Young SMEs’ Financial Constraints and Collectivism

An International Evidence
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Spring semester 2016
Bachelor thesis, 15hp
Abstract

Small and medium size enterprises (SMEs, hereafter) are important drivers of the global economic development. For the SMEs, to establish and growth, having access to the sources of finance is of great importance. Anecdotal evidence suggests that while the importance of having access for the SMEs is apparent, they have been disadvantageous in many different ways. The disadvantage position of the SMEs can even be worse when they are younger (e.g., The World bank, 2001, p. 6-7). Prior research documents many factors that affect the financial constraints of SMEs. In this study, we investigate the association between SMEs age and financial constraints. In addition, we test the moderating effect of collectivism on SMEs’ financial constraints, as collectivism is documented to have an effect on bank corruption. We first hypothesize that there is a negative association between SMEs’ age and financial constraints. We further propose that the negative association between SMEs’ age and financial constraints decreases as collectivism (at the country level) increases. Using a World Bank’s sample of 31422 firms across 38 countries, we find that younger firms, compared to the older firms, experience higher level of financial constraints. Further, we observe an insignificant results regarding the moderating effect of collectivism on the proposed association. We offer contribution to the existing empirical evidence on factors that affect financial constraints. Providing such an evidence may be found relevant to the economic institutions such as the World Bank and regulatory bodies, as they are allocating resources and making macro level decisions regarding the economic development through SMEs around the world.

Keywords: Collectivism, Financial constraints, Small & Medium enterprises, Young firms.
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1.1 Introduction
In this chapter, a shortened text about Small & Medium Enterprises is provided, followed by a summary of factors that is suggested to increase the constraints of access to credit in a global perspective. Further, we will present the purpose of the study to declare the importance of the conducted research.

1.2 Introductory background
In this study, we investigate the association of financial constraint and young Small and Medium Enterprises (SMEs, hereafter) and how this association is affected by the level of collectivism. To clarify the definition of SMEs, we employ the definition explained by the European Commission (European Commission, 2016). Thus, SMEs are defined by consisting of <250 employees. Further, we explain in short, Collectivism is one of the cultural dimensions founded by Hofstede (2001). Collectivism, represents a framework based on the question of self-definition of "we", rather than "I". The cultural dimension explains that a collectivistic societal view of expectations that the relatives or the members of a particular in-group will take care of them in exchange for unquestionable loyalty. In comparison to its contrary Individualism, in which it is only expected to deal, or take care of the closest of family and a rely mostly on yourself (Hofstede, 2016).

The SMEs are suggested to be important all over the world because they are one of the main elements for the world economic growth. One of the reasons behind the economic importance of the SMEs is the fact that they contribute to the labor market by hiring people, and additionally they add innovations to the economy (Ayyagari, 2005, p. 2). The subject has been recognized by the World Bank (2001, p. 4), as they have recently inserted 2.8 billion in financial support programs for SMEs globally. How these funds will be used efficiently is however still debated today.

For the SMEs, to establish and growth, having access to the financial sources is of great importance. Even though SMEs are interpreted as important to the economy, they have been disadvantageous in many different ways. For instance, World Bank’s report (2001) shows that SMEs' main concern is the need for external capital (The World Bank, 2001, p. 26). The disadvantage position of the SMEs is even worsened when being younger. For instance, prior research documents that the possibility for SMEs to obtain credit in younger stages of development is severely problematic in many countries. (Ayyagari, 2005, p. 2; The World Bank, 2001, p. 6-7; Annual Report on European SMEs 2015 p. 9). Given these line of arguments, we are in this thesis studying the effect the firms’ ages on their financial constraints.

Firm’s age is not the only factor that relates to the financial constraints. Prior research documents many factors that affect the financial constraints. Among these factors, country level individualism, and collectivism can be an important factor for the access to credit. We choose the cultural dimension of collectivism, mainly because of two reasons. First, because of its driving effects on societies. Second, because it has tendency to increase the occurrence of bank corruption in bank lending. This is important to acknowledge since corruption is one of the factors that leads to these young firms financial constraints (Zheng et. al, 2013, p. 365). We assume it is possible that in the countries with high level of collectivism (relationship-based countries), bank officers are more likely to engage in corruption because they prioritise the related. In line with these predictions, Zheng et al. (2013, p. 365) reports that lending corruption is higher as the collectivism increases.
Given this, we study whether a country’s level of collectivism is related to the level of financial constraints.

The situation of SMEs access to credit can differ to some extent around the world. One explanation to these variations comes with cultural differences (Zheng et. al, 2013). Among the dimensions of culture, it appears that collectivism might affect the association between firm’s age and financial constraints. For instance, collectivism might affect the financial constraints of older firms in a lesser degree because mature firms have more opportunity in the credit market. The effect arises because mature firms usually have established better relations and network with banks officials (Zheng et. al, 2013, p. 364). For instance, Minh Le (2012, p. 101) suggest that relationships are one of the main reasons to why small firms face a higher level of financial constraints. Having a larger network of connection enables more mature firms to overcome some of the disadvantage that the collectivism culture creates for firms in terms of access to credit (Zheng et. al, 2013, p. 364). Given by this argument, we also investigate the moderating effect of collectivism on the association between firm’s age and financial constraints.
1.3 Research questions

For the SMEs to operate well and to grow, access to credit plays a crucial role. The acquiring finance for new investments is suggested to be the number one concern for SMEs (The World bank, 2001, p. 26). One possible reason to the increased financial constraints for the young SMEs is the fact that creditors are more reluctant to lend to the younger SMEs. (The World bank, 2001 p. 26). The theoretical link between firm age and financial constraint is to some extent explained by the Survival Bias theory (Kuntchev, 2014, p. 3). In line with this prediction, we predict that there is a relationship between firm’s age and extent of financial constraints. Country level factors has shown to affect the financial constraints of firms. Among these country level factors, culture has recently been documented as important among researchers. Particularly, with focus on culture as effect on financial constraints. The effect of collectivism on the bank lending corruption raises the question of its effect on SMEs. We propose that in the countries with high level of collectivism (relationship-based countries), bank officers are more likely to engage in corruption because they prioritize the related customers (Zheng et. al, 2013, p. 364).

So far we argue that age and collectivism are related to financial constraints. We further suggest that collectivism might migrate the affect on the association between firm’s age and financial constraint. Put it simply, we propose that there should be an interaction between age and collectivism in their relationship with financial constraints. Minh Le (2012, p. 101) suggest that relationship is one of the main reasons to why small firms face a higher level of financial constraint. Having a larger network of connection enables more mature firms to overcome some of the disadvantage that the collectivism culture creates for firms in terms of access to credit (Zheng et. al, 2013, p. 364). Given this, we formulate the following research question:

RQ: Does the negative association between SMEs’ age and financial constraints decrease as collectivism increases.

The main source of our data comes from the World Bank’s Enterprise Survey. The dataset from the World Bank’s Enterprise Survey contains firm level data from 2006 until 2015. For our cultural variables, we use the Hodstede’s cultural dimension dataset. Our starting dataset consists of 118206 firm-year observations and 135 countries. When adding our cultural variable, our unique data decreased to 38 countries. The final sample consist of 31422 firms from 38 countries. Our data covers all continents of the world and therefore, also holds cultural varieties from many parts of the world.

Using the above data, we find that younger firms are perceiving higher obstacles to obtain credit than their older peers. The results relates to previous research. However, to some extent it contradicts the research of (Kuntchev, 2014, et. al p. 3; Minh Le, 2012, p. 94) that has neglected the explanatory power of firm age to access to credit. Additionally, we have found that firm age is explaining the perceived access to credit to a greater extent than firm size that is more supported by the theories of (Liu et. al, 2015, p. 34; Hope et al, 2011, p. 944). The link between firm age and access to credit is to some extent explained by the survival bias (Kuntchev, 2014, p. 3). By this previous support that ceteris paribus there is a positive association between age of firm and access to credit within SMEs. We find it even more relevant to analyse the asymmetry between cultures concerning SME access to credit. (Zheng et. al, 2013 p. 363) finds that national
culture holds impact on bank lending, flowingly that collectivism has impact on bank lending corruption. We find indications of collectivism being positively related to the level of financial constraints. Further, we find that the young SMEs financial constraints increases as collectivism increases. Our result is in line with Zheng et. al (2013 p. 363). However, we find our results not significant. This negates our prediction of the migrated effect on the positive association between age of firm and access to credit within SMEs if collectivism is applied. However, we see clearly through the margins plot that a certain trend neglects younger enterprises to a larger extent than their older peers.

We apply statistical models such as e.g. cluster regression model, VIF test, Correlations, and margins plot to test our associations. Further we use theoretical links and practical argumentation to reason between occurrence and reality in order to obtain high quality results from our tests.

1.4 Purpose
We offer contribution to the existing empirical evidence on factors that affect financial constraints. First, to our knowledge, very few (if any) has studied the role of collectivism on the financial constraints of young firms. Providing such an evidence is relevant to the economic institutions such as World Bank and regulatory bodies as they are allocating resources and making macro level decisions. Second, we are among first who provide an up-to-date analysis with a large sample regarding the role of firm’s age on the financial constraints. As noted before, younger firms are one of the contributors to the economic growth around the world. And, for these firm access to credit is crucial. We hope that our study will provide additional evidence to the financial institutions to help their daily operation of creating efficient financial support programs.

