00
FinCred	95718	0.53	0.50	0.00	0.00	1.00	1.00	1.00
RuOfLaw	95718	40.69	21.23	0.48	25.00	39.90	54.33	97.60
CorruptionObstacle	95694	1.74	1.49	0.00	0.00	2.00	3.00	4.00
InfraObstacle	95718	1.22	1.27	0.00	0.00	1.00	2.00	4.00
FirmSize	85035	16.78	3.03	0.00	14.69	16.52	18.75	33.85
FirmAge	70028	2.59	0.82	0.00	2.08	2.64	3.14	4.74
Experience	95718	17.1	11.01	0.00	9.00	15.00	24.00	75.00
Government	95699	0.02	0.12	0.00	0.00	0.00	0.00	1.00
Foreign	95666	0.1	0.30	0.00	0.00	0.00	0.00	1.00
Exporter	95181	0.17	0.37	0.00	0.00	0.00	0.00	1.00
Compete	84111	0.52	0.50	0.00	0.00	1.00	1.00	1.00
GDP	94057	25.56	2.09	19.58	23.94	25.75	27.10	29.88
GDPPerCapita	94057	8.2	1.08	5.54	7.31	8.20	9.22	10.98
GDPGrowth	93721	4.12	2.71	-10.31	2.18	4.42	6.19	13.61
Inflation	89134	4.8	0.12	4.59	4.71	4.78	4.87	5.47
Priv	88644	0.47	0.31	0.04	0.26	0.44	0.59	1.51

5.2. Variable Correlations

A correlation analysis was conducted in order to test the significance of the variables in the model. The main variables and the correlation between these are presented in Table 4. Additional control variables and the correlation between those are presented in Appendix 2. As a guideline value, the correlation between the variables should not exceed 0.8 to be useful and contribute to the model (Kennedy, 2003, p. 206). The variables with the strongest correlation (-0.333) is between the proxies for Priv and Inflation (Appendix 2). As 0.8 is the maximum correlation that we want to accept in the model, the correlation between the variables does not indicate to be significantly high. A weak correlation exists between the proxies for GDP and Government, with a correlation of -0.002 (Appendix 2). GDP and Government are therefore relatively independent from each other.

The weakest correlation in the model in relation to financial constraints can be seen between *FinCon* and the control variable government ownership (*Government*), which measures if the firm has ownership by the domestic government. The correlation is -0.0186. However, the star indicates that this variable is significant in relation to financial constraints at a 5% significance level, which can be seen in Table 4. All the variables used in the model reveal to be significant at a 5% significance level in relation to financial constraints (*FinCon*).

TABLE 4. CORRELATION TABLE BETWEEN THE MAIN VARIABLES

Correlation Matrix								
	FinCon	FinCred	RuOfLaw	CorruptionObstacle	InfraObstacle	FirmSize	FirmAge	Experience
FinCon	1.0000							
FinCred	-0.0779*	1.0000						
RuOfLaw	-0.1155*	0.1293*	1.0000					
CorruptionObstacle	0.2502*	0.0236*	-0.1979*	1.0000				
InfraObstacle	0.2721*	0.0142*	-0.1121*	0.2549*	1.0000			
FirmSize	-0.0758*	0.1936*	0.0586*	-0.0446*	0.0615*	1.0000		
FirmAge	-0.0527*	0.1642*	0.1081*	0.0310*	-0.0167*	0.1303*	1.0000	
Experience	-0.0294*	0.0732*	0.0923*	0.0553*	-0.0316*	0.0385*	0.4230*	1.0000
Government	-0.0186*	0.0370*	-0.0499*	-0.0263*	-0.0072*	0.0622*	0.0488*	-0.0107*
Foreign	-0.0439*	0.1325*	0.0065*	-0.0161*	0.0331*	0.1387*	-0.0036	-0.0234*
Exporter	-0.0453*	0.1601*	0.1117*	0.0078*	0.0191*	0.1676*	0.1287*	0.1038*
Compete	0.1464*	-0.0477*	-0.0736*	0.1365*	0.1065*	-0.0475*	0.0350*	0.0303*
GDP	-0.1362*	0.0542*	0.0667*	0.0328*	-0.0586*	0.0689*	0.0754*	0.0356*
GDPPerCapita	-0.1116*	-0.0147*	0.4103*	-0.0674*	-0.0799*	-0.0748*	0.0836*	0.1945*
GDPGrowth	-0.0315*	0.0936*	-0.0110*	-0.0485*	-0.0067*	0.2217*	0.0393*	-0.0818*
Inflation	0.0297*	0.0318*	-0.3090*	0.0509*	0.0584*	0.0249*	-0.0481*	-0.1203*
Priv	-0.1543*	0.1052*	0.4572*	-0.1813*	-0.1339*	0.0629*	0.0526*	0.0847*

Where * p<0.05

5.3. Regression Results

Table 5 visualizes the regression model for the whole sample and the R-square is 0.1567. This means that 15.67% of the fluctuations in financial constraints can be explained by this regression. The regression model provided a p-value for the F-statistics of 0.000. This indicates that we can reject the possibility that all the coefficients are equal to zero. Other relevant and noteworthy statistics given in this table are the p-values for the t-statistics. These provide information on whether the variables in the model have a significant influence on financial constraints and therefore are different from zero. As can be seen in Table 5, the following control variables do not have significant coefficients in relation to financial constraints in the model: size (*FirmSize*), management experience (*Experience*), government ownership (*Government*), exporter (*Exporter*), GDP per capita (*GDPPCap*), GDP growth (*GDPGrowth*), inflation (*Inflation*) and domestic banking credit to private sector (*Priv*). This is at a 5% significance level.

To test H1, the coefficient for financial credibility (*FinCred*) is worth highlighting. Financial credibility (*FinCred*) has a negative and significant coefficient with a p-value of 0.022. This indicates that increased financial credibility (*FinCred*) has a negative effect on financial constraints (*FinCon*) at a 5% significance level. Rule of law (*RuOfLaw*) has a coefficient of approximately -0.003 and a p-value of 0.198.

The variable of interest for our second hypothesis (H2) in this table is the interaction term between financial credibility (*FinCred*) and rule of law (*RuOfLaw*), (*FinCred#c.RuOfLaw*). This term has a coefficient of 0.001 and a p-value of 0.328, which means that the interaction term is insignificant towards financial constraints (*FinCon*) at a 5% significance level. In other words, it appears that the rule of law (*RuOfLaw*) does not act as a moderator for the association between financial credibility (*FinCred*) and financial constraints (*FinCon*) in this regression model.

TABLE 5. REGRESSION RESULTS FOR ALL FIRMS (AUDITED AND UNAUDITED)

Robust Cluster Regression for Financial Constraints						
Y = FinCon	Coefficient	Robust Std. Err.	t	P > t	[95% Confidence Interval]	
FinCred	-0.1596737	0.0683655	-2.34	0.022	-0.2953602	-0.0239871
RuOfLaw	-0.0030172	0.0023298	-1.30	0.198	-0.0076411	0.0016068
FinCred#c.RuOfLaw	0.0014053	0.0014289	0.98	0.328	-0.0014306	0.0042412
CorruptionObstacle	0.1745537	0.0165914	10.52	0.000	0.1416244	0.207483
InfraObstacle	0.2260827	0.0119326	18.95	0.000	0.2023997	0.2497657
FirmSize	-0.0143366	0.0096349	-1.49	0.140	-0.0334591	0.004786
FirmAge	-0.0644714	0.0139884	-4.61	0.000	-0.0922345	-0.0367083
Experience	-0.0008572	0.0009964	-0.86	0.392	-0.0028348	0.0011205
Government	0.0641069	0.0606852	1.06	0.293	-0.0563365	0.1845503
Foreign	-0.2325518	0.0311529	-7.46	0.000	-0.2943817	-0.1707219
Exporter	-0.0500031	0.0276115	-1.81	0.073	-0.1048043	0.0047981
Compete	0.1746973	0.0282658	6.18	0.000	0.1185976	0.230797
GDP	-0.0813291	0.0164116	-4.96	0.000	-0.1139016	-0.0487566
GDPPerCapita	-0.0292374	0.0430071	-0.68	0.498	-0.1145945	0.0561198
GDPGrowth	0.0012345	0.0146735	0.08	0.933	-0.0278883	0.0303573
Inflation	-0.3184344	0.4013121	-0.79	0.429	-1.114928	0.478059
Priv	-0.0157036	0.1382037	-0.11	0.910	-0.2899997	0.2585926
Constant	5.31168	2.096668	2.53	0.013	1.150375	9.472985
Fixed Industry Effect	YES					
Fixed Year Effect	YES					
Number of observations	52381					
Prob > F	0.0000					
R-Squared	0.1567					
Clusters	98					

We also divided our sample into audited and unaudited firms. The regression of rule of law (*RuOfLaw*) was then run to test the impact on financial constraints (*FinCon*) for audited and unaudited firms separately. The results of these two regressions can be seen in Table 6, for audited firms, and Table 7, for unaudited firms.

As noted above, Table 6 displays the results for audited firms. A negative sign before the coefficient indicates that the variable might decrease financial constraints (*FinCon*) and if it is positive, it increases. The R-square for the pooled regression for audited firms is 0.1559. This means that 15.59% of the fluctuations in financial constraints for audited firms are covered with this model. The p-value for the F-statistics in the model is 0.000. This means that there are indications that not all the coefficients are equal to zero. The number of audited firms in the sample is 30,008 distributed over 98 economies. The p-value for rule of law (*RuOfLaw*) for audited firms is 0.394, which means that this variable is insignificant towards financial constraints (*FinCon*) at a 5% significance level for audited firms. Some control variables are not significant in relation to financial constraints (*FinCon*) in the model. These are: firm size (*FirmSize*), government ownership (*Government*), exporter (*Exporter*), GDP per capita (*GDPPerCapita*), GDP growth (*GDPGrowth*), inflation (*Inflation*) and the domestic banking credit to the private sector (*Priv*). Also, the intercept (*constant*) has a p-value of 0.082 for audited firms, which is insignificant (Table 8). The used significance value is 5%.

TABLE 6. REGRESSION RESULTS FOR THE AUDITED FIRMS

Pooled Robust Cluster Regression for Audited Firms						
Y = FinCon	Coefficient	Robust Std. Err	t	P> t	[95% Conf. Interval]	
RuOfLaw	-0.0019375	0.0022633	-0.86	0.394	-0.0064295	0.0025545
CorruptionObstacle	0.1698097	0.0164617	10.32	0.000	0.1371377	0.2024817
InfraObstacle	0.2316555	0.0151248	15.32	0.000	0.201637	0.261674
FirmSize	-0.0201422	0.010605	-1.90	0.060	-0.0411902	0.0009057
FirmAge	-0.0610801	0.0158756	-3.85	0.000	-0.0925888	-0.0295715
Experience	-0.0026234	0.0012052	-2.18	0.032	-0.0050153	-0.0002314
Government	0.1308335	0.0711357	1.84	0.069	-0.0103512	0.2720182
Foreign	-0.2454723	0.0373436	-6.57	0.000	-0.3195889	-0.1713556
Exporter	-0.0353301	0.0257369	-1.37	0.173	-0.0864107	0.0157504
Compete	0.1365299	0.0318922	4.28	0.000	0.0732328	0.1998271
GDP	-0.0795449	0.0144812	-5.49	0.000	-0.108286	-0.0508038
GDPPerCapita	0.0036458	0.0439597	0.08	0.934	-0.0836021	0.0908937
GDPGrowth	-0.003875	0.0162288	-0.24	0.812	-0.0360846	0.0283347
Inflation	-0.0343898	0.4090956	-0.08	0.933	-0.8463313	0.7775517
Priv	-0.0735752	0.1603966	-0.46	0.647	-0.391918	0.2447676
Constant	3.682136	2.092011	1.76	0.082	-0.4699257	7.834198
Fixed Industry Effect	YES					
Fixed Year Effect	YES					
Number of Observations	30008					
Prob > F	0.0000					
R-Squared	0.1559					
Clusters	98					

As noted on the previous page, Table 7 visualizes the results for unaudited firms. Negative signs before the coefficients indicate that when the variable increases, financial constraints (*FinCon*) will decrease. The regression for unaudited firms has an R-square of 0.1555. This model covers 15.55% of the movements in financial constraints for unaudited firms. The F-statistics revealed a p-value of 0.000. We can therefore reject the possibility that all coefficients in the model are equal to zero. The number of unaudited firms in the sample is 22,373, spread over 98 countries. The p-value for rule of law (*RuOfLaw*) in relation to financial constraints (*FinCon*) is 0.321 for unaudited firms, which means that rule of law (*RuOfLaw*) is insignificant towards financial constraints (*FinCon*) at a 5% significance level for unaudited firms. Further, some control variables are not significant in the model. These are: size (*FirmSize*), managers experience (*Experience*), government ownership (*Government*), exporter (*Exporter*), GDP per capita (*GDPPerCapita*), GDP growth (*GDPGrowth*), inflation (*Inflation*) and the domestic banking credit to private sector (*Priv*) (Table 7). In comparison to the audited firms, the intercept (*Constant*) for unaudited firms are significant with a 5% significance level.