In this study we offer contribution both practically in the everyday operations to The World Bank and The International Financial Corporation, also theoretically to all authors that are striving to contribute to the field of access to credit all over the world. Our ambition is to construct a thesis on the foundation of previous research. By predicting outcomes out of previous researcher’s empirical evidence we perform a positivistic research based on several hypothesis problematizations. Thus, we attempt to find possible associations between the firms’ age of operations and their perceived access to credit. Further, we try to find a migrating effect by the insertion of the cultural dimension of collectivism. As previous authors have explored this subject only partially, our purpose is to increase the general understanding of SMEs constraints on a global scale. Further, we attempt to identify hidden obstacles that in a longer perspective can affect the world economic development. In order to reach this purpose, we will test the relationship between firm age and access to credit, and the migrating effect of the cultural dimension of collectivism. The main dataset we have used to obtain this knowledge is conducted by the World Bank enterprise survey. We have then merged this dataset with Hofstede's dataset of cultural dimension resulting in 31422 firm observations in 38 different countries. The final aim of this study is to establish whether there is a connection between firm access to credit depending on its age and if countries with a higher level of collectivism has an effect on the firm level credit lending.
1.5 Stakeholders
The World Bank, from here on (TWB), have expressed a distress for the making of international financial support programs since SMEs has shown to be hard to serve. Smaller and younger firms are usually more vulnerable to regulatory burdens and constraints in the business environment than their larger peers, (The World bank, 2001, p. 6-7). However, TWB is suggesting that SMEs main concern is the need for external capital, e.g. financial means or credit. (2001, p. 26) In ambition to increase the understanding of domestic preferences of access to credit as well the impact of shifts in the level of culture we strive to provide better eligibility for these institutions to potentially make more efficient and innovative financial support programs. Previous research has also been conducted on a global scale. However, to the best of our knowledge, no previous research has been done on the link between firm age and culture as main and moderating variables to the access to credit. We hope that the results and findings of this study will add contribution to the existing knowledge of SMEs financially exposed situation in the world.

1.6 Introduction to the literature review
When investigating the subject of Financial constraint we see that some conclusions are inclusive. Though, SMEs are one of the drivers in economic development and employment. Moreover, they are more disadvantageous than their larger peers concerning access to capital around the whole world. In 2004, the World Bank (TWB) granted approximately 2.8 billion insertions into the initiative of supporting SMEs. (World bank, 2001, p. 3)

TWB (2001, p. 26) is suggesting that SMEs main concern is the need for external capital. Extensive research is put on the subject to find the solution to the capital problem all over the world. One of the bigger problems is shown to be the lending habits of younger SMEs, they are more tending to use trade credit and informal credit sources, e.g. capital from relatives or informal actors on the market (Kuntchev, 2014, p. 17). No matter the habits of formal credit, it has been suggested that SMEs need for capital is larger than the available supply. Thus, there is a need to explain the fallacies in SMEs credit operations all over the world.

Divided arguments has been presented due to what the explanatory variables are to this capital problem and different theories are presented to explain it. K hallberg (2000, p. 6) suggests that SMEs are misinterpreted by focusing on financial key moderators in the business environment, and that social and political considerations are rather more important. No author claims that the credit insufficiency comes from one single source. However, divided means are put on the subject when a specified variable is suggested to hold the main explanatory power. One of the identified divided means on the subject is the suggestion that firm age holds explanatory significance to access to credit and has been presented by authors (Liu et al, 2015, p. 8) (Minh Le, 2012, p. 101). However, Kuntchev ( 2014 et. al, p. 3) contradicts our perceived question of age affecting Access to credit. By new measures of credit constrained status they find that age is not always significant for defining the probability of being credit constrained.

We find it important to gain a deeper perspective, hence we got a contradiction between earlier published research. A research gap has been found regarding the national culture and its impact on bank lending ( Zheng et. al , 2013 p. 363). The article hypothesizes that “self-construal and particularistic norms in collectivist countries leads to a higher tendency of lending corruption through their interactions between bank officers and bank customers and on the dynamics among
bank colleagues. The claim of cultural importance has been rather less noticed in the scientific research on the subject. However, Zheng et al. (2013, p. 364) claims that literature has been omitted with exception of three recently published studies regarding the effect of bank competition and various monitoring institutions on differences on firm lending corruption, (Barth, Lin, Lin, & Song, 2009, Beck, Demirgu, Kunt, & Levine, 2006, Houston, Lin, & Ma, 2011). The research concludes that cultural differences between countries is a rather undiscovered subject which might create potential for new research to offer great contribution. It is clear that within all our research on this subject that cultural differences have a big impact on access to credit within SMEs, as well as societies. Thus, we suggest that collectivism/individualism is an appropriate dimension fit to test this relationship.

1.7 The gap
The gap of this research focus on how financial constraint among young SMEs is affected by the level of collectivism among countries. Zheng et. al (2013, p. 364) suggest that, financial constraint is less likely for more mature firms, since, they usually have established better relations and network with banks officials. Previous research suggest that high level of collectivism creates higher level of corruption (Zheng et. al, 2013 p. 363). In addition, relationships are suggested to be one of the most important factor why SMEs face a higher grade of financial constraint (Minh Le 2012, p. 101). However all research that has come to our knowledge is generally insufficient or perceived out of date to answer our hypotheses. On behalf of (Zheng et. al, 2013 p.363) there is an identified gap within the cultural view on bank lending and there on the financial constraint. By determining if the level of collectivism influence the cleft between young and mature when it comes to level of financial constraint, we wish to offer a greater understanding to the subject.

1.8 Pre-understandings
Both authors of this thesis are students at Umeå University. The last three years, both Marcel Netzén Örn and Grim Moström has been studying to achieve a Degree in Bachelor of Science in Business and Economics. Thus, during the program both students has chosen a specialization in Accounting or financial institutions. During our education at Umeå University we have had opportunity to gain understanding in broader academic terms of business, National economics and finance. From there on we have gained interest in the importance of financial growth in developing countries and how it differs around the world. There has been vast research done on this subject with the growing understanding regarding the importance of SMEs to the world economic development and what constraints to growth is more commonly occurring in current research. By living in an industrial and developed country it can both limit and open our understanding of the situation since our access to information is large, yet our practical experience on the subject is limited. Thereby we have to take our novice arguments in extra particular second consideration in lack of practical experience in these cross-country matters. Yet since we are doing a deductive methodological research study we are firmly holding to previous acknowledged research and attempting to follow these suggestions to build our own perspectives on these matters of research.
2. Methodology
During this chapter an explanation will be presented as to how specific methods have been used to create best quality of results. To ensure validity of research and withhold ethical considerations we will present our source of data, the liabilities and potential bias results and unexpected deviations that are presumed to deliver disadvantage to our final results. Further explanation will be held on the methods sampling data, the reshaping of data sets and relation these data has to previous scientific articles and research. Complete datasets and do-files are found in the appendix.

To construct an efficient and understandable methodological approach we will apply the model of the “research onion” (Kulatunga et al, 2007, p. 480). This implies delivery of our collecting research strategy, methodological and theoretical approach to research and empirical findings and our research philosophy.

Figure 1 The “research onion”
(Kulatunga et al, 2007, p. 480).

2.1 Research philosophy
To form our interpretation on existing knowledge and observations we have chosen to implement the epistemological position of Positivism that promotes former natural science to the present study of social reality. It is amongst criteria that only observations confirmed by sense can become interpreted as knowledge. In a deductible approach, the positivistic view implements the method of generating hypotheses that can be explained and there by claimed. By this standpoint fact must be collected and interpreted in a way that is value free, e.g. without personal presumptions and objective (Bryman & Bell 2011 p. 15-16). To approach this scientific view and conduct our research we are to study previous research and apply these insights in aim to create, or hypothesise whether firm age has an impact on access to credit and if cultural variables moderates this relationship or if other control variables might have association to the relationship. However, we
do not aim to exclude related variables to our dependent variable of access to credit, rather suggest strong relationships between chosen variables based on previous related observations.

Regarding the objective standpoint on our data interpretation and conclusions it is vital that our results remain as recommendations for further analysis and that our personal references are attempted to be left out. Regarding the alteration of data for personal interests, we hold belief that there are no benefits of manipulating our results since we are widening the range of previous findings by adding a moderating variable to the context. By this we should have a better chance of remaining objective regarding the variety of world data and kept control variables. To embrace arguments of previous researchers we view our datasets in an ontological consideration and debate. Our choosing the ontological view of objectivism is under the scope as of it is further explained. In order to grasp the objectivism as a standpoint, it implies that social phenomena are beyond our reach of influence. Constructionism on the other hand is in a constant process between constructed and under construction. For example, culture is one of the means that are believed to be in constant change, and cannot be for that reason set into a fixed value (Bryman & Bell 2011, p. 15-16). Becker (1982, p. 521) is however stressing that people can create culture continuously but that this definition cannot be pushed to the extreme.

The definition of constructivism can in some way be seen as a point of reference that is in the process of being formed. Taking this into consideration we set out on the incentive of having an ontological position of objectivism, but as Corruption is one of the variables that can be under constant change and variate within the countries themselves we see to that our timespan of collected data is in a reasonable short range in order to be able to state a point of reference in which the cultural variables has not been able to change in a too drastic way. It might also be taken into consideration that with the amount of countries that we collected data, the vibrant local changes should be estimated to be evened out by its large numbers and come to be seen as rather valid in its objectivity.

2.2 Research approach
To fulfil the scientific value of this thesis, we naturally follow the process of deduction, the most common form of research approach. By building theoretical frameworks we can access a clear base on which hypotheses can be formed. By being precise in the narrowing of previous research we can more easily gather relevant datasets and get better findings. The controversiality of deduction is that applied theories not always corresponds with the results of hypothesis. By testing applied hypotheses we can do a revision of theory and make new conclusions and thereby add contribution to the scientific collective. Figure; Bryman & Bell 2011 p.11
This Figure is an instructive way of forming our work. However, Bryman and Bell (2011, p.11) is claiming that the linear process of deductivism might be questioned in its essence because the literature framework and result can be revised throughout the work as an inductive method would rather suggest. Our intent is to keep firm to the deductive process and by statistics determine if to reject our hypotheses. We have got strong indications that Firm age has strong relationship to SMEs Access to credit. This makes us true to the deductive theory and our ambition is to offer better contribution to the knowledge of access to credit in the developing world.

2.3 Research strategy
The link between the dependent variable and the independent variable will be tested in order to obtain if our hypothesis is correct or not. When testing the link, it is important to have strong internal validity, otherwise we cannot be certain that changes in the independent variable is deriving the change in the dependent variable (Bryman & Bell 2011 p.45). By trying different possible explanations why some companies have more access to credit than others, we create the possibility to find the highest amount of internal validity as possible.
2.4 Choices of methodology and the methodological fit
Regarding the choice between qualitative and quantitative methodology we have naturally chosen the quantitative method since it is the form that offers measurements into the results. Further, we have to view our data as an external reality beyond our control (Bryman & Bell 2011 p. 27). Further, we have also taken the recommendation from earlier conducted research which has also been pure archival quantitative data on which assumptions has been built.