TABLE 7. REGRESSION RESULTS FOR THE UNAUDITED FIRMS

Pooled Robust Regression for Unaudited Firms						
Y = FinCon	Coefficient	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
RuOfLaw	-0.0031069	0.0031151	-1.00	0.321	-0.0092895	0.0030756
CorruptionObstacle	0.1809379	0.0201824	8.97	0.000	0.1408815	0.2209944
InfraObstacle	0.2185391	0.0114325	19.12	0.000	0.1958487	0.2412295
FirmSize	-0.007628	0.0102642	-0.74	0.459	-0.0279995	0.0127436
FirmAge	-0.0707216	0.0199489	-3.55	0.001	-0.1103145	-0.0311286
Experience	0.0014218	0.0019095	0.74	0.458	-0.002368	0.0052117
Government	-0.0309901	0.0735011	-0.42	0.674	-0.1768694	0.1148891
Foreign	-0.1821614	0.0482123	-3.78	0.000	-0.2778494	-0.0864733
Exporter	-0.0665112	0.0471943	-1.41	0.162	-0.1601788	0.0271564
Compete	0.2172096	0.0339451	6.40	0.000	0.1498379	0.2845812
GDP	-0.0776362	0.0314629	-2.47	0.015	-0.1400814	-0.015191
GDPPerCapita	-0.062353	0.0661859	-0.94	0.348	-0.1937137	0.0690078
GDPGrowth	0.008513	0.0177367	0.48	0.632	-0.0266893	0.0437154
Inflation	-0.650864	0.4816894	-1.35	0.180	-1.606884	0.305156
Priv	0.0600548	0.1369148	0.44	0.662	-0.2116831	0.3317927
Constant	6.869633	2.502578	2.75	0.007	1.902708	11.83656
Fixed Industry Effect	YES					
Fixed Year Effect	YES					
Number of Observations	22373					
Prob > F	0.0000					
R-Squared	0.1555					
Clusters	98					

5.4. Margins for Financial Credibility

Figure 5 visualizes how financial constraints and rule of law interacts for audited and unaudited firms. The red line (bottom line) symbolizes audited firms and the blue line (top line) represents unaudited firms. The red and blue shadowed areas represent a 95% confidence interval. For instance, if rule of law (*RuOfLaw*) is 50, then the predicted financial constraint for audited firms is roughly 1.45. The 95% confidence interval at this point stretches between approximately 1.38 and 1.52. At the same point of rule of law (*RuOfLaw*), the predicted financial constraints (*FinCon*) for unaudited firms are roughly 1.59, with a confidence interval ranging between approximately 1.49 and 1.69. (Figure 4) These values should be put in contrast to the 0 to 4 scale financial constraints (*FinCon*) is based on.

Indications from the graph suggest decreasing financial constraints (*FinCon*) when there is an increase in rule of law (*RuOfLaw*). This is attributed both to audited and unaudited firms. Unaudited firms have a slightly more negative slope than the counterpart, which suggest that these firms gain more of an increased perception in rule of law (*RuOfLaw*). From the figure, it appears that a weaker level of rule of law suggests being less preferable for unaudited firms. When the perceived rule of law is close to 100, there is a small predicted difference in financial constraints for audited and unaudited firms. (Figure 5). This indicates that when the perceived rule of law in an economy is high, increased financial credibility in terms of auditing leads to minor improvements in access to external finance.

From the lowest to the highest value in rule of law, audited firms predicted constraints changes from roughly 1.52 to 1.47. For unaudited firms, the same range is approximately

1.67 to 1.48. There are indications of small improvements in predicted financial constraints over the whole spectrum of rule of law (Figure 5). This is attributed both to audited and unaudited firms.

Interesting observations can be distinguished when dividing rule of law (*RuOfLaw*) at the value of 50. When rule of law (*RuOfLaw*) takes a value between 0 and 50, increased financial credibility (*FinCred*) seems to improve the access to external finance for the firms'. A potential interpretation of this can be that that firms' operating in economies which have a value of rule of law (*RuOfLaw*) between 0 and 50 gaining on increasing their financial credibility (*FinCred*) in terms of lowering the financial constraints (*FinCon*). When the rule of law (*RuOfLaw*) takes a value between 50 and 100, the benefits of increasing the financial credibility (*FinCred*) seems to be less effective. This is in comparison to when rule of law (*RuOfLaw*) takes a value between 0 and 50. As discussed before, at values around 100 in rule of law (*RuOfLaw*), there is just a small benefit in predicted financial constraints (*FinCon*) between increased financial credibility (*FinCred*) and not increasing the financial credibility (*FinCred*) (Figure 5).

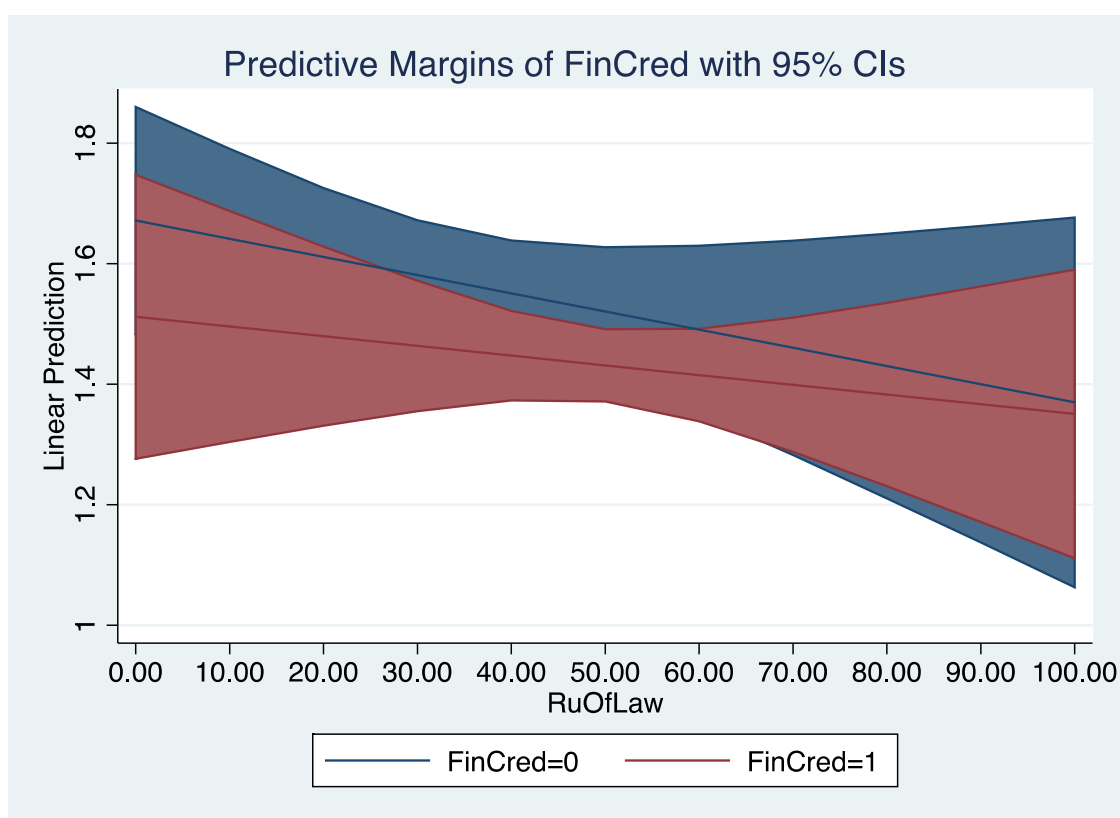


FIGURE 5. *PREDICTIVE MARGINS FOR FINANCIAL CREDIBILITY*

5.5. Testing for Multicollinearity

The unwanted effect when the explanatory variables covering a high degree of the same explanatory factors in the dependent variable can be referred to as multicollinearity. Consequences that can arise from multicollinearity, as discussed in the Practical Method chapter, are that variables that are significant can reveal to be insignificant towards each other (Cuddington, 1983, p. 119). It is therefore important, to validate the model, to

minimize the influence of multicollinearity. The reference value for high multicollinearity is values above 10 (Kennedy, 1998, p. 190).

The test of the VIF values can be seen in Table 8. No values above 10 appeared and the highest value was generated by the control variable GDP per capita (*GDPPerCapita*). This value is 2.20. In the model, the average VIF value generated is 1.34 (Table 8). There are therefore indications that no significantly high multicollinearity exists in the regression model.

TABLE 8. *VIF TABLE*

VIF Table	
<i>Variable</i>	<i>VIF</i>
GDPPerCapita	2.20
GDPGrowth	1.68
Inflation	1.63
RuOfLaw	1.58
Priv	1.53
GDP	1.32
FirmAge	1.27
Experience	1.26
FirmSize	1.22
CorruptionObstacle	1.18
Foreign	1.13
Exporter	1.13
FinCred	1.13
InfraObstacle	1.10
Compete	1.05
Government	1.03
Mean VIF	1.34

5.6. Testing for Heteroscedasticity

As discussed in the Practical Method, the possibility of heteroscedasticity in the model can affect the statistical tests and lead to a tilted regression line (Kennedy, 1998, p. 119-120). To detect possible violations in this basic assumption, the authors conducted a Breusch-Pagan / Cook-Weisberg test. The hypothesis used for this test is:

HA: The error term has a non-constant variance

Results from the test revealed a Prob > chi2 = 0.000 (Appendix 3). This means that we can reject the null hypothesis that the error term has a constant variance and there are indications of heteroscedasticity in the sample. By conducting a robust cluster pooled regression, the potential shortcomings (tilted regression line and non-constant variance for the variables) of violations in homoscedasticity, could be minimized.

5.7. Propensity Score Matching (PSM)

A matching analysis was conducted in order to isolate the effect of auditing on financial constraints (*FinCon*). This was done since the results from the regression analysis can be affected by other, unobservable factors than just the effect of auditing (Dehejia & Wahba,

2002, p. 151). As we discussed in the Practical Method chapter, this will provide a more valid indication if auditing has an effect on firms' financial constraints.