Figure 3 “Methodological fit a mean tendency”

Amy C. Edmondson and Stacy E. Mcmanus (2007, p. 1168) suggests that data in which contains mature information is more suited to be measured in a quantitative methodological fit and the qualitative data is more appropriate to have a nascent to intermediate dataset. This is illustrated in Model 3: “Methodological fit a mean tendency” (Edmondson A, & Mcmanus S, 2007, p. 1168)

2.5 Time horizon
As have been mentioned in our research philosophy we have set as ambition to reach objectivity, therefore we aim to find data that is tangible and untampered. By this reason we have an outset to not view our research as evolving over time. Even if this would be both relevant and interesting study we are building this study in a point of reference that summarises a snapshot in time. With that stated, we want this study to clarify what can be statistically confirmed due to retrieved datasets.

2.6 Methodological impact on quality criteria

2.6.1 Reliability and validity for quantitative research
Reliability is of biggest concern within the quantitative research area. It is described as “the question of whether the results of a study are repeatable” (Bryman and Bell, 2011, p. 41-42). Regarding reliability, we further come into the definition with the consideration of research stability (Bryman & Bell, 2011, p.157-158) as of how the research results are stable over time and the consistency makes the research repeatable in the future. Our research is obtained from acknowledged sources such as the world bank Enterprise Survey. These sources should obtain validity as of in the reference of time frame we should have reasonably stable results. Further the concept of internal validity has an effect on our study. Internal validity is the definition of how
results on each indicator is influenced on another. We predict that our datasets consist of internal validity since our data set contains enough observations to be assumed to be normally distributed. Also, as we are conducting our research on archival data retrieved from the world bank we assume that the main dataset is reliable. Regarding the validity of our thesis, the concept of validity comes to question.

When conducting research on Access to credit and whether Firm age has an impact on its results, we have to validate the question whether Firm age reflects that level of access to credit in relationship (Bryman & Bell, 2011, p. 159). To ensure validity to our project we will take Face validity (Bryman & Bell, 2011, p. 160) that suggests the recommendation of other authors or researchers. We will ensure face validity through consideration in the same way as we do our deductive theory. By following up on acknowledged research we will ensure that some relationships hold strong validity, as off the moderator variables and new correlations we will find supporting theories on the subject.

2.6.2 Measurement Bias
During the collection of data, we have been attempting to implement variety of sources and broad range of quality. World Bank Enterprise survey and Hofsteede offers raw datasets that has been used by many authors, researchers and reporters. We offer contribution by merging these datasets and theories from cross cultural and financial figures. The diversification between branches within SMEs and number of observations speak for variation in datasets that would account for reliability.

2.6.3 Sourcing error
When collecting data from different sources there is a risk for error. We have collaborated during our filtering and merging of data to eliminate source of error. The most important factor is that we attempt to never drop data that might tamper with results. This means that range of observations and variables are left in the datasets if they are not crucial to delete in order to complete the task at hand.

2.6.4 Sourcing bias
Since we use data on a cross country level we have a minimum of preference to local companies in the sector of SMEs. However, to eliminate any chances of prejudice judgements we have chosen to use specific companies by code so that no companies are valued separately. The same process is made for countries in order to code data for regression sets.

2.7 Ethical considerations
When creating our dataset, we tried our best to choose sources that followed the ethical standards. Bryman & Bell (2011, p. 669-671) claims that the data should fulfil the ethical concerns for anonymity, confidentiality and informed consent. By using primary data from well-known global databases and large sample of observations we include these basis of ethical considerations. This data is already conducted and public and we will not publish any names of companies and countries. Thus, our thesis will not interfere integrity.

2.8 Sourcing of data and source criticism
During the sourcing of data, we have aimed to remain critical to the articles and raw datasets. To access the data files, we have been going both internally and externally to receive appropriate data.
Within the jurisdiction of Umeå University we have collected data and articles from Ebsco host and retriever Business journal. What we have realised is that in order to do a cross country study we needed to reach externally for sufficient data that could cover the subject of financial survey information on developing countries across the world. Since we have been reaching outside the approved databases of Umeå University, we have been especially careful on which sources we have picked.

In order to ensure validity and well documented data, we have been focusing mainly on articles that has been peer-reviewed and databases that have been used in prior reference research as recommended in our deductive perspective. Our main databases we have used are Enterprise survey, World Bank, Hofstede and Ebscohost, mainly because these databases have been used by peer-reviewed articles and are perceived trustworthy by well-known authors on similar subjects. When choosing data, we tried our best to be critical to the data source in order to create reliable arguments in our thesis. When we could not find the information we needed on our main databases, we have used Google Scholar and those who hold higher values of “Cited by”. These sources are common in many high rated surveys and therefore becomes a reliable for our study as well. When losing data by merging our datasets, we have tried our best to check that the lost variables does not affect the reliability of our dataset. To be sure that we used trustworthy sources, we have also only used journals that are recommended in the ABS - “Association of business schools” (ABS, 2015). The journal is suggesting that the highest purpose of its use is to create clarity for scholars in which journals to aim for. By acknowledging peer reviews and expert peers they will deliver higher probability of quality and contribution to the research. (ABS, 2015 p. 5)
3. Literature Review and Hypotheses Development

In this chapter, we first provide an overview of prior literature. Then, we will present the research hypotheses.

### 3.1 Overview of literature Review

During our research we have found several works related to our topic. The divided arguments on the association between firm age and access to credit, followed by closely related subjects has been presented in the table below.

<table>
<thead>
<tr>
<th>Study</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Challenge, World Bank Review of Small Business Activities, 2001</td>
<td>An overview of the situation of young SMEs in the developing world</td>
</tr>
<tr>
<td>Small and Medium Enterprises across the Globe M Ayyagari, 2005</td>
<td>Analyses the importance of size in SMEs in the business environment. Shows indications of SMES role in employment, GDP increases as countries grow richer. Also brings up credit information and lower costs of entry as benefactors to SMEs.</td>
</tr>
<tr>
<td>A Market-Oriented Strategy for Small and Medium Scale Enterprises K Hallberg et al. 2000</td>
<td>Investigates the incentives of economic support programs for SMEs across the globe. K hallberg is dividing the perspective between financial and governments institutional settings to support SMEs. A rather large difference in view to its more financially interested predecessors.</td>
</tr>
<tr>
<td>Small and medium-size enterprises: Access to finance as a growth constraint, T. Beck, 2006</td>
<td>Research on the SMEs access to credit. SMEs shows tendency of larger growth constraints than their larger peers. Flowingly, SMEs has greater obstacles to formal finance. Research also suggests solutions such as better credit information and a more competitive banking structure.</td>
</tr>
<tr>
<td>What Have We Learned from the Enterprise Surveys Regarding Access to Credit by SMEs?, V. Kuntchev, 2014</td>
<td>Research goes deeper into the study of credit constraints and lending habits in SMEs. Research finds that SMEs are more credit constrained than their larger peers and are tend to use more trade credit instead of formal lending sources. However, this research claims that only size of firm shows significance to the explanatory variable of credit constraint. Firm age does not.</td>
</tr>
<tr>
<td>Trade credit and bank lending: an investigation into the</td>
<td>Research goes more in-depth on the tendency of trade credit use within firms and why they are using these credit channels. Research finds on a</td>
</tr>
<tr>
<td>Title</td>
<td>Description</td>
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<tr>
<td>Determinants of UK manufacturing firms’ access to trade credit. S. Mateut, 2003</td>
<td>more local basis that age and credit risks has significant impact on the access to credit and that trade credit is tending to be a substitute as firms are credit constrained.</td>
</tr>
<tr>
<td>What Determines the Access to Credit by SMEs? A Case Study in Vietnam, P. Nu Minh Le, 2012</td>
<td>A local study in Vietnam determining some of the constraints of SMEs compared to large companies. Results are to some extent inconclusive, but the suggestions that are in line with previous research are suggesting that information about credit risks are harder to obtain within SMEs than their larger peers.</td>
</tr>
<tr>
<td>Culture and auditor choice: A test of the secrecy hypothesis, OK Hope, 2008</td>
<td>Research mainly focusing on auditing and its habits in different cultures. Results shows that more secretive cultures are less probable to get formally audited. Further, the secrecy that results in information asymmetry affects the relationship between firm and bank lenders.</td>
</tr>
<tr>
<td>A more complete conceptual framework for SME finance A N. Berger et al, 2006</td>
<td>A more complete study concerning SME Credit availability issues. They find that causal chain of policy, and financial structures have important effect on SME bank lending. Further the results emphasize the effect on access to credit by Relationship lending. Further, formal large institutions are disadvantaged in ability to lend to opaque SMEs.</td>
</tr>
<tr>
<td>The dark side of disclosure, evidence of government expropriation from worldwide firms, T. Liu et al, 2015</td>
<td>Paper studying the effects of voluntary accounting information disclosure through auditing on access to credit. The study finds that audited firms holds lower constraints to the access to credit. However, the audited firms also face larger extent of corruption. Finally the results suggest that the audit is more beneficial in countries that have stronger institutions.</td>
</tr>
<tr>
<td>Financial credibility, ownership, and financing constraints in private firms, OK Hope et al. 2011</td>
<td>In this study they suggest that providing better credible information about firms in developing countries would effectively decrease the information asymmetry. This would in its turn improve the relation between firms and their external providers of finance. It is also claiming the importance of firm age in its indirect description of the survival bias.</td>
</tr>
<tr>
<td>SME Credit Availability Around the World: Evidence from the World Bank’s Enterprise Survey, R A. Cole, 2013</td>
<td>Study describing the characteristics of firms in different stages of credit need. Finding that smaller firms usually are in less need of any credit at all. Less constrained firms in terms of credit are usually older, larger and better growing than their younger peers.</td>
</tr>
<tr>
<td>Collectivism and corruption in bank lending, X. Zheng et. al, 2013</td>
<td>Paper examines how national culture and collectivism influences corruption in bank lending. The results find Collectivism leads to higher corruption in bank lending. Among the dimensions of Hofstede it has been found that collectivism is the variable that holds the largest impact on the association. Further the study shows that it is not explained by factors such as relationship lending or governments in the economy, raising the importance of analysing the impact of Collectivism further.</td>
</tr>
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</table>

3.2 Literature review
3.2.1 The role of SMEs in the world economy

The subject of SMEs and their importance has increased majorly the last decade. Acknowledged Authors has found that the private sector is a key element to growth, most of all in the focus of small entrepreneurs, thus SMEs are described as a core element of world economic growth, employment and poverty alleviation. (Ayyagari, 2005, p. 2). Through SMEs, TWB financially supports the firm level acquiring of new profession-skills. Thus, implements capital in the working middle class and opens for the possibility of making it more pluralistic. TWB states that what is needed to help the world economy is to make the middleclass healthier, more competitive and sustainable. It is suggested that SMEs should be a tangible tool, accessible or effective intermedium for regulating the world economic health on a global scale (The World bank, 2001, p. 6).