The results from the Propensity-Score Matching gave us a coefficient of -0.1 and a p-value of 0.000. With a 5% significance value, it means that financial credibility (*FinCred*) has a negative effect on financial constraints (*FinCon*). To put it simply, it appears that financial reporting credibility (through auditing) reduces firms' financial obstacles. The test is summarized in Table 9 and will be discussed further in the next chapter.

TABLE 9. *PROPENSITY SCORE MATCHING*

Propensity Score Matching					
Y = FinCon	Coefficient	Robust Std. Err	z	P> z	[95% Conf. Interval]
FinCred (1 vs 0)	-0.1008954	0.0138227	-7.30	0.000	-0.1279874 -0.0738033
Observations	52381				
Matches required	1				
Minimum	1				
Maximum	4				

6. Analysis and Discussion

This chapter will provide an analysis and discussion connected to the results presented in the previous chapter. These results will be connected to the theories and previous findings presented in Theoretical Frame of Reference and in Practical Method for the control variables. The aim of this chapter is to provide the reader with our interpretation of the results and how these are connected to previous findings. Potential reasons for the outcome will be discussed along with the hypotheses and research questions in the study.

6.1. The Negative Association Between Financial Credibility and Financial Constraints (H1)

The results for the regression line for audited and unaudited firms in Table 5 and the results from the PSM analysis in Table 9 gave significant results for the negative association between financial credibility and financial constraints. We can therefore reject the null hypothesis that there is no effect between these variables. Empirical support exists to claim that increased financial credibility decreases firms' financial constraints. The results are in line with previous studies (Hope et al., 2011, p. 935; Liu et al., 2015, p. 24; Cole & Dietrich, 2014, p. 3; Diamond & Verrecchia, 1991, p. 1325:1348; Brown et al, 2009, p. 151-152).

We acknowledge that the perception based proxy for financial constraints could lead to a measurement error in the dependent variable. This might happen because managers could have incentives to complain about their current situations, as concluded and argued for by Bertrand and Mullainathan (2001, p. 929) and Hope et al. (2011, p. 941).

Theory suggest that increased financial credibility decreases information asymmetry and auditing has been suggested to be suitable to increase financial credibility (e.g. Jensen & Meckling, 1976, p. 323; Healy & Palepu, 2001, p. 418; Hope et al., 2011, p. 935). Potential effects of decreasing information asymmetry are decreased agency cost, risk associated with adverse selection and risk with earnings management (Jensen & Meckling, 1976, p. 323; Healy & Palepu, 2001, p. 415:431; Akerlof, 1970, p. 489-492; Healy & Wahlen, 1999, p. 368-369; Burgstahler et al., 2006, p. 1012-1013). However, due to the type of measurement in this thesis, it cannot be stated with certainty that these factors are actually decreasing. This causal relationship between auditing and decreased information asymmetry can be affected by other factors. For instance, the audited firms can have access to wider capital markets and operate in more attractive industries to invest in. These factors can also affect firms' financial constraints without decreasing potential information asymmetry. Previous studies suggest that adverse selection and earnings management are decreasing due to the increase in distributed information, but we cannot say with certainty that this is actually happening in our findings.

We presented arguments in the hypotheses and in the theoretical frame of reference that increased financial credibility can decrease the required return among investors. These arguments were based on the findings by Tsai and Hua (2009, p. 265), Easley and O'Hara (2004, p. 1571) and Hope et al. (2011, p. 935). Even if these findings suggest being plausible, the interpretation of "information risk" and the association this has with required return is important. We did not investigate different percentages investors demand in return, but rather how top managers perceive how severe obstacles to external finance are for firms. It is therefore important that we do not claim that our findings on the negative relationship between financial credibility and financial constraints suggest a

decrease in cost of capital. However, based on previous findings, there are indications that firms' cost of capital is decreasing when these are audited. This can be the result for the decrease in firms' financial constraints.

Theory and previous findings can give us valid information to interpret the results. Based on the type of measurement of the variables in this thesis, we cannot say with certainty that information asymmetry decreases in the relationship. It is therefore difficult to say exactly what caused the decrease in financial constraints, except that auditing has a part in it. However, the reasons why financial constraints decreases are not in the scope of this study, but rather if there is a decrease caused by financial credibility. This means that we can accept H1. We can conclude that RQ1 is answered with a positive response.

RQ1: "Does financial credibility decrease the financial constraints faced by firms?"

H1: Financial reporting credibility reduces financial constraints

-H1 is accepted-

The implication of the results indicates that when firms' increasing the financial credibility, their financial constraints will decrease as a response. Based on the p-values, empirical support exists for this claim.

6.2. The Weakening Impact of Rule of Law (H2)

The regression results in Table 5 gave insignificant results regarding the weakening effect of rule of law. P-values for the impact of rule of law on the association between financial credibility and financial constraints were above the 5% significance level. The insignificance of the impact was revealed for both the full sample and for audited and unaudited firms separately (Table 5; Table 6; Table 7). No empirical support for a weakening effect of rule of law on financial credibility and financial constraints therefore exists.

Previous scholars have shown that various country level indicators have an effect on the financing environment. As discussed in the theoretical frame of reference and in the hypotheses, La Porta et al. (1997, p. 1131) found evidence for smaller capital markets when investor protections are low. Ball et al. (2000, p. 2) found that the demand for financial information is lower when investor protections are low, which can affect the quality of the disclosed information (Chen et al., 2011, p. 1259). When the quality in financial information decreases, firms' financial constraints can increase (Lambert et al., 2007, p. 385; Hope et al., 2009, p. 177; Chen et al., 2011, p. 1283). Further, Beck et al. (2005, p. 137) and Jaffee and Russell (1976, p. 665) argues for well-functioning legal systems in an economy in order to decrease financing obstacles for firms. In addition to this, La Porta et al. (2000, p. 5-6) argues that expropriation against investors increases when the quality of governance decreases. We did not find significant support for a higher degree of distributed information among firms to decrease financial constraints, which was suggested by Brown et al. (2009, p. 151-152). Reasoning behind this can be attributed to the more diverse sample used in this study, where we used firms operating in economies worldwide. Brown et al. (2009, 151-152) used firms operating in Eastern Europe and former Soviet Union.

In our study, we did not find any empirical findings for of a weakening effect of rule of law on the association between financial credibility and financial constraints. The question that arises is why? Differences in how managers perceive and define constraints due to various reasons can affect this relationship (Bertrand & Mullainathan, 2001, p. 929). The findings of Cole and Dietrich (2014, p. 3) can also explain the results, where firms that does not need a loan gets audited to a lower degree.

There was a marginal difference between audited and unaudited firms in predicted financial constraints when rule of law was absent or low (Figure 4). We hypothesized a weakening effect between financial credibility and financial constraints, due to that financial disclosure can lack quality with decreasing legal stability (Chen et al., 2011, p. 1259). Based on previous findings, the quality of financial disclosure is an essential factor when decreasing financial constraints (Hope et al., 2009, p. 177; Lambert et al., 2007, p. 385; Chen et al., 2011, p. 1283). However, we did not find any empirical support for this effect. Potential reasons for this can be linked to our proxy for financial constraints (*FinCon*) and the arguments by Cole and Dietrich (2014, p. 3). Cole and Dietrich (2014, p. 3) claim that firms that does not need a loan, does not get externally audited. Based on the perception based proxy for financial constraints (*FinCon*), a potential scenario is that the top managers' responding to Enterprise Surveys does not feel that the firm has any financial obstacles. This can affect the choice of being audited. The reason for the insignificant rule of law (*RuOfLaw*) can therefore be attributed to firms' decisions and need for external loans, which might be independent of our moderator in the study. Even if there is a possibility of decreasing quality in disclosed information with decreased rule of law, this did not have an impact on the outcome in the study.

Other possible explanations can be attributed to the theory of comparative thinking and the amount of capital in circulation within economics. Comparative thinking means that we are affected by our environment in relation to our cognitive state. For instance, how we perceive things and situations around us are derived from what we can see and feel (Markman & McMullen, 2003, p. 244). Comparative thinking in this case could be that the responding firms for the measurement of financial constraints in the study are affected by and make comparisons to firms around them. These firms can be of the same size and operate within the same industries as themselves. Due to the possibility that the results can be affected by comparative thinking, this might have made the rule of law irrelevant.

Indications that many firms in the sample are domestically operating companies can be seen in Table 3. The mean value of the variable Exporter was 0.17. This means that only 17% of the firms in the sample are exporting goods or services in any degree. Combining this with the theory of comparative thinking, it is possible that a majority of the firms operating only in a domestic market. A possible effect is that the firms does not make comparisons to firms outside their spectrum of operations and might therefore base their own perceived financial obstacles on how other firms' obstacles are. This can lead to a systematic error, since the measurement of financial constraints is based on firms' perceptions of the obstacles in attaining finance. The perception can therefore be relative and vary with what the firms' compare themselves to.

Despite various reasons why rule of law revealed to be insignificant, it all comes down to this: we have no empirical support for the claim that the ability of financial credibility to reduce financial constraints decreases when rule of law decreases. We can therefore

not reject H2. Due to the lack of empirical findings, we cannot give a positive response to RQ2.

RQ2: Does a weak perception of rule of law weaken the negative association between financial credibility and financial constraints?"

H2: The ability of financial reporting credibility to reduce financial constraints decreases when Rule of Law (at the country level) decreases

-No empirical support for H2-

The implication of the results indicates that we found no empirical support for the weakening effect of rule of law on the association between financial credibility and financial constraints. However, even if no empirical support exists for the association, this does not mean that rule of law has no effect on the association. Finding significant values for the association can be something that future researchers can investigate.

6.3. The Influence of the Control Variables

Our results for some of the control variables were also insignificant. For instance, the insignificance of firm size does not support the results in Liu et al. (2015, p. 34). These authors found evidence at a 5% significance level that firm size is an important variable when it comes to accessing external finance. However, in the model used in this thesis, no empirical findings were found. The insignificance is not due to a different measurement, since the choice of using the logarithm of firm size is in line with this previous study. One possible explanation might be due to the difference in sample. The sample in this study consists of new data and economies that were not included in Liu et al. (2015).

The control variable government ownership (*Government*) was also insignificant in the model. The insignificance in the model are in line with the study by Liu et al. (2015, p. 34) and the measurement of this variable as a dummy are equal to Liu et al. (2015, p. 47) and Beck et al. (2005, p. 143). Further, whether the firm is an exporter (*Exporter*) also revealed to be insignificant in the model. Even if this variable was measured as a dummy variable, which is in the same way as Liu et al. (2015, p. 33-34), the result of this variable is not equal to this study. In the regression model presented in Liu et al. (2015, p. 34), exporter revealed to be significant.

The variable *Priv* was not significant in the model, which contradicts the previous study by Liu et al. (2015, p. 34) and Beck et al. (2005, p. 149). In this study, this variable was measured as the domestic banking credit to the private sector divided by GDP. This type of measurement for this variable is similar to both Liu et al. (2015, p. 33) and Beck et al. (2005, p. 149). There are four macroeconomic variables controlled for in the model. GDP (*GDP*) was the only one who got significant values. Inflation (*Inflation*), GDP per capita (*GDPPerCapita*) and GDP growth (*GDPGrowth*) were not significant in our model. We cannot compare their significance to Liu et al. (2015, p. 33-34), but their existence and their way of measurement in the model is in line with that study.

Even if all the control variables revealed to be significant in relation to financial constraints alone, the impact of these in the model can be questioned (Table 5; Table 6; Table 7). However, due to that these variables has been included in previous studies and

they enable us to control for the business environment for firms, the importance of including them exists. By excluding them, we would have missed macro and micro economical factors that affecting firms' financial constraints and therefore growth.

Many of the control variables were also significant in the model towards financial constraints. For instance, age of the firm (*FirmAge*) was significant in Liu et al. (2015, p. 34), which is in line with the results in our thesis. Foreign ownership (*Foreign*), GDP (*GDP*) and competition (*Compete*) are also significant in the model, where foreign ownership and GDP have a negative impact and competition has a positive impact on financial constraints. The significance of foreign ownership (*Foreign*) and competition (*Compete*) are similar to Liu et al. (2015, p. 34) and indicates that these have an impact on financial constraints. In addition, corruption obstacles (*CorruptionObstacle*) and infrastructure obstacles (*InfraObstacle*) were also positively significant in all the regression models.

7. Conclusion

This chapter will re-establish the stated research question presented in the Introduction chapter and present possible limitations with the study. The study's contribution to existing theory will be discussed together with suggestions for further research. An elaboration of the quality aspects of the study, in terms of validity, reliability and replicability will be presented.

7.1. Answering the Research Questions

In this study, we investigated the relationship between financial credibility and financial constraints and the moderating effect that the country level indicator of rule of law has on this relationship. This was done through a quantitative study. Objectives behind this study have been to increase the understanding how firms are affected by rule of law on a country level and how this in turn affects firms' access to financing. Financial credibility has been measured as a dummy variable, whether the firm is audited or not. Financial constraints are based on data from WBES, where top managers' rank their perception of the firms' obstacles in obtaining external finance. This variable took a value between 0 and 4, where 0 represents a minor obstacle and 4, a very severe obstacle. The proxy for rule of law was the World Bank's index, which takes into consideration agents perceived trust in rules of society, quality of contract enforcement, property rights, the police, the courts, and the likelihood for crime and violence in the economies (World Bank, 2016).

In order to answer the two research questions stated in this thesis, a quantitative research has been conducted. We used secondary data collected from Enterprise Surveys, which contained firm level data and gathered by the World Bank, and macro economic data from the World Bank. This data was analyzed in the statistical software STATA. The number of firms analyzed in this study is 52,381 divided over 98 economies.

The literature used as underlying theory when conducting our study has been carefully collected and summarized. We only included the most relevant articles within the fields of auditing, access to finance and country level governance to assure the validity of our arguments. These articles were mainly linked to information asymmetry. Presented articles in this study have influenced and contributed to our stated hypotheses. The control variables used in the thesis to test the hypotheses have been influenced by the studies of Liu et al. (2015, p. 33-34) and Hope et al. (2011, p. 944:956).

The two hypotheses in the study were stated as follows:

H1: Financial reporting credibility reduces financial constraints

H2: The ability of financial reporting credibility to reduce financial constraints decreases when Rule of Law (at the country level) decreases

In order to test the hypotheses, we used a regression for audited and unaudited firms together, a pooled regression for these types of firms separately and propensity score matching. The regression analysis was conducted with fixed effect modeling, to control for firm differences caused by differences in sampling year and in which industries the firms are operating in. In addition, the regression models were made robust and with clusters, to control for the violation of the basic assumption of homoscedasticity. In addition to this, a matching analysis was conducted for the association between financial

credibility and financial constraints. The results revealed to be negatively significant for the relationship, which was the result for both the combined regression model and the matching analysis. These findings are in line with previous studies, e.g. Liu et al. (2015, p. 34) and Hope et al. (2011, p. 935). The effect of rule of law revealed to be insignificant. This means that we found no empirical support to state that the ability of financial reporting credibility to reduce financial constraints decreases, when rule of law decreases. This insignificance was supported by the pooled regression models, which also revealed insignificant results. We accepted therefore H1, but we found no empirical support to reject the null hypothesis for H2.

The two research questions in the study were stated as follows:

RQ1: “Does financial credibility decrease the financial constraints faced by firms?”

RQ2: Does a weak perception of rule of law weaken the negative association between financial credibility and financial constraints?”

There was empirical support for the negative association between financial credibility and financial constraints. No empirical support exists for the weakening effect rule of law has on this relationship. We can therefore claim that financial credibility decrease financial constraints faced by firms for RQ1. We cannot claim that a weak perception of rule of law weakens the negative association between financial credibility and financial constraints for RQ2. However, there was an indication of a negative trend between the association, which revealed to be insignificant.

7.2. Limitations with the Study

In line with many other business research studies, limitations with this study exist. Most notable is the measurement through the perception based dependent variable. As discussed throughout the study, perception is based on personal beliefs and what the respondents compare their situation with. It can therefore be a lurking possibility of a measurement error in the sample, since many firms can compare the financial situation with firms operating with the same macroeconomic circumstances and that are of the same size as themselves. A potential consequence of this can be that the concept of “financial constraints” becomes subjective and can have affected the responses given by the firms. Further, an open discussion to how financial constraints perceived by managers should be measured would be appropriate, since there are no universal standards how this concept should be interpreted, to our knowledge. Also discussed in the study, managers can have incentives to exaggerate the actual constraints for the firm. It can therefore be argued that a more suitable proxy would be, for instance, the individual firm's cost of capital. However, due to the time frame of this study and the fact that the firms in the Enterprise Surveys are anonymous, this hindered the possibility to get access to a number based proxy that covers the same research frame that was used in the study. The use of a perception based proxy to measure financial constraints is not solely linked to this study, since this has been done in previous research. Previous researchers have found significant relationships between financial credibility and financial constraints using this variable and we found the same significant results (e.g. Liu et al., 2015, p. 24; Hope et al., 2011, p. 941; Table 5). The use of similar measurements in previous studies gives support for the use of this proxy.

Other limitations with this study includes that countries with mandatory auditing was not excluded. Reasoning behind not excluding the firms in these countries is due to the time frame and the problem to access valid data regarding the auditing requirements in these countries. This can have affected the result, since countries that demand firms to be audited covers both firms that have no difficulty in accessing finance and firms that face this problem, which can have given skewed results. Previous scholars that investigated the association between financial credibility and financial constraints found a significant relationship with country level indicators as moderators. The limitation of not excluding firms operating in economies with mandatory auditing can therefore have affected the results in this study. Distribution of audited and unaudited firms across the original sample can be seen in Appendix 7.

Some control variables were insignificant in the model, which can question the reasoning of including them. Many of the insignificant control variables were macro economical variables. If we would have excluded them, we believe that we would have missed an important aspect that might influences firms' access to financing. We therefore decided to include them, despite the insignificance in the model. The reasoning for this was that the insignificance was not based on potential multicollinearity, so there was not any violation in the basic assumption by including them.

Based on that we tested for association and not reverse causality in the study is a potential limitation. A lurking limitation therefore lies in the possibility of endogeneity between the variables and can have affected the results in the study. This means that the degree of financial constraints can have affected the choice for firms to increase the financial credibility, in contrast to that financial credibility affects the financial constraints. Also, endogeneity and the casual effect can be affected by the rule of law within economies. This means that we tested the association between financial credibility and financial constraints and how rule of law modifies this association, while it can be the other way around. A lower degree of financial constraints can be an enabler for improving the degree of rule of law within the economies. The potential risk for endogeneity and that we did not test for reverse causality can be seen as a limitation and can have affected the study.

We cannot with certainty state that the data received from WBES is accurate. It is therefore a limitation that our study is based on secondary data and that the authors of this thesis were not in contact directly with the sample. However, the used data was collected by recognized institutions and can therefore be seen as reliable. A justified explanation of this will follow in section 7.5.

7.3. Contribution

A large majority of articles exist within the subject of information sharing and financial constraints (e.g. Liu et al., 2015; Hope et al., 2011; Brown et al., 2009). This means that our contribution with the significant result between financial credibility and financial constraints is not groundbreaking. However, our theoretical contribution lies in the impact of the moderating variable rule of law on this association. Even if scholars before us have investigated how country level indicators affect firms' financial constraints, no known previous study has investigated how rule of law affects the association between financial credibility and financial constraints. The difference between the country level indicator rule of law and other governance indicators, such as investor protections and property

rights, is the much wider coverage. The rule of law variable takes into account more aspects that affects firms' environment than for instance investor protection does. Instead of just investigating how the investors are protected and how this affects firms access to finance, our study has investigated how firms are affected of a wider legal situation that expands outside the investment market.

Even if the empirical evidence does not support the claim that rule of law has a weakening effect on the association between financial credibility and financial constraints, there were some indications of a downward sloping trend between these variables. This is something that future researchers can investigate further. The contribution made by this study is therefore an increased understanding in how the perceived legal situation in economies affects firms' access to financing. Improvements in future research regarding financial credibility, financial constraints and rule of law will be discussed in the following text.

7.4. Further Research

With the limitations in mind, we will provide suggestions for further research. For instance, since our study was conducted on a global level and gave insignificant results, it would be interesting to see if there are regional differences. Many economies differ in culture and similar aspects and it is possible that a study focusing on a region instead of the world as a whole can give significant results. We therefore suggest future researchers to narrow down the amount of countries and the focus of the study on a regional level instead, e.g. Europe. This can lead to significant results for the impact of rule of law on financial constraints and financial credibility. There were indications of a downward sloping trend between the variables and this can become significant with focusing on a region instead. Also, it appeared in Figure 5 that firms' operating in economies with rule of law (*RuOfLaw*) between 0 and 50 gained more in increasing their financial credibility, compare to economies that scored between 50 and 100.

Improvements for future researchers can include changing the proxy for financial constraints. As we discussed throughout the study, perception is difficult to measure and might have given different results compared to if we would have used cost of capital as a measurement instead. We are aware of the difficulties in getting access to a proxy like the one suggested, since many companies in the sample are private firms and it is difficult to get access to valid information from these. Also, another possible limitation with this suggestion is that the firms in the Enterprise Surveys are anonymous, which limits this suggestion. However, it would be interesting to see if significant results appeared with a change of the proxy.

7.5. Truth Criteria

There exist three important truth criteria in business research, according to Bryman and Bell (2011, p. 41-42). The criteria are reliability, replicability and validity. These will be discussed in the following text.

7.5.1. Reliability

This criterion is concerned with the replicability of the study (Bryman & Bell, 2011, p. 41). That is, are the results presented in this study to be trusted? The data is collected from Enterprise Surveys and various databases provided by the World Bank, which support that the reliability of the results are met. If other researchers decided to conduct a study that is exactly the same as this one, the results would not differ from the ones that

we have presented in this study. The data can therefore be argued to be low on personal biases. The possibility to manipulate the variables in a way that would benefit us to get a hypothetically preferred result was therefore limited. Our argument is therefore that this criterion is met.

7.5.2. Replicability

The criterion for replicability covers the need for the study to be replicable (Bryman & Bell, 2011, p. 41-42). That is, will other researchers get the same results as us if they did a similar study? Here, as discussed under the reliability, the possibility that other researches will get the same results as us is relatively high. The use of similar proxies will most likely give the same results as we have presented in this study. We therefore argue that the criterion for replicability is met in this thesis.

7.5.3. Validity

The validity aspect is argued to be the most important out of the three criteria (Bryman & Bell, 2011, p. 42). The need for correctly interpreted results and conclusions are important for a business study (Bryman & Bell, 2011, p. 42). This means, have we really measured what we intended to measure? The use of whether firms have been audited as a proxy for financial credibility can be considered reliable. This type of proxy has been used in previous studies to measure the same thing as we intended to measure (e.g. Liu et al., 2015, p. 33; Hope et al., 2011, p. 941:956). The choice of being audited has also been argued to be a good way to decrease information asymmetry and increase the financial credibility (e.g. Healy & Palepu, 2001). Further, the use of the proxy for financial constraints, which took a value between 0 and 4 depending on the amount of constraints the firms perceived that they were facing, has also been used in previous research to measure the same aspect as we intended to (e.g. Liu et al., 2015, p. 33; Hope et al., 2011, p. 941:956). We argued for a better proxy for this variable, but the use of the proxy still has to be considered valid. The validity aspect is therefore relatively hard to question regarding the choice of measurement for these variables. Regarding the measurement of rule of law, we used a rule of law index, which can be considered valid. The reasoning behind this is that the intention with this variable was to measure rule of law and an index of this can therefore be argued to be a reliable way to do so. Therefore, our assumption is that this criterion is met.