Hallberg (2000, p. 6) suggests that the importance of financial support products is more important to the developing world, since SMEs are such a large share of the private sector. However, The European Union implements on the importance of SMEs as its combined countries consists of about 99,5% SMEs of the enterprise population (Annual Report on European SMEs, 2015 p. 9). Thus, SMEs are recognised as drivers of the economy regardless of countries levels of development.

Divided opinion has further been presented by authors on which scale the SMEs is a powerful tool for poverty alleviation, economic recovery and growth. TWB explains that many actors have tried to obtain all of these development factors, but that obtaining effective results is not a simple task. SMEs has been found to be especially difficult to serve and obtain results. An important consideration of financial institutions has become how to efficiently use means to support the SMEs all over the world, thus the creation of financial stimulating packages has grown. In 2004, The world bank granted approximately 2.8 billion into the initiative of supporting SMEs. (The World bank, 2001, p. 4)

3.2.2 The disadvantageous position of being an SME

TWB and the International Financial Corporation, from now on (IFC) have come together and analysed what the obstacles are for SMEs, and what are the explanatory factors that hinders support to become efficient. They have ultimately found that SMEs are usually more vulnerable to regulatory burdens and constraints in their entrepreneurial activity in the business environment than their larger peers. (The World bank, 2001, p. 6-7) Thus, falls victim to larger social and political forces more easily. It predicts that political changes, institutional powers and cultural obstacles are disadvantageous to SMEs. Further into the analysis of SMEs obstacles to growth, TWB is identifying one of the main concerns of younger SMEs, their access to external credit.

3.2.3 Financial constraint as an obstacle

TWB is introducing a complete chapter exclusively focusing on the SMEs need for external capital, suggesting that SMEs main concern for further growth is the support of external, formal capital (bank loans) (The World bank, 2001, p. 26). Zheng et. al (2013, p. 364) claims through reference of earlier research that the importance of banking systems and access to credit is critical to economic growth. The connection between economic recovery and development by SMEs external financing is indirectly stressing the crucial implementation of access to credit in small firms among developing economies.
Beck (2006, p. 2943) complies previous research of (Ayyagari & Beck, 2005, p. 8). In comparison to larger firms, SMEs are in larger extent facing obstacles such as credit constraints. Kuntchev (2014 p. 17) suggests that the result of the disadvantageous lending for SMEs leaves them to find more informal ways to obtain finance. Without appropriate financial tools, the middle and lower class is without necessary means to truly become self-sufficient. Today, Beck (2006, p. 2936) finds that SMEs are accessing significantly more informal finance than their larger competitors. S. Mateut, (2003, p. 6) declares that trade credit, or informal finance is not only a question of loan taking habit. The reason is mainly that firms does not have any other external funds to rely on. The issue becomes even more problematic as the financing of SMEs are not coming from both governmental sources and development banks. This suggests that this gap in knowledge about the remainder of access to credit remains unexplained. It becomes increasingly interesting to acknowledge the reasons to why some SMEs are rather getting informal finance means, even though it is more limited. Even though the explanatory reasoning varies to some extent to what variables are hindering SMEs to obtain growth, the subject is mainly focusing on financial factors. (Ayyagari & Thorsten Beck, 2005, p. 8). However, Hallberg (2000, p. 6) published an article on SMEs role in the world economy and has come to challenge the thought on what elements are the main contributory factors of economic growth. The author further suggests that SMEs are misinterpreted by focusing on financial key moderators in the business environment, and that social and political considerations are rather more important.

According to Hallberg, (2000, p. 6) SMEs are still important and should mainly be handled because they are such a large share of firms in the business environment. TWB (2001, p. 11) presents a diagnostic overview of how the business environment affects the access to credit. It is both explained that the business environment is affected and made difficult to understand when adding political, and ethnic divisions to the context. This suggests that the business environment and the access to credit is highly dependent on countries governmental and cultural structural differences and the way it can change the nature of business. By this line of argument, we assume that the relevance of SMEs is based on global scale because of their large share in the global business environment with impacts on both the financial, social and governmental levels. Thus, rather than exclusively focusing in the poorest of countries around the world, we will focus on a widespread collection of observations within the segment of SMEs to find variation in potential explanatory variables such as culture and access to credit.
3.2.4 Credit information and access to credit
The level of Credit information differs among countries around the world. The empirical evidence suggests that SMEs face constraints by banks since they have a hard time obtaining correct information about credit risks. (Minh Le, 2012, p. 96) finds that banks are averse in their habit of giving loans to SMEs that does not have formal financial statements. It is described as asymmetric information and is mostly found in countries without well-established credit bureaus. Hope,2008, p. 358) suggests that information asymmetry increases conflict between firm and its debtholders, eg banks or informal debt roles (Hope, 2008, p. 358). A.Bergers implies that SMEs often are flawed when it comes to accurate credit information. (Berger et. al, 2006, p. 2) The World bank is claiming that credit information is also sharing significance on activity of market entry and thus higher competition in the SME market and access to better external finance. Thus we have come to understand that information asymmetry proclaims indications of credit constraint to SMEs mostly in developing countries that are disadvantageous in form of governmental regulation policy and formal credit bureaus. Love (2012, p. 2) Suggests that the information hypothesis problem can induce larger constraints on SMEs since it is harder to determine the benefits of lending with opaque clients, rather than transparent and more mature firms.

3.2.5 Firm age and Access to Credit
The growth rate of younger firms tends to be higher than for old firms. Bribes are also not as common in young firms as it is in old firms, thus they have weaker relationships with bank officers and bureaucrats (Liu et al, 2015, p. 8). Age of a firm is re-appearing to distinguish whether the company has a good track record or not (Hope et al, 2011, p. 944). Hence if a company have high age in years, we assume that it has been enough profitable to survive the market competition and therefore have an edge to other firms when it comes to access to credit. Hope et. al (2011, p. 944) suggest that age in years of the company are positively and significant in association to access to credit. The wisdom implied by the longer survival of firms suggests that it should be of easier task to obtain external, formal credit. The question remains if this access to credit in relation to firm years of operations is misguided throughout the world based on banks empirical preconceptions.

The evidence is clear that older and larger firms are benefiting from its history, and that younger firms have a more complicated task to obtain needed credit. Liu et al (2015, p.8) shows that the firm age has a negative relationship to financial obstacle and is even more important than the firm size when it comes to that matter. Minh Le (2012, p. 101) supports this idea of disadvantageous SMEs in terms of formal debt access. However, Kuntchev et. al (2014, p. 3) contradicts our perceived question of age affecting Access to credit. By new measures of credit constrained status they find that age is not always significant for defining the probability of being credit constrained. Though showing significant values for age on some levels of credit constraints, it is first when firm size is added to the equation that the explanatory power of age become vague.

Regarding the divided opinion on the importance of firm age (Phuong Nu Minh Le, 2012, p94) is suggesting that younger firms are struggling more to get access to credit since they are more affected by information symmetry. Thus, in the argument of (Minh Le, 2012, p. 107) it suggests that age holds stronger correlation to Access to credit, which furtherly questions (Kuntchev, 2014, p. 3) lack of faith in firm age as an explanatory variable. We find it important to gain a deeper perspective on the subject, since we have got a contradiction between earlier published research.
Since we have collected different perspectives to firm age as a crucial variable to access to credit we do not get a clear and concise explanation to why younger firms are generally more credit constrained. Kuntchev (2014, p. 3) suggests, even though sceptic to firm age as an explanatory variable that small firms lack access to credit as of the problematic “Survival bias”. It means that bigger and older firms are suggested to be approved more bank credit since they are of higher quality and safe-guarded in terms of risk. This implies that the level of default is logically higher within smaller, younger firms than large enterprises. This situation is highly problematic as of the still high credit constraint put on smaller firms, even though they are in need of credit to fulfil its task as core element to economic growth.

Even though the conclusion is clear, that bank finance is more accessed by larger and older firms, it remains unexplained why SMEs access to credit are different between countries. By previous research we predict that variance between countries are mostly found in countries that has weak governmental policies and cultural differences. Thus, weaker institutional setting has an impact on the relationship between firm age and access to credit.

3.2.6 Culture, policies and various effects on access to credit

Countries around the world have different cultures and government policies. Cole (2013, p. 2-3) expects more developed countries to provide more opportunity to obtain loans for SMEs. The author further suggests that less competitive business environments can make it more difficult to obtain loans, but also that the personal relationship to the bank can make it easier. This suggests that cultural differences between countries can create variation in whether obtaining credit increases with experience and maturity of management and firm. Coles (2013, p. 29) findings suggests that policy change to stimulate the access to credit is one of the key elements to obtain national economy growth. With larger credit constraints, it is likely that countries limit innovation, production and long term growth.

To strengthen the argument whether Country level cultural differences and policies e.g governmental decisions has an impact on SME financial Access, it has been suggested by (Kuntchev, 2014, p. 17) that Governments decisions to improve the availability to finance, and credit information is disproportionately more beneficial to young firms. So by this it is perceived that political motives and cultural differences on a cross-country scale reasons that older firms are more common to use bank finance, as younger firms are more common to use a combination of Trade credit and informal finance (Kuntchev, 2014, p17).

The pattern is clear that SMEs are both younger and less financially able to access credit within all cultures and equally as important among all cultures in order to obtain economic growth. To this line of argument, it questions if social, and cultural differences makes the perceived financial constraint any different between different cultures. Thus, loans are made on a firm level, the focus on access to credit within SMEs are balancing on a scale between micro and macro level economics since the reasoning seems to be two parted on business environments and political/cultural scales. This is suggesting that the relevance of a mixed study regarding identifying the gap within dependent variables on access to credit on both micro level and between countries would have a good chance of offering contribution to present research on the matter.
3.2.7 Cultural variable and its impact on Access to Credit

When analysing developing countries and their past and present situation on access to credit within SMEs a research gap has been found regarding the national culture and its impact on bank lending. Zheng et. al (2013 p. 363) has presented a thorough study regarding corruption and the level of collectivism in countries. The article hypothesizes that “self-construal and particularistic norms in collectivist countries leads to a higher tendency of lending corruption through their interactions between bank officers and bank customers and on the dynamics among bank colleagues.”

Regarding what has been learnt by studies by Kuntchev (2014) and TWB (2001), we see a strong connection between cultural differences and the access to credit within SMEs. However, the claim of cultural importance has been rather less noticed in the scientific research on the subject of finance. When speaking about corruption Zheng et. al., (2013, p. 364) gives a stated example of the relationship between a bank officer and a bank lender. The example is that Corruption in which bank lenders profits presently or in the future by altering terms of access to credit gives consequence to SMEs. When a bank actor has influence over the financial terms and professional responsibility is abused, it is shown that SMEs are disproportionately more reduced in access to profitable loans for investments than larger, older firms. Even though evidence claims significance of these effects Zheng et. al (2013, p. 364) claims that literature has been omitted with exception of three recently published studies regarding the effect of bank competition and various monitoring institutions on differences on firm lending corruption (Barth, Lin & Song, 2009; Beck, Kunt, & Levine, 2006; Houston, Lin, & Ma, 2011). The research concludes that cultural differences between countries is a rather undiscovered subject which might create potential for new research to offer great contribution.

In addition to the unclear subject of firm age we can see that an explanation between the cultural differences effect on bank corruption and firm age can have an explanatory effect on access to credit. By combining the definition of cultural differences, founded by (Hofstede, 2001) to analyse its constraints on financial constraint through human interaction. Zheng et. al (2013, p. 365) mainly focuses among the four different types of cultural differences on the cultural dimension of individualism/collectivism since it has been proven to be the most significant driver of cultural differences within societies. The conclusion is that among countries with higher level of collectivism, actors within banks are more plausible to be exposed and engaged in bribes. Zheng et. al (2013, p. 363) concludes that there is robust evidence that firms in more collectivistic countries are perceived to be exposed to more corruption within bank lending and access to credit.

Additionally, it is not possible to explain governmental and political connections to collectivism and its impact on bank lending corruption. It is clear that within all our research on this subject that cultural differences have a big impact on access to credit within SMEs and that collectivism/individualism is the best fit to test this relationship. The conclusion that culture affects bank corruption and that the relationship between firm age affects access to credit further, it gives a great opportunity to question the importance of firm age to the subject and how experienced companies can ease the constraints on their own access to credit and how it might be challenging for the very smallest and youngest firms to access credit due to corruption in the formal credit and finance sector. We learn that the importance of SME development has reached multiple beneficial factors in the whole world economic development and recovery. Our research builds on the fundament of earlier research, claiming that SMEs are a core element in the economic growth. By measuring the relationship between firm age and financial constraint influenced by collectivism,
we can offer contribution to the understanding about how SMEs are constrained by more than just economic factors. The supporting financial variables might sources that might hold potential to reduce the barriers to desired world economic growth.
3.3 Hypotheses Development

In the next two sections, we first provide a hypothesis regarding the association between firm’s age and financial constraints. Then, we provide a hypothesis on the moderating effect of culture on the proposed association.

3.3.1 The association between firm age and access to credit

The SMEs are crucial for the world economic development. (Ayyagari, p. 2; The World bank, 2001, p. 6-7; Annual Report on European SMEs, 2015 p. 9). For the SMEs to operate well and to grow, access to credit plays an important role. In particular, for the SMEs in the early stage of development, obtaining finance is of great importance. In fact, acquiring finance for new investments is suggested to be the number one concern for SMEs, particularly for the younger ones. (The World bank, 2001, p. 26). One possible reason behind the increased financial constraints for the young SMEs is the fact that creditors are more reluctant to lend to the younger SMEs. (The World bank, 2001 p. 26). The theoretical link between firm age and financial constraints is to some extent explained by the Survival Bias theory (Kuntchev, 2014, p. 3). The theory of Survival Bias suggests that younger firms are more likely to bankrupt and therefore represent more lending risks. In addition, younger firms are usually more vulnerable to regulatory burdens and constraints in their entrepreneurial activity in the business environment than their larger peers (The World bank, 2001, p.6-7). Being exposed to the higher level of bankruptcy and being more vulnerable to the environmental changes, young firms usually represent higher level of risk for the creditors. Having more lending risk, younger firms should have a limited access to credit (Kuntchev, 2014, p. 3). In line with this prediction, majority of prior research (e.g., Hope et al. 2011, p.944) show that there is a relationship between firm’s age and extent of financial constraints.

Based on the above discussion, and building upon survival bias theory and findings of prior research, we hypothesize that young firms experience higher level of financial constraints than the more mature firms. This leads to the following hypotheses:

**H1a:** *Ceteris paribus, there is a negative association between SMEs’ age and access to credit within SMEs financial constraints.*

To deepen our insights on the matter, we have also generalized Age as a dummy for the youngest of firms (age <5 years). Thus, we hypothesize a second research question.

**H1b:** *Younger SMEs, Compared to the older one experience higher level of financial constraints.*

3.3.2 The Role of Collectivism

According to the extant body of research, country level factors might affect the financial constraints of firms. Among the country level factors, culture has been among the favourite topics for researchers. Particularly related to our topic, prior research document the effect of culture on financial constraints. For instance, Zheng et. al (2013, p.363) suggest that culture has effect on the financial constraints. As noted before, culture may have several dimension such as collectivism, power distance, etc. Perhaps, focusing on all dimensions of culture is far beyond the purpose of our thesis. Therefore, for the purpose of this thesis, we focus on only one dimensions of culture, namely individualism-collectivism. We choose individualism-collectivism because variety of prior research (Zheng et al, 2013) document the effect of collectivism on the corruption. And corruption
is one of the factors that leads to the financial constraints (Zheng et al., 2013, p. 365). We propose that in the countries with high level of collectivism (relationship-based countries), bank officers are more likely to engage in corruption because they prioritise the related customers. In line with this prediction, Zheng et al. (2013) report that lending corruption is higher as the collectivism increases. Given this, we predict that firms experience higher level of financial constraints as the collectivism increases. While this prediction has already been tested by prior research, we also test this prediction by newer sample with more observation both in terms of number of firms and number of countries. Therefore, we formulate the following hypothesis:

**H2:** A country's level of collectivism is positively related to the level of financial constraints among SMEs.

So far we argue that age and collectivism are related to financial constraints. We further suggest that collectivism might affect the association between firm’s age and financial constraints. Put it simply, we propose that there should be an interaction between age and collectivism in their relationship with financial constraints. For the moderating effect of collectivism on the association between firm’s age and financial constraints, one might argue that collectivism affects the financial constraints of older firms in a lesser degree because of the following reason. More mature firms have more opportunity in the credit market because they usually have established better relations and network with banks officials (Zheng et. al, 2013, p. 364). In fact, Minh Le (2012, p. 101) suggest that relationships are one of the main reasons to why small firms face a higher level of financial constraint. Having a larger network of connection enables more mature firms to overcome some of the disadvantage that the collectivism culture creates for firms in terms of access to credit. (Zheng et. al,2013, p. 364). Given this, we formulate the following null hypothesis:

**H3:** The negative association between SMEs’ age and financial constraints decreases as collectivism increases.
4. Practical Method
The chapter presents the data collection, sample selection and research design.

4.1 Data collection
The main source of our data comes from the World Bank’s Enterprise Survey. The dataset from the World Bank’s Enterprise Survey is containing firm level data from 2006 until 2015, and lastly modified 2016. The Enterprise Survey data set can be obtained from the following link: https://www.enterprisesurveys.org/portal/elibrary.aspx?libid=14
This is currently the latest updated dataset on the world bank database. For our cultural variables, we use the Hodstede’s cultural dimension dataset from the following website http://www.geerthofstede.nl/dimension-data-matrix

4.2 Sample selection
To get a global perspective on our survey it is important that we can collect data from countries all around the world. To do so we kept as much countries in our dataset as we could, unless there was crucial missing data on a specific country. By using a broad dataset we include cultures among the world and therefore make it possible to investigate if culture has an association due to firm age and access to credit on a global level. From beginning our data consist 118206 observations and unique countries were 135. When adding our cultural variable, our unique data decreased to 38 countries. Since our data still covers all continents of the world and therefore also contains culture from all around the world, we assume that the collected data holds high quality and our study still acquires the potential of offering contribution. The final sample consist of 31422 firms from 38 countries.

4.2 Research Design
To illustrate our research design, we first, provide the Libby’s boxes. The conceptual model of Libbys boxes is described as a predictive validity model. A framework for designing and evaluating research.