Reference list

- Akerlof, G. (1970). The Market for "Lemons": Quality Uncertainty and the Market Mechanism. *The Quarterly Journal of Economics*, 84 (3), 488-500.
- Alin, A. (2010). Multicollinearity. *Wiley Interdisciplinary Reviews: Computational Statistics*, 2 (3), 370-374.
- Ball, R., Kothari, S.P., & Robin, A. (2000). The effect of international institutional factors on properties of accounting earnings. *Journal of Accounting and Economics*, 29, 1-51.
- Beck, T., Demirgüç-Kunt, A., & Maksimovic, V. (2005). Financial and Legal Constraints to Growth: Does Firm Size Matter?. *The Journal of Finance*, 60 (1), 137-177.
- Bertrand, M., & Mullainathan, S. (2001). Are CEOs Rewarded for Luck? The Ones Without Principals Are. *The Quarterly Journal of Economics*, 116 (3), 901-932.
- Bosma, N., van Praag, M., Thurik, R., & de Wit, G. (2004) The Value of Human and Social Capital Investments for the Business Performance of Startups. *Small Business Economics*, 23, 227-236.
- Brown, M., Jappelli, T., & Pagano, M. (2009). Information sharing and credit: Firm-Level evidence from transition countries. *Journal of Financial Intermediation*, 18, 151-172.
- Bryman, A. & Bell, E. (2011). *Business Research Methods*. 3rd edition. New York: Oxford University Press.
- Burgstahler, D.C., Hail, L., & Leuz, C. (2006). The Importance of Reporting Incentives: Earnings Management in European Private and Public Firms. *The Accounting Review*, 81 (5), 983-1016.
- Chen, F., Hope, O.K., Li, Q., & Wang, X. (2011). Financial Reporting Quality and Investment Efficiency of Private Firms in Emerging Markets. *The Accounting Review*, 86 (4), 1255-1288.
- Cole, R.A & Dietrich, A. (2014). SME Credit Availability Around the World: Evidence from the World Bank's Enterprise Surveys. *Social Science Research Network*, 1-41.
- Cooper, R.G., & Kleinschmidt, E.J. (1985). The Impact of Export Strategy on Export Sales Performance. *Journal of International Business Studies*, 16 (1), 37-55.
- Cuddington, J.T. (1983). Currency substitution, capital mobility and money demand. *Journal of International Money and Finance*, 2 (2), 111-133.
- Dehejia, R.H., & Wahba, S. (2002). Propensity Score Matching Methods for Non-experimental Causal Studies. *Review of Economics and Statistics*, 84 (1), 151-161.
- Diamond, D.W., & Verrecchia, R.E. (1991). Disclosure, Liquidity and the Cost of Capital. *The Journal of Finance*, 46 (4), 1325-1359.

Dunne, T., Roberts, M.J., & Samuelson, L. (1988). Patterns of Firm Entry and Exit in U.S. Manufacturing Industries. *The RAND Journal of Economics*, 19 (4), 494-515.

Easley, D., & O'Hara, M., (2004). Information and the Cost of Capital. *The Journal of Finance*, 59 (4), 1553-1583.

Enterprise Survey. (2016). Survey Methodology. <http://www.enterprisesurveys.org/methodology>. [Retrieved 16-05-18]

Francis, J.R., Khurana, I.K., & Pereira, R. (2003). The role of accounting and auditing in corporate governance and the development of financial markets around the world. *Asia-Pacific Journal of Accounting & Economics*, 10 (1), 1-30.

Greenaway, D., Guariglia, A., & Yu, Z. (2012). The more the better? Foreign ownership and corporate performance in China. *The European Journal of Finance*, 20 (7-9), 681-702.

Healy, P.M., & Palepu, K.G. (2001). Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature. *Journal of Accounting and Economics*, 31, 405-440.

Healy, P.M., & Wahlen, J.M. (1999). A Review of the Earning Management Literature and its Implications for Standard Setters. *Accounting Horizons*, 13 (4), 365-383.

Hope, O.K., Kang, T., Thomas, W.B., & Yoo, Y.K. (2009). Impact of Excess Auditor Remuneration on the Cost of Equity Capital around the World. *Journal of Accounting, Auditing & Finance*, 24 (2), 177-210.

Hope, O.K., Thomas, W., & Vyas, D. (2011). Financial credibility, ownership, and financing constraints in private firms. *Journal of International Business Studies*, 42 (7), 935-957.

Jaffee, D.M., & Russell, T. (1976) Imperfect information, Uncertainty and Credit Rationing. *The Quarterly Journal of Economics*, 90 (4), 651-666.

Jensen, M.C., & Meckling, W.H. (1976). Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure. *Journal of Financial Economics*, 3, 305-360.

Kaufman, L., & Rousseeuw, P.J. (2009). *Finding Groups in Data: an introduction to cluster analysis*. 2nd Edition. Wiley-Interscience.

Kennedy, P. (1998). *A Guide to Econometrics*. 4th edition. Malden: Blackwell Publishers Inc.

Kennedy, P. (2003). *A Guide to Econometrics*. 5th edition. Malden: Blackwell Publishers Inc.

King, G., & Nielsen, R. (2016). *Why Propensity Scores Should Not Be Used for Matching*. [Unpublished document].

- La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. (2000). Investor protection and corporate governance. *Journal of Financial Economics*, 58 (2000), 3-27.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R.W. (1997). Legal Determinants of External Finance. *The Journal of Finance*, 52 (3), 1131-1150.
- Lambert, R., Leuz, C., & Verrecchia, R.E. (2007). Accounting Information, Disclosure, and the Cost of Capital. *Journal of Accounting Research*, 45 (2), 385-420.
- Liu, T., Ullah, B., Wei, Z., & Xu, L.C. (2015). The Dark Side of Disclosure: Evidence of Government Expropriation from Worldwide Firms. *World Bank Policy Research Working Paper*, 7254, 2-48.
- Markman, K.D. & McMullen, M.N. (2003). A reflection and evaluation model of comparative thinking. *Personality and Social Psychology Review*, 7 (3), 244-267.
- McLean, R.D., Zhang, T., & Zhao, M. (2012). Why Does the Law Matter? Investor Protection and Its Effects on Investment, Finance, and Growth. *The Journal of Finance*, 67 (1), 313-350.
- Meggison, W.L., & Netter, J.M. (2001). From State to Market: A Survey of Empirical Studies on Privatization. *Journal of Economic Literature*, 39 (2), 321-389.
- Mukka, K., & Tervo, H. (2013) Air transportation and regional growth: which way does the causality run?. *Environment and Planning A*, 45, 1508-1520.
- Oxley, J.E. and Yeung, B., 2001. E-commerce readiness: Institutional environment and international competitiveness. *Journal of International Business Studies*, 705-723.
- Pradhan, R.P., & Bagchi, T.P. (2013). Effect of transportation infrastructure on economic growth in India: The VECM approach. *Research in Transportation Economics*, 38, 139-148.
- PRS Group. 1996. International Country Risk Guide. New York, NY: Political Risk Services, IBC USA (Publications) Inc.
- Robinson, A.D. and Acemoglu, R., 2012. *Why nations fail. The Origins of Power, Prosperity and Poverty*, Nueva York.
- Retriever Business (2015). Retriever Businessmanual. [Brochure] Retriever Business.
- Rosenbaum, P.R. & Rubin, D.B. (1983). The Central Role of the Propensity Score in Observational Studies for Causal Effects. *Biometrika*, 70 (1), 41-55.
- Scalia, A. (1989) The Rule of Law as a Law of Rules. *The University of Chicago Law Review*, 56 (4), 1175-1188.
- Tanzi, V., & Davoodi, H. (2000) Corruption, Growth, and Public Finances. International Monetary Fund Working Paper, 00/182, 2-26.

Tsai, H., and Hua, M. (2009). The Effects of Audit Quality on Loan Interest Rates for Small and Medium-Sized Enterprises in Taiwan. *International Journal of Business*, 14 (3), 265-281.

Weinberg, J.A. (1994). Firm size, Finance, and Investment. *Economic Quarterly*, 80 (1), 19-40.

World Bank. (2016). Rule of Law. <http://info.worldbank.org/governance/wgi/pdf/rl.pdf>
[Retrieved 16-05-18]

Appendix 1: Descriptive Statistics for Audited and Unaudited Firms Separately

These two tables summarize the descriptive statistics for audited and unaudited firms respectively. Table 10 summarizes the statistics for audited firms and Table 11 summarizes the statistics for unaudited firms. *FinCon* is the perceived obstacles of accessing external finance, derived from top managers' responses from World Bank's Enterprise Surveys (WBES). The responses take the value 0, no obstacle, 1, minor obstacle, 2, moderate obstacle, 3, major obstacle or 4, very severe obstacle. *FinCred* is based on whether the firm has been audited or not and take a value of 1, the firm's annual report has been externally audited, and 0 otherwise. *RuOfLaw* is the World Bank's (WB) index and takes a value between 0 (low) and 100 (high).

CorruptionObstacle measures the amount of perceived obstacles corruption has on current operations for any given firm. This variable takes values of 0, no obstacle, 1, minor obstacle, 2, moderate obstacle, 3, major obstacle or 4, very severe obstacle. *InfraObstacle* measures if the firms perceive the transportation of goods, supplies and inputs to be an obstacle for current operations. The variable takes values of 0, no obstacle, 1, minor obstacle, 2, moderate obstacle, 3, major obstacle or 4, very severe obstacle. *FirmSize* is measured as a logarithm of a firm's total sales in year $t-1$. *FirmAge* is measured as the natural logarithm of a firm's survey year subtracted by the founding year. *Experience* measures the amount of years the top manager has worked within the current sector and the variable takes on the numerical value of actual years of experience. *Government* measures if the firm has ownership by the domestic government. This is measured through a dummy variable, which takes a value of 1, the firm has government ownership in some degree, 0 otherwise. *Foreign* is measured as a dummy variable and takes the value 1, the firm has foreign ownership, and 0 otherwise. *Exporter* is measured as a dummy variable and takes the value 1, the firm is an exporter, and 0 otherwise. *Compete* is measured as a dummy variable and takes the value 1, the firm has competition from the informal sector, and 0 otherwise.

GDP is the average logarithm of GDP (USD) in 2014, 2013 and 2012. *GDPPerCapita* is the average logarithm of GDP per capita (USD) in 2014, 2013 and 2012. *GDPGrowth* is the average GDP growth in 2012, 2013 and 2014. *Priv* is the domestic banking credit to the private sector over GDP.

TABLE 10. *DESCRIPTIVE STATISTICS FOR AUDITED FIRMS*

Descriptive Statistics for Audited Firms								
Variable	Observations	Mean	Std. Dev.	Minimum	First Quantile	Median	Third Quantile	Maximum
FinCon	50226	1.42	1.30	0.00	0.00	1.00	2.00	4.00
FinCred	50586	1.00	0.00	1.00	1.00	1.00	1.00	1.00
RuOfLaw	50586	43.29	20.59	0.48	28.37	42.79	54.33	97.60
CorruptionObstacle	50578	1.77	1.48	0.00	0.00	2.00	3.00	4.00
InfraObstacle	50586	1.23	1.26	0.00	0.00	1.00	2.00	4.00
FirmSize	45411	17.33	3.00	0.00	15.22	17.13	19.26	33.85
FirmAge	38796	2.71	0.81	0.00	2.20	2.77	3.26	4.74
Experience	50586	17.86	11.13	0.00	10.00	15.00	25.00	75.00
Government	50572	0.02	0.14	0.00	0.00	0.00	0.00	1.00
Foreign	50543	0.14	0.35	0.00	0.00	0.00	0.00	1.00
Exporter	50208	0.22	0.42	0.00	0.00	0.00	0.00	1.00
Compete	45090	0.49	0.50	0.00	0.00	0.00	1.00	1.00
GDP	49994	25.66	2.11	19.58	23.99	25.75	27.41	29.88
GDPPerCapita	49994	8.19	1.08	5.54	7.31	8.18	8.98	10.98
GDPGrowth	49922	4.35	2.60	-10.31	2.18	4.62	6.42	13.61
Inflation	47167	4.80	0.12	4.59	4.71	4.80	4.87	5.47
Priv	47617	0.50	0.32	0.04	0.27	0.50	0.59	1.51

TABLE 11. *DESCRIPTIVE STATISTICS FOR UNAUDITED FIRMS*

Descriptive Statistics for Unaudited Firms								
Variable	Observations	Mean	Std. Dev.	Minimum	First Quantile	Median	Third Quantile	Maximum
FinCon	43467	1.63	1.38	0.00	0.00	2.00	3.00	4.00
FinCred	45132	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RuOfLaw	45132	37.79	21.56	0.48	23.08	35.10	54.33	97.60
CorruptionObstacle	45116	1.70	1.50	0.00	0.00	2.00	3.00	4.00
InfraObstacle	45132	1.20	1.27	0.00	0.00	1.00	2.00	4.00
FirmSize	39624	16.16	2.94	2.77	14.08	15.96	17.96	30.20
FirmAge	31232	2.44	0.80	0.00	1.95	2.56	2.94	4.73
Experience	45132	16.25	10.81	0.00	8.00	15.00	22.00	75.00
Government	45127	0.01	0.10	0.00	0.00	0.00	0.00	1.00
Foreign	45123	0.06	0.24	0.00	0.00	0.00	0.00	1.00
Exporter	44973	0.10	0.31	0.00	0.00	0.00	0.00	1.00
Compete	39021	0.54	0.50	0.00	0.00	1.00	1.00	1.00
GDP	44063	25.44	2.07	19.58	23.74	25.75	26.97	29.88
GDPPerCapita	44063	8.22	1.09	5.54	7.31	8.20	9.28	10.98
GDPGrowth	43799	3.85	2.81	-10.31	1.99	4.22	5.54	13.61
Inflation	41967	4.80	0.11	4.59	4.71	4.78	4.87	5.47
Priv	41027	0.44	0.28	0.04	0.21	0.37	0.59	1.51

Appendix 2: Additional Correlations

Table 12 reports additional correlations that were not presented in the text. *Government* measures if the firm has ownership by the domestic government. This is measured through a dummy variable, which takes a value of 1, the firm has government ownership in some degree, 0 otherwise. *Foreign* is measured as a dummy variable and takes the value 1, the firm has foreign ownership, and 0 otherwise. *Exporter* is measured as a dummy variable and takes the value 1, the firm is an exporter, and 0 otherwise. *Compete* is measured as a dummy variable and takes the value 1, the firm has competition from the informal sector, and 0 otherwise. *GDP* is the average logarithm of GDP (USD) in 2014, 2013 and 2012. *GDPPerCapita* is the average logarithm of GDP per capita (USD) in 2012, 2013 and 2014. *GDPGrowth* is the average GDP growth in 2014, 2013 and 2012. *Priv* is the domestic banking credit to the private sector over GDP. The star (*) indicate if the variables are significant towards each other with a 5% significance level.

TABLE 12. ADDITIONAL CORRELATIONS

	Correlation Matrix								
	Government	Foreign	Exporter	Compete	GDP	GDPPerCap	GDPGrowth	Inflation	Priv
Government	1.0000								
Foreign	0.0979*	1.0000							
Exporter	0.0561*	0.1896*	1.0000						
Compete	-0.0334*	-0.0446*	-0.0763*	1.0000					
GDP	-0.0002	-0.1395*	0.0145*	-0.0700*	1.0000				
GDPPerCap	-0.0155*	-0.0123*	0.1240*	-0.0616*	0.3250*	1.0000			
GDPGrowth	0.0152*	-0.0492*	-0.0869*	-0.0048	0.0847*	-0.3787*	1.0000		
Inflation	0.0159*	-0.0485*	-0.0951*	0.0071*	0.0692*	-0.5191*	0.3042*	1.0000	
Priv	-0.0021	-0.0366*	0.0694*	-0.0927*	0.3285*	0.3975*	-0.0521*	-0.3330*	1.0000

Where * $p < 0.05$

Appendix 3: Breusch-Pagan / Cook-Weisberg Test for Heteroscedasticity

Table 13 reports the Breusch-Pagan / Cook-Weisberg. The test was done to test for heteroskedasticity in the model. $\chi^2(17)$ indicates that the test has 17 degrees of freedom. Prob > χ^2 is the p-value for the test.

TABLE 13. *BREUSCH-PAGAN / COOK-WEISBERG TEST FOR HETEROSCEDASTICITY*

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity	
H0:	Constant variance
HA:	Non-constant variance
 chi2(17)	 553.37
Prob > chi2	0.000

Appendix 4: Industry Definition

Table 14 defines industries the firms in the sample operate in. Industry displays the name of the industries that are covered in the study. Observations give the number of firms that operates in each respective industry.

TABLE 14. *INDUSTRY DESCRIPTION*

Industry description	
Industry	Observations
Textiles	4679
Leather	599
Garments	6366
Food	10411
Metals and machinery	8491
Electronics	1530
Chemicals and pharmaceuticals	4399
Wood and furniture	2268
Non-metallic and plastic materials	5858
Auto and auto components	963
Other manufacturing	8023
Retail and wholesale trade	21637
Hotels and restaurants	4927
Other services	9987
Other: Construction, Transportation, etc.	5580
Total	95718

Appendix 5: Year and Industry Dummies

Table 15 reports the dummies that were created for the fixed effect model. Variable displays the name of the dummies that was created and year reports which year each dummy represent. YearDummy8 is the reference dummy for the fixed effect model. Table 16 displays the dummies that were created for the industries to run the fixed effect model. Variable defines the dummies that were created and industry reports which industry each dummy represents. IndDummy15 is the reference dummy in the model.

TABLE 15. *YEAR DUMMY DEFINITION*

Year Definition	
<i>Variable</i>	<i>Year</i>
YearDummy1	2008
YearDummy2	2009
YearDummy3	2010
YearDummy4	2011
YearDummy5	2012
YearDummy6	2013
YearDummy7	2014
YearDummy8	2015

TABLE 16. *INDUSTRY DUMMY DEFINITION*

Industry Definition	
<i>Variable</i>	<i>Industry</i>
IndDummy1	Textiles
IndDummy2	Leather
IndDummy3	Garments
IndDummy4	Food
IndDummy5	Metals and Machinery
IndDummy6	Electronics
IndDummy 7	Chemicals and pharmaceuticals
IndDummy8	Wood and furniture
IndDummy9	Non-metallic and plastic materials
IndDummy10	Auto and auto components
IndDummy11	Other manufacturing
IndDummy12	Retail and wholesale trade
IndDummy13	Hotels and restaurants
IndDummy14	Other services
IndDummy15	Other: Construction, Transportation, etc.

Appendix 6: The Development of the Model

Table 17 displays the development of the model. *FinCon* is the perceived obstacles of accessing external finance, derived from top managers' responses from World Bank's Enterprise Surveys (WBES). The responses take the value 0, no obstacle, 1, minor obstacle, 2, moderate obstacle, 3, major obstacle or 4, very severe obstacle. *FinCred* is based on whether the firm has been audited or not and take a value of 1, the firm's annual report has been externally audited, and 0 otherwise. *RuOfLaw* is the World Bank's (WB) index and takes a value between 0 (low) and 100 (high).

CorruptionObstacle measures the amount of perceived obstacles corruption has on current operations for any given firm. This variable takes values of 0, no obstacle, 1, minor obstacle, 2, moderate obstacle, 3, major obstacle or 4, very severe obstacle. *InfraObstacle* measures if the firm perceives the transportation of goods, supplies and inputs to be an obstacle for current operations. The variable takes values of 0, no obstacle, 1, minor obstacle, 2, moderate obstacle, 3, major obstacle or 4, very severe obstacle. *FirmSize* is measured as a logarithm of a firm's total sales in year t-1. *FirmAge* is measured as the natural logarithm of a firm's survey year subtracted by the founding year. *Experience* measures the amount of years the top manager has worked within the current sector and the variable takes on the numerical value of actual years of experience. *Government* measures if the firm has ownership by the domestic government. This is measured through a dummy variable, which takes a value of 1, the firm has government ownership in some degree, 0 otherwise. *Foreign* is measured as a dummy variable and takes the value 1, the firm has foreign ownership, and 0 otherwise. *Exporter* is measured as a dummy variable and takes the value 1, the firm is an exporter, and 0 otherwise. *Compete* is measured as a dummy variable and takes the value 1, the firm has competition from the informal sector, and 0 otherwise.

GDP is the average logarithm of GDP (USD) in 2014, 2013 and 2012. *GDPPerCapita* is the average logarithm of GDP per capita (USD) in 2014, 2013 and 2012. *GDPGrowth* is the average GDP growth in 2014, 2013 and 2012. *Priv* is the domestic banking credit to the private sector over GDP.

Model 1 represent the model with the variables used in Liu et al. (2015, p. 34). Model 2 represent the model with the variables used in Liu et al. (2015, p. 34) and two additional control variables we added to the model. These are *CorruptionObstacle* and *InfraObstacle*. Model 3 displays the model with the variables used in Liu et al. (2015, p. 34), two additional control variables and the moderating term *RuOfLaw*. Model 4 represent the variables used in Liu et al. (2015, p. 34), two additional control variables, the moderating variable *RuOfLaw* and the interaction term *FinCred#c.RuOfLaw*.

TABLE 17. *THE DEVELOPMENT OF THE MODEL*

Y = FinCon	The development of the model			
	Model 1	Model 2	Model 3	Model 4
FinCred	-0.068 (0.04)	-0.109** (0.04)	-0.097* (0.04)	-0.160* (0.07)
FirmSize	-0.009 (0.01)	-0.013 (0.01)	-0.014 (0.01)	-0.014 (0.01)
FirmAge	-0.070*** (0.02)	-0.070*** (0.02)	-0.065*** (0.01)	-0.064*** (0.01)
Experience	-0.001 (0.00)	-0.001 (0.00)	-0.001 (0.00)	-0.001 (0.00)
Government	0.093 (0.07)	0.085 (0.06)	0.066 (0.06)	0.064 (0.06)
Foreign	-0.236*** (0.04)	-0.233*** (0.03)	-0.231*** (0.03)	-0.233*** (0.03)
Exporter	-0.030 (0.03)	-0.055 (0.03)	-0.049 (0.03)	-0.050 (0.03)
Compete	-0.291*** (0.04)	-0.176*** (0.03)	-0.174*** (0.03)	-0.175*** (0.03)
GDP	-0.069** (0.02)	-0.078*** (0.02)	-0.081*** (0.02)	-0.081*** (0.02)
GDPPerCapita	-0.090 (0.05)	-0.041 (0.04)	-0.028 (0.04)	-0.029 (0.04)
GDPGrowth	-0.001 (0.02)	-0.003 (0.02)	0.002 (0.01)	0.001 (0.01)
Inflation	-0.461 (0.47)	-0.278 (0.40)	-0.316 (0.40)	-0.318 (0.40)
Priv	-0.309 (0.17)	-0.085 (0.13)	-0.012 (0.14)	-0.016 (0.14)
CorruptionObstacle		0.179*** (0.02)	0.174*** (0.02)	0.175*** (0.02)
InfraObstacle		0.228*** (0.01)	0.226*** (0.01)	0.226*** (0.01)
RuOfLaw			-0.002 (0.00)	-0.003 (0.00)
FinCred=1 # RuOfLaw				0.001 (0.00)
Constant	7.200** (2.50)	5.390* (2.14)	5.590** (2.08)	5.661** (2.09)
Industry Fixed Effect	YES	YES	YES	YES
Year Fixed Effect	YES	YES	YES	YES
Observations	52381	52381	52381	52381
R-Square	0.0529	0.1558	0.1566	0.1567
Degrees of Freedom	97	97	97	97

Appendix 7: Distribution of Audited and Unaudited firms Across Countries

Table 18 displays the distribution of audited and unaudited firms across countries. Country labels all the countries in the original sample. N displays observations for audited and unaudited firms in the economies in total and for audited and unaudited firms in the economies separately. Table 18 continuous over five pages.