Within this model we validate our hypothesis between our variable X, firm age and Y, Access to credit. by following previous research and questioning the added variable we find a result within this first link. By using proxy, by the enterprise survey, we apply statistical models on this association. By the model design we then add potential moderating variable M, Collectivism/individualism. By the proxy of Hofstedes cultural dimensions to see an effect on the association between firm age and access to credit. For example, some validity problem might occur by the measurement of our variables. The proxy for Access to credit is measured by the perceived credit constraint by firms. This perception is in highest degree practical and needs to be interpreted with accuracy. Therefore, we have implemented a declaration, or explanation of all variables used in the study. This will be presented in the next chapter.
Figure 4 “Libbys Boxes”

Conceptual

Independent Variable X
- Firms Age

Moderator:
- Culture at country level

1. External Validity

2. and 3. Construct validity

Proxy Moderator(s)
- Hofstede's Cultural dimensions
- Collectivism

4. Statistical Validity

Operational

Proxy X
- Young firm Dummy: ><\text{year}>>1 & <\text{year}>>0

Proxy Y
- The perceived obstacle to finance within SMEs [0-4]

Vs & Zs

Prior Influence & Contemporaneous factors
- Control variables: Based on theory in prior research; primarily Liu et al. 2015 and Hope et al. 2008

Statistical methods: Robust linear regression; Marginal Plot; Correlations test

5. Internal Validity
4.3 Variables of conceptual model and controls

In this chapter, we provide an explanation to our used variables. First we present our main variables, followed by our control variables. In order to ensure quality of results within our paper we include additional control variables to our work.

4.3.1 Definitions

The following definitions of variables introduces the fundamentals essential to full understanding of this thesis. These definitions will further be a complement to previously mentioned variables to fully understand their meaning and relationship to each other.

4.3.1.1 Access to Credit

Access to credit is describing our main dependent variable based on how problematic obtaining finance is for current operations of business. The alteration of variable \( \text{FinCon} \) Financial constraint is based on four different perceived values. \((0) \) No obstacle, \((1) \) Minor obstacle, \((2) \) Moderate obstacle, \((3) \) Major obstacle and \((4) \) very severe obstacle. This is survey data collected on a wide scale of cross-country level from the world bank enterprise survey (WBES). The data regarding \( \text{FinCon} \) is collected in 31422 observations and is representative for 38 countries.

4.3.1.2 Firm Age

Firm age is determined by years of service with an ending date as of last updated database from enterprise survey 2015. Numerical data is is determined through the mathematical function of \([\text{Survey year} - \text{firm founding year}]\). This illustrates years of conducted business on firm level. Companies younger than 1 years old are seen as outliers since the observations are immature for the collected data and contains uncertainties and are therefore excluded, also companies over 100 years old are excluded.

In this study we have made Firm age into a dummy in which young firms younger than 5 years \((\text{AgeD}=0)\) are considered as young firms, and firms older than 5.1 years, \((\text{AgeD}=1)\) are considered old firms. This way we can do more statistical analyses and go further into our discussion.

4.3.1.3 Collectivism

In order to measure the level of collectivism in a country, we have created the variable \((idv)\). Our data is maintained from Hofstede's six dimension dataset (2001). \((Idv)\) is created in a scale from 1-100, where 100 means that the the country is highly controlled by individualism and 1 tells us that the country is highly controlled by collectivism. Previous research suggest that high level of collectivism creates higher level of corruption (Zheng et. al , 2013 p. 363). This aspect makes collectivism even more interesting since corruption is a common global problem.

4.3.2 Main variables

4.3.2.1 FinCon

Access to credit is describing our main dependent variable based on how problematic obtaining finance is for current operations of business. The alteration of variable \( \text{FinCon} \) Financial constraint is based on four different perceived values. \((0) \) No obstacle, \((1) \) Minor obstacle, \((2) \)
Moderate obstacle, (3) Major obstacle and (4) very severe obstacle. This is survey data collected on a wide scale of cross-country level from the world bank enterprise survey (WBES). The data regarding (FinCon) is collected in 31422 observations and is representative for 38 countries.

4.3.2.2 AgeD
Firm age is determined by years of service with an ending date as of last updated database from enterprise survey 2015. Numerical data is is determined through the mathematical function of [Survey year-firm founding year]. This illustrates years of conducted business on firm level. Companies younger than 1 years old are as mentioned before seen as outliers and are therefore excluded. Also companies over 100 years old are excluded. In this study we have made Firm age into a dummy in which young firms younger than 5 years (AgeD=0) are considered as young firms, and firms older than 5.1 years, (AgeD=1) are considered old firms. This way we can do more statistical analyses and go further into our discussion.

4.3.2.3 lnAge
Firm age is also made by doing a logarithmic variable (lnAge). When performing statistical analysis, it can be misleading to use datasets that contain large outliers in their datasets. In order to avoid results that contain outliers it can be a good alternative to make variables logarithmic. This means that in a logarithmic variable you can see the proportional change while in the numerical set you can find it in arithmetic change (Noymer, nd).

4.3.2.4 idv
In order to measure the level of collectivism in a country, we have created the variable (idv). Our data is maintained from Hofstede's six dimension dataset (2001). (Idv) is created in a scale from 1-100, where 100 means that the the country is highly controlled by individualism and 1 tells us that the country is highly controlled by collectivism. Previous research suggest that high level of collectivism creates higher level of corruption (Zheng et. al, 2013 p. 363). This aspect makes collectivism even more interesting since corruption is a common global problem.
4.3.3 Control variables
Thankfully previous research grants us the opportunity to retrieve control variables. The reason and need for control variables is that they might withhold explanatory power to our main conceptual model of firm age, culture and access to credit. Further, we have presented all control variables with a short summary of their contents, meaning and contributor to the analysis of our study. Additionally, their control codes are presented to ensure replicability for future research and revision. We are mainly retrieving our control variables from Enterprise survey and World government index.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Corrupt</strong></td>
<td>The Corruption variable is telling how problematic corruption is on a country level. It consist a scale from 0 to 4 where 4 is “very severe obstacle” and 0 is “No obstacle”. We want to test if corruption as a control variable, therefore the variable (Corrupt) is inserted.</td>
</tr>
<tr>
<td><strong>size</strong></td>
<td>When it comes to access to credit, previous research has suggested firm size as one of the most important factors (Beck, 2006, p. 2396). Therefore, we found it interesting to investigate if firm age still has a significant association to access to credit when adding (size) as control variable. Based on previous research in which divided means has been presented, we predict that there could be a multicollinearity between these variables. Though we have done an VIF-test to handle that risk. To measure firm size, we have used a categorized indicator with Small and medium firms, based on employment rate.</td>
</tr>
<tr>
<td>Variable</td>
<td>Explanation</td>
</tr>
<tr>
<td>----------</td>
<td>-------------</td>
</tr>
<tr>
<td>Exp</td>
<td>Previous research has measured Experience as the control variable ($Exp$), by “How many years of experience working in this sector does the top manager have” (Liu et. al, 2015, p. 36). Thus we have done the same. Yusuf &amp; Attahir claims that ability to develop and use resources effectively is a main factor for success. To obtain this element of success one key variable is management experience. Previous Literature in Libya has shown that management skill has an importance when it comes to access to credit. It is common that SME owners and founders are also manager of the company, but do not have the experience that is needed to create growth beyond a certain level (Zarook et. al). We believe that management with higher level of experience and a better track record will face less financial constraints than firms with less experienced management. Therefore, we claim that it is interesting and necessary to use management experience as a control variable.</td>
</tr>
<tr>
<td>foreign</td>
<td>Our control variable ($foreign$) is retrieved from The world bank enterprise survey and is used by former research. If an international firm or owner has a financial stake in the firm its value increases between 0 and 100. Previous research has applied ($foreign$) as a variable in which if any influence from foreign countries is in the company it is set as a value 0. Within our study we want to view companies that are mainly set as domestic countries. Because of this we have set our foreign stake to 20%. This allows companies to have some international influence but their main operations within a country. Since the study is performed on a global scale we see no problem with having set our tolerance level to 20%.</td>
</tr>
<tr>
<td>GDPPCap</td>
<td>Our control variable ($GDPPCap$) variable is based on GDP per capita, measured in US dollar. The data is collected from the world bank enterprise survey, which implies some reliability. GDP is used since it measures the market production, and market weaknesses and institutional imperfections affects economic growth. (Beck, 2006, p. 2932). By adding GDP per capita as a control variable, we can see how it affects our association between firm age and access to credit.</td>
</tr>
<tr>
<td>Variable</td>
<td>Explanation</td>
</tr>
<tr>
<td>----------</td>
<td>-------------</td>
</tr>
<tr>
<td><strong>TaxA</strong></td>
<td>We measure how problematic tax rates are for a current operation of business, graded on a scale zero to four. The control variable (TaxA) determines if tax rates have no negative effect on the current operation, it will show a scale between zero and four. This symbolizes the maximum amount of effect. The TaxA variable is perceived important as there are big differences among countries. It is argued by Gatti &amp; Honorati (2008, p. 2) that TaxA is both in significant in measurement of Ordinary least square and in country estimates in association to tax compliance. Thus, tax audited firms are tending to escape less taxes than those who are not audited.</td>
</tr>
<tr>
<td><strong>CII2014</strong></td>
<td>Credit scoring is one of the tools to overcome the obstacle of SME financing. The problematic situation of insufficient credit information is most of all the consequence of high credit costs because of uncertainty of opaque SMEs. (Love, 2012, p. 2) In this study we have merged the dataset of Credit Information Index, the variable (CII2014) from TWB in which the data is collected from the year 2014 on country level. The years 2013 and 2015 are showing rather similar results which indicates that the dataset is stable and can be relied on from obtained single year point of reference. The scale is measured between 0 and 8 and is perceived as 0 corresponds to very low credit score and 8 the highest. We have obtained information on all 38 countries used in the dataset which indicated no loss of observation.</td>
</tr>
<tr>
<td><strong>FinCred</strong></td>
<td>Dummy variable of (FinCred) that equals 1 if firm is checked and certified by an external auditor, and 0 if otherwise. This paper discusses how effects of voluntary auditing on firms has an effect on access to credit. Theory is supporting that audited firms are easier accessing finance, but are more faced by bank lending corruption. It is believed to be a bigger problem within developing countries. (liu et al, 2012, p. 24)</td>
</tr>
</tbody>
</table>
4.4 Statistical models

We examine how the company’s age (LnAge) affects financial constraints (FinCon) to test the impact of age to access to credit. We employ correlations and robust cluster regressions for relevant firm characteristics by adding variables: management experience, corruption, tax audited, financial credibility, foreign owner structure, firm size GDP per capita and credit information index. Our model is specified as below.