TABLE 18. *DISTRIBUTION OF AUDITED AND UNAUDITED FIRMS ACROSS COUNTRIES*

Country	N Observations	Audited		Unaudited	
		N	%	N	%
Afghanistan	715	262	37%	453	63%
Albania	467	115	25%	352	75%
Angola	635	83	13%	552	87%
Antigua and Barbuda	140	74	53%	66	47%
Argentina	1915	1360	71%	555	29%
Armenia	667	146	22%	521	78%
Azerbaijan	570	278	49%	292	51%
Bahamas	119	77	65%	42	35%
Bangladesh	1468	659	45%	809	55%
Barbados	130	110	85%	20	15%
Belarus	517	225	44%	292	56%
Belize	150	103	69%	47	31%
Benin	116	67	58%	49	42%
Bhutan	454	227	50%	227	50%
Bolivia	893	698	78%	195	22%
Bosnia and Herzegovina	648	398	61%	250	39%
Botswana	580	406	70%	174	30%
Brazil	1664	379	23%	1285	77%
Bulgaria	1209	505	42%	704	58%
Burkina Faso	306	160	52%	146	48%
Burundi	405	106	26%	299	74%
Cameroon	326	223	68%	103	32%
Cape Verde	119	45	38%	74	62%
Central African Republic	140	75	54%	65	46%
Chad	134	79	59%	55	41%
Chile	1872	955	51%	917	49%
China	2380	1686	71%	694	29%

TABLE 18. *DISTRIBUTION OF AUDITED AND UNAUDITED FIRMS ACROSS COUNTRIES*
(CONTINUED)

Country	N Observations	Audited		Unaudited	
		N	%	N	%
Colombia	1847	1073	58%	774	42%
Congo	75	46	61%	29	39%
Costa Rica	503	308	61%	195	39%
Croatia	852	380	45%	472	55%
Czech Republic	417	213	51%	204	49%
Ivory Coast	382	92	24%	290	76%
Djibouti	192	80	42%	112	58%
Dominica	150	72	48%	78	52%
Dominican Republic	317	292	92%	25	8%
Ecuador	966	514	53%	452	47%
Egypt	2475	1906	77%	569	23%
El Salvador	969	875	90%	94	10%
Eritrea	133	111	83%	22	17%
Estonia	422	246	58%	176	42%
Ethiopia	1151	805	70%	346	30%
Fiji	123	110	89%	13	11%
Macedonia	673	296	44%	377	56%
Gabon	141	54	38%	87	62%
Gambia	171	54	32%	117	68%
Georgia	562	215	38%	347	62%
Ghana	1066	526	49%	540	51%
Grenada	118	72	61%	46	39%
Guatemala	1041	673	65%	368	35%
Guinea	220	16	7%	204	93%
Guinea Bissau	156	13	8%	143	92%
Guyana	148	136	92%	12	8%
Honduras	702	428	61%	274	39%

TABLE 18. *DISTRIBUTION OF AUDITED AND UNAUDITED FIRMS ACROSS COUNTRIES*
(CONTINUED)

Country	N Observations	Audited		Unaudited	
		N	%	N	%
Hungary	505	311	62%	194	38%
India	8861	7386	83%	1475	17%
Indonesia	1044	185	18%	859	82%
Iraq	656	286	44%	370	56%
Israel	417	389	93%	28	7%
Jamaica	244	173	71%	71	29%
Jordan	451	271	60%	180	40%
Kazakhstan	892	213	24%	679	76%
Kenya	1328	1033	78%	295	22%
Kyrgyz Republic	463	184	40%	279	60%
Laos	418	92	22%	326	78%
Latvia	491	286	58%	205	42%
Lebanon	468	416	89%	52	11%
Lesotho	125	88	70%	37	30%
Liberia	134	30	22%	104	78%
Lithuania	442	158	36%	284	64%
Madagascar	685	344	50%	341	50%
Malawi	561	326	58%	235	42%
Mali	705	220	31%	485	69%
Mauritania	350	97	28%	253	72%
Mauritius	297	176	59%	121	41%
Mexico	2675	1236	46%	1439	54%
Micronesia	44	6	14%	38	86%
Moldova	551	162	29%	389	71%
Mongolia	597	476	80%	121	20%
Montenegro	195	92	47%	103	53%
Morocco	341	186	55%	155	45%

TABLE 18. *DISTRIBUTION OF AUDITED AND UNAUDITED FIRMS ACROSS COUNTRIES*
(CONTINUED)

Country	N Observations	Audited		Unaudited	
		N	%	N	%
Mozambique	476	193	41%	283	59%
Myanmar	453	121	27%	332	73%
Namibia	755	588	78%	167	22%
Nepal	779	620	80%	159	20%
Nicaragua	741	335	45%	406	55%
Niger	107	55	51%	52	49%
Nigeria	3766	778	21%	2988	79%
Pakistan	1769	615	35%	1154	65%
Panama	890	642	72%	248	28%
Paraguay	910	286	31%	624	69%
Peru	1564	561	36%	1003	64%
Philippines	1103	1010	92%	93	8%
Poland	700	186	27%	514	73%
Russia	4023	1138	28%	2885	72%
Rwanda	407	194	48%	213	52%
Samoa	83	56	67%	27	33%
Senegal	963	245	25%	718	75%
Sierra Leone	133	36	27%	97	73%
Slovak Republic	414	214	52%	200	48%
Slovenia	495	184	37%	311	63%
South Africa	931	698	75%	233	25%
South Sudan	664	191	29%	473	71%
Sri Lanka	487	320	66%	167	34%
St Kitts and Nevis	124	88	71%	36	29%
St Lucia	150	71	47%	79	53%
St Vincent and Grenadine	105	81	77%	24	23%
Sudan	526	294	56%	232	44%

TABLE 18. *DISTRIBUTION OF AUDITED AND UNAUDITED FIRMS ACROSS COUNTRIES*
(CONTINUED)

Country	N Observations	Audited		Unaudited	
		N	%	N	%
Suriname	151	78	52%	73	48%
Swaziland	295	214	73%	81	27%
Sweden	532	512	96%	20	4%
Tajikistan	578	201	35%	377	65%
Tanzania	920	448	49%	472	51%
Togo	128	68	53%	60	47%
Tonga	107	54	50%	53	50%
Trinidad and Tobago	321	258	80%	63	20%
Tunisia	574	448	78%	126	22%
Turkey	2129	1198	56%	931	44%
Uganda	1129	530	47%	599	53%
Ukraine	1345	376	28%	969	72%
Uruguay	1059	409	39%	650	61%
Uzbekistan	687	295	43%	392	57%
Vanuatu	107	51	48%	56	52%
Venezuela	265	185	70%	80	30%
Vietnam	923	308	33%	615	67%
Yemen	628	213	34%	415	66%
Zambia	1111	683	61%	428	39%
Zimbabwe	560	328	59%	232	41%

Appendix 8: STATA File

```
*****
*****
```

```
***** Opening Enterprise Survey Dataset for the Period 2006-2015 (Updated in
March 2016) *****
```

```
*****
*****
```

```
*****
*****
```

```
use XX, clear
```

```
*****
*****
```

```
*****
```

```
set more off
```

```
* Splitting the Variable Country
```

```
split country , p(2)
```

```
drop country2
```

```
drop country
```

```
rename country1 country
```

```
*****
*
```

```
***** Merging the main dataset with other required datasets
```

```
*****
```

```
*****
*****
```

```
* Merging the current dataset with the dataset that contains the official code for each
country.
```

```
sort country
```

```
*****
*****
```

```
merge m:1 country using XX
```

```
*****
*****
```

```

drop _merge

* No. of Observations

unique ISO3

*Number of unique values of ISO3 is: 135

*Number of records is: 118206


* Creating a unique identifier based on country and year. This identifier is called id.

tostring a14y, gen(years)

gen id = ISO3+ years

*****

*****

merge m:1 ISO3 using XX

*****

*****

drop if _merge==1

drop if _merge==2

drop _merge

* No. of Observations

unique ISO3

*Number of unique values of ISO3 is: 130

*Number of records is: 114243

* We lost 3963 observations

* Merging CII ...

*****

*****

merge m:1 ISO3 using XX

*****

*****

drop if _merge==2

drop _merge

```

* No. of Observations

unique ISO3

*Number of unique values of ISO3 is: 130

*Number of records is: 114243

* We lost 0 observations

* Merging Governance indication variables

sort ISO3

```
*****
*****
```

merge ISO3 using XX

```
*****
*****
```

drop if _merge==2

drop _merge

* No. of Observations

unique ISO3

*Number of unique values of ISO3 is: 130

*Number of records is: 114243

* We lost 0 observations

* Merging Rule of Law data

```
*****
*****
```

merge m:1 ISO3 using XX

```
*****
*****
```

drop if _merge==1

drop if _merge==2

drop _merge

* No. of Observations

unique ISO3

*Number of unique values of ISO3 is: 129

*Number of records is: 114093

* We lost 150 observations

* Merging Total GDP (need different years to replicate the variable in Liu et al)

merge m:1 ISO3 using XX

drop if _merge==2

drop _merge

* No. of Observations

unique ISO3

*Number of unique values of ISO3 is: 129

*Number of records is: 114093

* We lost 0 observations

* Merging CPI (need different years to replicate the variable in Liu et al)

merge m:1 ISO3 using XX

drop if _merge==2

drop _merge

* No. of Observations

unique ISO3

*Number of unique values of ISO3 is: 129

*Number of records is: 114093

* We lost 0 observations

* Merge Private sector credit (variable Priv ratio, divided by GDP)

merge m:1 ISO3 using XX

drop if _merge==2

drop _merge

* No. of Observations

unique ISO3

*Number of unique values of ISO3 is: 129

*Number of records is: 114093

* We lost 0 observations

*Merge GDP per capita (need different years to replicate the variable in Liu et al)

merge m:1 ISO3 using XX

drop if _merge==2

drop _merge

* No. of Observations

unique ISO3

*Number of unique values of ISO3 is: 129

*Number of records is: 114093

* We lost 0 observations

* Merge GDP growth (need different years to replicate Liu et al)

merge m:1 ISO3 using XX

drop if _merge==2

drop _merge

* No. of Observations

unique ISO3

*Number of unique values of ISO3 is: 129

*Number of records is: 114093

* We lost 0 observations

***** Creating the required Variables

* No. of Observations

unique ISO3

*Number of unique values of ISO3 is: 129

*Number of records is: 114093

* Cleaning financial constraints

tab FinancialObstacle

drop if FinancialObstacle==7

drop if FinancialObstacle==8

drop if FinancialObstacle==9

gen FinCon=.

```

replace FinCon= FinancialObstacle

* No. of Observations

unique ISO3

*Number of unique values of ISO3 is: 129

*Number of records is: 112071

* We lost 2022 observations

*****

*****

* Creating a variable for corruption - Respond to question whether corruption is a
problem - (Take Values from 0 (no obstacle) to 4 (severe obstacle).

tab CorruptionObstacle

* as you noticed, it needs cleaning

drop if CorruptionObstacle==9

drop if CorruptionObstacle==8

drop if CorruptionObstacle==7

drop if CorruptionObstacle==3

gen Corrupt=.

replace Corrupt= CorruptionObstacle

*Number of unique values of ISO3 is: 129

*Number of records is: 108999

* We lost 3072 observations

*****

*****

* Creating an indicator variable of whether annual financial statements are reviewed by
an external auditor. (please put a label for this variable!)

gen FinCred=.

replace FinCred=0 if k21==2

replace FinCred=1 if k21==1

drop if FinCred==.

* No. of Observations