To measure financial constraint, the variable measures from 0 (no obstacle) to 4 (severe obstacle).

\[ FinCon = \beta_0 + \beta_1 LnAge + \beta_2 Exp + \beta_3 Corrupt + \beta_4 TaxA + \beta_5 FinCred + \beta_6 ForeignD + \beta_7 size + \beta_8 GDPPerCap + \beta_9 CPI2014 + \varepsilon \]

We further run a test on the dummy variable of firm age to cluster young (<5 years) to older (>5 years) to measure the effects of young SMEs to financial constraints. We further explain similar firm control variables.

\[ FinCon = \beta_0 + \beta_1 AgeD + \beta_2 Exp + \beta_3 Corrupt + \beta_4 TaxA + \beta_5 FinCred + \beta_6 ForeignD + \beta_7 size + \beta_8 GDPPerCap + \beta_9 CPI2014 + \varepsilon \]

For our second hypothesis we employ both age as a dummy variable, and the migrating variable of collectivism in this model. We further test robust cluster regressions on this association.

\[ FinCon = \beta_0 + \beta_1 AgeD + \beta_2 idv + \beta_3 Exp + \beta_4 Corrupt + \beta_5 TaxA + \beta_6 FinCred + \beta_7 ForeignD + \beta_8 size + \beta_9 GDPPerCap + \beta_{10} CPI2014 + \varepsilon \]

Our third hypothesis tests for the association between collectivism and firm age we test for a increasing interaction effect, therby we multiply ageD with idv. Here, we employ both margins plot and robust cluster regression.

\[ FinCon = \beta_0 + \beta_1 AgeD + \beta_2 AgeD*idv + \beta_3 Exp + \beta_4 Corrupt + \beta_5 TaxA + \beta_6 FinCred + \beta_7 ForeignD + \beta_8 size + \beta_9 GDPPerCap + \beta_{10} CPI2014 + \varepsilon \]

In our tests we use 5% significance level as our limit to reject the null-hypotheses.
4.4.4 Controlling for Multicollinearity
Multicollinearity has been avoided as much as possible when adding variables to the model. To ensure non multicollinearity a variance inflation factor (VIF) test has been used. However, an VIF-Value larger than 10 indicates risk for multicollinearity.(Moore et al, p.610)

When analysing our sample it showed indications of that the variable “Year” and “firm age” might hold multicollinearity, therefore the variable “year” were excluded from the model. Though, As suggested when finding multicollinearity in the model, the identified regressor should be dropped (Cameron & Trivedi, 2009, p. 367).

Table 1 VIF-Value

<table>
<thead>
<tr>
<th>Variable</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDPPCap</td>
<td>1.33</td>
</tr>
<tr>
<td>FinCred</td>
<td>1.18</td>
</tr>
<tr>
<td>idv</td>
<td>1.16</td>
</tr>
<tr>
<td>Exp</td>
<td>1.16</td>
</tr>
<tr>
<td>Corrupt</td>
<td>1.11</td>
</tr>
<tr>
<td>AgeD</td>
<td>1.07</td>
</tr>
<tr>
<td>size</td>
<td>1.06</td>
</tr>
<tr>
<td>CII2014</td>
<td>1.05</td>
</tr>
<tr>
<td>TaxA</td>
<td>1.04</td>
</tr>
<tr>
<td>ForeignD</td>
<td>1.04</td>
</tr>
<tr>
<td>Mean VIF</td>
<td>1.12</td>
</tr>
</tbody>
</table>

4.4.5 Controlling for Heteroskedasticity
When one perform a classical regression analysis, the common assumption is that it does not contain heteroscedasticity. If the error term in the regression does not have constant variance, they are heteroskedastic. In other words, if the variance of the distribution does not depend on the sample mean, the errors are homoskedastic. (Stock & Watson, 2011, p. 155-156). We have done our best to avoid heteroskedasticity as much as possible, since it can influence the validity of our statistical regression. Kennedy (2011, p. 345), suggesting the usage of robust regression to eliminate the risk for heteroskedasticity. Therefore, all of our regression models are robust.

4.4.6 Reverse Causality and Omitted Variable Bias
The results within our research might to some extent hold reversed causality. Thus might become problematic, since it would become difficult to explain a consistent theory that causality is reversed (e.g. Rajan & Zingales, 1998, p. 582). It is not in our belief that the access to bank loan should have an effect on firm’s age. No particular reasoning of this sort is brought up in previous research which indicates that our correlations does not hold reverse causality. However, we do not either claim that there is no such link. Since previous authors have neglected that there would be high risk of reverse associations we have chosen not to focus on reverse causality. To repel the problematic situation of reverse causality we are instead of explaining a causal link, describing the association between
variables. In this way, we do not claim to prove causality. We are instead suggesting that the statistical data can prove association between main variables.

There are many external variables that might affect the level of financial constraints among SMEs. If a dataset excludes variables that could have an impact, the regression test score could be biased, this type of bias is called Omitted variable bias (OVB) (Stock, J., & Watson, 2011, p. 179-180). Therefore, there might be risk for omitted variable bias in our model. We have tried our best to include the variable that earlier research has suggested might have an impact on our research question, to minimize the risk of OVB. Though, we cannot reject that the risk still remain. To reduce the risk for OVB we have done a robust cluster regression. Since, Stock, J. & Watson (2011, p. 184-186) Suggest that by dividing the data into group the risk for unknown OVD is reduced.
5. Results
In this chapter, we present the descriptive statistics and the results of our tests.

5.1 Descriptive statistics

For our observations of descriptive statistics we have inserted table 2 that presents our variables on the based observations of 31422 with independent means on each variable. The table is divided into two sets since they are based on the dummy variable of age >5.1 and <5 years. \((AgeD = 0)\). Consists of observations on firms younger than 5 years. \((AgeD = 1)\) consists of companies older than 5.1 years. We can see that the amount of observations is lower for \((AgeD=0)\) which make sense since they are younger and harder to obtain solid information from.

For the sample of young firms \((AgeD=0 <5 \text{ years})\), we can observe that financial constraint has a mean value of 1.52 which indicates rather low value of constraint observations within our datasets. However, what can be seen is that the standard deviation is rather high which indicates a wide spread of observations to its normal distribution.

Individualism shows results close to the median with a mean value of 41.93 while a median value of 39. Its standard deviation 12.07 which indicates some spread but nothing out of the ordinary. Management experience is with a mean value of 10.9 years which points to rather high amount of years within management though the firm is only 5 years old or younger. The standard deviation is 7.48 years and is interpreted as rather high which tells us that the spread of management years can be quite high between young firms. Corruption is measured within the scale of 0 to 4 and is presented with a mean of 1.6 which indicates no extreme values with a generally dominated lower half on the corruption scale with a standard deviation of 1.48.

The Dummy variable of audited firms of tax officials makes the mean slight higher than 50% of the firms. Since it is a dummy variable, it is not possible to get information from the standard deviation. The results for our dummy variable for audited firms is quite like the tax audited but differs slightly by a little bit lower share of audited firms. Regarding the foreign or domestic owned firms we can see that most of firms are owned within the country observed. The dummy variable of size says that there are very similar amount of medium and small firms within the young firm segment.

GDP per capita is not telling us so much out of its numbers. The mean value tells us that the per capita value is 9398.78. What we can see is that we have collected a wide spread sample of countries since the standard deviation is rather high with 6854.18. The credit information index spreading between 0 and 8 has a mean of 5.98 which indicates rather high mean value of credit information, but also here does the standard deviation tell us that the spread is rather high which indicates a high variance in the dataset. The dataset is not demonstrating anything out of the ordinary which makes our analysis more reliable to perform statistical tests on.

For the sample of mature firms \((AgeD =1 >5.1 \text{ years})\), financial constraint has a mean value of 1.43. The standard deviation is rather high which indicates a rather wide spread of observations to its normal distribution. Individualism shows results close to the median with a mean value of 41.41 while a median value of 46. Its standard deviation 14.9 which indicates some spread but nothing
out of the ordinary. Management experience is with a mean value of 17.6 years which points to rather high amount of years within management. The standard deviation is 9.29 years and is interpreted as rather high which tells us that the spread of management years can be hold higher variance between older companies. Corruption is measured within the scale of 0 to 4 and is presented with a mean of 1.76 with a standard deviation of 1.48.

The Dummy variable of audited firms of tax officials makes the mean slight higher than 50% of the firms. GDP per capita is 9915.5. The standard deviation is rather high with 7721.58. The credit information index spreading between 0 and 8 has a mean of 6.23. The dataset is not demonstrating anything out of the ordinary which makes our analysis more reliable to perform statistical tests on. What is worth mentioning is that some values differ between the dummy variables. For example, we can see that management experience is higher within older companies which makes sense. Companies that are older has the potential of having longer management experience. We can also see that the values of financial constraints and GDP per capita both are changing to the advantage of older firms. This is perceived as a good argument to go further into analysis to further understand the disadvantages of SMEs around the world.

We believe that it can be worth mentioning that the standard deviation spread between GDP per capita in both young and old firms is very high. It indicates high variety of country observations and that we can find SMEs all over the world within our datasets.
Table 2 Descriptive Statistics Tables

<table>
<thead>
<tr>
<th>Variable</th>
<th>AgeD=0</th>
<th>AgeD=1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
</tr>
<tr>
<td>Fincon</td>
<td>4866</td>
<td>1.52</td>
</tr>
<tr>
<td>Idv</td>
<td>2764</td>
<td>41.93</td>
</tr>
<tr>
<td>Exp</td>
<td>4866</td>
<td>10.90</td>
</tr>
<tr>
<td>Corrupt</td>
<td>4866</td>
<td>1.60</td>
</tr>
<tr>
<td>TaxA</td>
<td>4826</td>
<td>0.53</td>
</tr>
<tr>
<td>FinCred</td>
<td>4866</td>
<td>0.05</td>
</tr>
<tr>
<td>ForeignD</td>
<td>4853</td>
<td>1.34</td>
</tr>
<tr>
<td>size</td>
<td>4866</td>
<td>9398.78</td>
</tr>
<tr>
<td>GDDPCap</td>
<td>4866</td>
<td>5.98</td>
</tr>
<tr>
<td>CII2014</td>
<td>4866</td>
<td>0.53</td>
</tr>
</tbody>
</table>
5.2 Correlation
Before the regression analysis, the correlation between the variables in our model was tested. To do so, a correlation analysis has been done. Results with a star tells us that the variables have a correlation on a 5% level of significance. As seen in Table 3 the correlation between our independent variable (AgeD) and our dependent variable (FinCon) are significantly negatively correlated at r=-0.0261.