```

unique ISO3

*Number of unique values of ISO3 is: 129

*Number of records is: 107150

* We lost 1849 observations

* Creating an indicator variable of CEO is female. (please put a label for this variable!)

gen Female=.

replace Female=1 if b7a==1

replace Female=0 if b7a==2

* Creating a variable which shows the CEO's experience.

su b7

* as you noticed, it needs winsorizing.

winsor b7 , gen(Exp) p(0.1)

* Creating an indicator variable of whether the firm is headquartered in the country's capital city. (please put a label for this variable!)

gen Capital=.

replace Capital=0 if a3b==2

replace Capital=1 if a3b==1

* Creating a variable which shows the contribution of bank loan financing to working capital investments.

gen BankLoan=.

replace BankLoan = k3b

* Creating a country level variable which shows the GDP per capita.

```
gen GDPPCap=GDPpercapitaPPPintUSD
```

```
*****  
*****
```

*Creating a variable showing that the compnay get audited by the tax officials.

```
gen TaxA=.
```

```
replace TaxA=0 if j3==2
```

```
replace TaxA=1 if j3==1
```

```
*****  
*****
```

* Creating a variable for the companies ages. Please note that the variable age need cleaning. Here, I drop the very old companies. And also companies that were stablished in the future!

```
drop if b5<1900
```

```
drop if b5>2016
```

```
gen Age = a14y- b5
```

```
drop if Age<0
```

```
drop if Age<0
```

```
gen LnAge=ln(Age)
```

* No. of Observations

```
unique ISO3
```

*Number of unique values of ISO3 is: 129

*Number of records is: 105534

* We lost 1616 observations

```
*****  
*****
```

* Creating a dummy variable for age. Takes the value of 1 if company is young (less than 5 years old), and zero otherwise.

```
gen AgeD=.
```

```
replace AgeD=0 if Age>5
```

replace AgeD=1 if Age<5.1

* Creating a variable for the industry

tab sector

drop if sector==0

drop if sector>31

* No. of Observations

unique ISO3

*Number of unique values of ISO3 is: 129

*Number of records is : 105106

* We lost 428 observations

* Cleaning the variable for year

drop if a14y==2016

drop if a14y==2301

* No. of Observations

unique ISO3

*Number of unique values of ISO3 is: 129

*Number of records is: 105048

* We lost 58 observations

gen GDPGrowth = ((GDPG14+GDPG13+GDPG12)/3)

* Creating a dummy for Financial obstacle

tab FinancialObstacle

```

gen FinObD=.

replace FinObD=0 if FinancialObstacle==0
replace FinObD=0 if FinancialObstacle==1
replace FinObD=1 if FinancialObstacle==2
replace FinObD=1 if FinancialObstacle==3
replace FinObD=1 if FinancialObstacle==4

tab FinObD

*****
*****

* Creating a dummy for Corruption obstacles

tab CorruptionObstacle

gen CorrObD=.

replace CorrObD=0 if CorruptionObstacle==0
replace CorrObD=0 if CorruptionObstacle==1
replace CorrObD=1 if CorruptionObstacle==2
replace CorrObD=1 if CorruptionObstacle==3
replace CorrObD=1 if CorruptionObstacle==4

tab CorrObD

*****
*****

* Creating ln for GDP

gen GDP = log((Sumof2014+Sumof2013+Sumof2012)/3)

*****
*****

* Creating ln for GDP per capita

gen GDPPerCapita = log((GDPPC14+GDPPC13+GDPPC12)/3)

*****
*****

* Creating ln for inflation

gen Inflation = log((CPI14+CPI13+CPI12)/3)

```

```
*****
*****
```

* Creating a dummy for "exporter"

tab d3c

drop if d3c<0

gen Exporter=.

replace Exporter=0 if d3c<1

replace Exporter=1 if d3c>1

tab Exporter

```
*****
*****
```

* Creating a dummy for Capital Expenditure

tab n5a

gen CapitalExpenditure=.

replace CapitalExpenditure=0 if n5a<0

replace CapitalExpenditure=1 if n5a>0

tab CapitalExpenditure

```
*****
*****
```

* Cleaning the experience variable

tab Experience

drop if Experience>75

drop if Experience<0

tab Experience

* No. of Observations

unique ISO3

*Number of unique values of ISO3 is: 128

*Number of records is: 102699

* We lost 2349 observations


```

*****
*****

* Creating a variable for FirmSize (logSales)

gen FirmSize = log(Sales)

*****
*****

* Creating dummy for Government

tab b2c

    gen Government=.

    replace Government=1 if b2c>1

    replace Government=0 if b2c<1

tab Government

*****
*****

* Creating dummy for Foreign

tab b2b

    gen Foreign=.

    replace Foreign=0 if b2b<1

    replace Foreign=1 if b2b>1

tab Foreign

*****
*****

* Cleaning Compete

tab Compete

    drop if Compete==9

    drop if Compete==-7

    drop if Compete==-8

tab Compete

*****
*****

```

* Creating variable for SalesGrowth

gen SalesGrowth = ((Sales-n3)/(Sales+n3))

* Creating variable for FirmAge

gen FirmAge = log(a14y-b5)

* Making private capital (Priv14) into percentage

gen Priv = (Priv14/100)

* Cleaning Infrastructure (this one should be included, logic both theoretically and in terms of improving the model)

tab d30a

drop if d30a<0

drop if d30a>4

tab d30a

* Creating a dummy for year

tab a14y, gen(YearDummy)

* Creating a dummy for industry

tab sector, gen(IndDummy)

* Clean and recoding Compete

drop if Compete<0

replace Compete=0 if Compete==2

replace Compete=1 if Compete==1

sort ISO3 year

***** Analyses and Tables

* Define the Global list

global xlistFirm FirmSize FirmAge Experience Government Foreign Exporter Compete

global xlistMacro GDP GDPPerCapita GDPGrowth Inflation Priv

global xlistyear YearDummy1 YearDummy2 YearDummy3 YearDummy4
YearDummy5 YearDummy6 YearDummy7

global xlistInd IndDummy1 IndDummy2 IndDummy3 IndDummy4 IndDummy5
IndDummy6 IndDummy7 IndDummy8 IndDummy9 IndDummy10 IndDummy11
IndDummy12 IndDummy13 IndDummy14

* Table 3 - Descriptive statistics

univar FinCon FinCred RuOfLaw CorruptionObstacle d30a \$xlistFirm \$xlistMacro
\$xtlistyear \$listInd

* Table 4 - Correlation table

```
pwcorr FinCon FinCred RuOfLaw CorruptionObstacle d30a $xlistFirm $xlistMacro
$xtlistyear $xtlistInd , star(0.05)
```

* Table 5 - Regression Results for all firms

```
reg FinCon FinCred RuOfLaw CorruptionObstacle d30a $xlistFirm $xlistMacro
$listyear $listInd , r cluster( UN)
```

* Table 6 - Regression Results for audited firms

```
reg FinCon FinCred RuOfLaw CorruptionObstacle d30a $xlistFirm $xlistMacro
$listyear $listInd if FinCred==1, r cluster( UN)
```

* Table 7 - Regression Results for unaudited firms

```
reg FinCon FinCred RuOfLaw CorruptionObstacle d30a $xlistFirm $xlistMacro
$listyear $listInd if FinCred==0, r cluster( UN)
```

* Figure 5 - Margins Graph

```
reg FinCon i.FinCred##c.RuOfLaw CorruptionObstacle d30a $xlistFirm $xlistMacro
$xtlistyear $xtlistInd , r cluster( UN)
```

```
quietly margins FinCred, at ( RuOfLaw=(0(10)100)) vsquish
```

```
marginsplot, xdimension(at(RuOfLaw)) recast(line) recastci(rarea)
```

* Table 8 - VIF table

```
reg FinCon FinCred RuOfLaw CorruptionObstacle d30a $xlistFirm $xlistMacro
$listyear $listInd , r cluster( UN)
```

```
vif
```

* Table 9 - Propensity Score Matching

```
teffects psmatch (FinCon) (FinCred RuOfLaw CorruptionObstacle d30a $xlistFirm
$xlistMacro $listyear $listInd)
```

* Table 10 - Descriptive Statistics for audited firms

```
univar FinCon FinCred RuOfLaw CorruptionObstacle d30a $xlistFirm $xlistMacro
$lstyear $lstInd if FinCred==1
```

* Table 11 - Descriptive Statistics for unaudited firms

```
univar FinCon FinCred RuOfLaw CorruptionObstacle d30a $xlistFirm $xlistMacro
$lstyear $lstInd if FinCred==0
```

* Table 13 - Breusch-Pagan / Cook-Weisberg test for heteroscedasticity

```
reg FinCon i.FinCred##c.RuOfLaw CorruptionObstacle d30a $xlistFirm $xlistMacro
$xtlstyear $xtlstInd
```

```
hettest i.FinCred##c.RuOfLaw CorruptionObstacle d30a $xlistFirm $xlistMacro
$xtlstyear $xtlstInd
```

* Table 14 - Industry Definition

```
tab sector
```

* Table 15 - Year Dummy Definition

```
tab YearDummy
```

* Table 16 - Industry Dummy Definition

```
tab IndDummy
```

* Table 17 - The Development of the Model

```
ssc install estout
```

* First: the model completely from Liu et al page 33-34 (excluding the two extra control variables)

```
reg FinCon FinCred $xlistFirm $xlistMacro $xtlstyear $xtlstInd , r cluster(
UN)
```

```
estimates store m1, title(Model 1)
```

```

* Second: add extra controls to the model

reg FinCon FinCred CorruptionObstacle d30a $xlistFirm $xlistMacro $xtlistyear
$xtlistInd , r cluster( UN)

estimates store m2, title(Model 2)

* Third: add RuOfLaw to the model

reg FinCon FinCred RuOfLaw CorruptionObstacle d30a $xlistFirm $xlistMacro
$xtlistyear $xtlistInd , r cluster( UN)

estimates store m3, title(Model 3)

* Fourth: add an interaction term

reg FinCon i.FinCred##c.RuOfLaw CorruptionObstacle d30a $xlistFirm $xlistMacro
$xtlistyear $xtlistInd , r cluster( UN)

estimates store m4, title(Model 4)

* Making all the models into one table

estout m1 m2 m3 m4, cells(b(star fmt(3)) se(par fmt(2))) ///

legend label varlabels(_cons constant)                                     ///

stats(r2 df_r bic, fmt(3 0 1) label(R-sqr dfres BIC))

*****

* Table 18 - Distribution of Audited and Unaudited Firms Across Countries

tab country FinCred

*****
*****

***** End
*****
*****

```