Table 3 shows that all the variables in the model has a significant correlation to Access to credit (FinCon) except for (FinCred). (FinCred) and (Fincon) only correlates on a level of 0.46%. (Corrupt) and (TaxA) are the only variables that has a positive correlation with (FinCon). Though, if the level of corruption in the country are high and/or the company are Tax audit, the availability to be approved for credit will decrease. Furthermore, Corruption is the variable that has the highest correlation with Access to credit, on a level of 28.77%.

Table 3 Correlation Table

<table>
<thead>
<tr>
<th></th>
<th>FinCon</th>
<th>LnAge</th>
<th>AgeD</th>
<th>idv</th>
<th>Exp</th>
<th>Corrupt</th>
<th>TaxA</th>
</tr>
</thead>
<tbody>
<tr>
<td>FinCon</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LnAge</td>
<td>-0.0382*</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AgeD</td>
<td>-0.0261*</td>
<td>0.7054*</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>idv</td>
<td>-0.0998*</td>
<td>0.0291*</td>
<td>-0.0120</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exp</td>
<td>-0.0150*</td>
<td>0.4220*</td>
<td>0.2429*</td>
<td>-0.0851*</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrupt</td>
<td>0.2877*</td>
<td>0.0539*</td>
<td>0.0377*</td>
<td>-0.1095*</td>
<td>0.0072</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>TaxA</td>
<td>0.0818*</td>
<td>-0.0021</td>
<td>0.0133*</td>
<td>-0.0329*</td>
<td>-0.0010</td>
<td>0.0309*</td>
<td>1.000</td>
</tr>
<tr>
<td>FinCred</td>
<td>-0.0046</td>
<td>0.1271*</td>
<td>0.0759*</td>
<td>0.1847*</td>
<td>0.0452*</td>
<td>0.0736*</td>
<td>0.1639*</td>
</tr>
<tr>
<td>ForeignD</td>
<td>-0.0196*</td>
<td>-0.0269*</td>
<td>-0.0190*</td>
<td>0.0363*</td>
<td>-0.0164*</td>
<td>-0.0188*</td>
<td>0.0206*</td>
</tr>
<tr>
<td>size</td>
<td>-0.0429*</td>
<td>0.1543*</td>
<td>0.1133*</td>
<td>-0.0166*</td>
<td>0.0507*</td>
<td>0.0527*</td>
<td>0.0413*</td>
</tr>
<tr>
<td>GDPPCap</td>
<td>-0.1233*</td>
<td>0.0630*</td>
<td>0.0246*</td>
<td>0.1959*</td>
<td>0.2160*</td>
<td>-0.2021*</td>
<td>-0.1312*</td>
</tr>
<tr>
<td>CII2014</td>
<td>-0.1092*</td>
<td>0.0791*</td>
<td>0.0389*</td>
<td>-0.1157*</td>
<td>0.1170*</td>
<td>0.0424*</td>
<td>-0.0600*</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>FinCred</th>
<th>ForeignD</th>
<th>size</th>
<th>GDPPCap</th>
<th>CII2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>FinCred</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ForeignD</td>
<td>0.0667*</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>size</td>
<td>0.2004*</td>
<td>0.0583*</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GDPPCap</td>
<td>-0.1201*</td>
<td>0.0462*</td>
<td>-0.0037</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>CII2014</td>
<td>0.0118*</td>
<td>-0.0421*</td>
<td>0.0918*</td>
<td>0.2863*</td>
<td>1.0000</td>
</tr>
</tbody>
</table>
5.3 Hypothesis testing

5.3.1 Hypothesis 1a test

Table 4 H1a: “Ceteris paribus, there is a positive negative association between SMEs’ age and access to credit within SMEs financial constrains”. Age of firm is here a logaritmed variable (LnAge). Our data shows a R-squared on a level of 10.7%, which we see as a good result. Though, similar research in the same field has come up with a R-Square at around 17% (Liu et. al, 2015, p34). The coefficient of (LnAge) shows -0.076, which indicates that the older the company is, the less financial constraint it will face. Our limit for rejecting the null-hypothesis is at 5% significance level. Since p-value for (LnAge) is within the area of 1% significant level we are able to reject the alternative hypothesis that younger SMEs, compared to the older one does not experience higher level of financial constraints. There are some other control variables that also got significan result on a 1% level, such as Corrupt and CII2014, which indicates that they have an importance of the result of our statistics.

Table 4 Robust cluster Regression

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>(1) Model with FinCon</th>
<th>(2) tstat</th>
</tr>
</thead>
<tbody>
<tr>
<td>LnAge</td>
<td>-0.076***</td>
<td>-3.22</td>
</tr>
<tr>
<td>Exp</td>
<td>0.003</td>
<td>1.41</td>
</tr>
<tr>
<td>Corrupt</td>
<td>0.257***</td>
<td>10.72</td>
</tr>
<tr>
<td>TaxA</td>
<td>0.182**</td>
<td>2.43</td>
</tr>
<tr>
<td>FinCred</td>
<td>-0.072</td>
<td>-1.56</td>
</tr>
<tr>
<td>ForeignD</td>
<td>-0.103</td>
<td>-1.68</td>
</tr>
<tr>
<td>size</td>
<td>-0.104**</td>
<td>-2.67</td>
</tr>
<tr>
<td>GDPPCap</td>
<td>-0.000</td>
<td>-0.60</td>
</tr>
<tr>
<td>CII2014</td>
<td>-0.058***</td>
<td>-3.46</td>
</tr>
<tr>
<td>Constant</td>
<td>1.643***</td>
<td>13.48</td>
</tr>
<tr>
<td>Observations</td>
<td>31,107</td>
<td></td>
</tr>
<tr>
<td>R-squared</td>
<td>0.11</td>
<td></td>
</tr>
<tr>
<td>r2</td>
<td>0.107</td>
<td></td>
</tr>
<tr>
<td>chi2</td>
<td>.</td>
<td></td>
</tr>
</tbody>
</table>

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
5.3.1.2 Hypothesis 1b test

Table 5 H1b: “Younger SMEs, Compared to the older one experience higher level of financial constraints”. Age of firm is here created as a dummy variable (AgeD), where 0 is equal to firms 5 years old or younger and 1 equal to firms older than 5 years. Our data shows a R-squared on a level of 11%, which is higher than when we tested the model with LnAge. The coefficient of (AgeD) shows -0.111. Since p-value for (AgeD) is within the area of 1% significant level we are able to reject the alternative hypothesis that younger SMEs, compared to the older one does not experience higher level of financial constraints.

Table 5 Robust cluster Regression

<table>
<thead>
<tr>
<th>Variables</th>
<th>(1) Model with FinCon</th>
<th>(2) t-Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>AgeD</td>
<td>-0.111***</td>
<td>-3.39</td>
</tr>
<tr>
<td>Exp</td>
<td>0.002</td>
<td>0.73</td>
</tr>
<tr>
<td>Corrupt</td>
<td>0.257***</td>
<td>10.61</td>
</tr>
<tr>
<td>TaxA</td>
<td>0.186**</td>
<td>2.44</td>
</tr>
<tr>
<td>FinCred</td>
<td>-0.078</td>
<td>-1.63</td>
</tr>
<tr>
<td>ForeignD</td>
<td>-0.100</td>
<td>-1.61</td>
</tr>
<tr>
<td>size</td>
<td>-0.111***</td>
<td>-2.84</td>
</tr>
<tr>
<td>GDPPCap</td>
<td>-0.000</td>
<td>-0.57</td>
</tr>
<tr>
<td>CII2014</td>
<td>-0.059***</td>
<td>-3.38</td>
</tr>
<tr>
<td>Constant</td>
<td>1.586***</td>
<td>13.95</td>
</tr>
<tr>
<td>Observations</td>
<td>31,133</td>
<td></td>
</tr>
<tr>
<td>R-squared</td>
<td>0.11</td>
<td></td>
</tr>
<tr>
<td>r2</td>
<td>0.107</td>
<td></td>
</tr>
<tr>
<td>chi2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1
5.3.2 Hypothesis 2 test
Table 6 tests H2: “A country’s level of collectivism is positively related to the level of financial constraints”.

Here the cultural variable Collectivism (idv) has been added into the model. By doing so, the significance of AgeD still remain on a level of 1%. The value of the coefficient now has dropped to -0.076. Furthermore, The R-square is now at the level of 10.23%, which is a minor decrease from before (10.66%). The p-value of idv does not show significance, which imply that we statistically cannot reject our alternative hypothesis “ A country’s level of collectivism is not positively related to the level of financial constraints”.

Table 6 Robust cluster Regression

<table>
<thead>
<tr>
<th>Variables</th>
<th>Model with FinCon</th>
<th>t-statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>AgeD</td>
<td>-0.076***</td>
<td>-2.95</td>
</tr>
<tr>
<td>idv</td>
<td>-0.007</td>
<td>-1.71</td>
</tr>
<tr>
<td>Exp</td>
<td>-0.002</td>
<td>-0.77</td>
</tr>
<tr>
<td>Corrupt</td>
<td>0.259***</td>
<td>8.19</td>
</tr>
<tr>
<td>TaxA</td>
<td>0.172**</td>
<td>2.72</td>
</tr>
<tr>
<td>FinCred</td>
<td>-0.026</td>
<td>-0.50</td>
</tr>
<tr>
<td>ForeignD</td>
<td>-0.160***</td>
<td>-2.87</td>
</tr>
<tr>
<td>size</td>
<td>-0.069*</td>
<td>-1.79</td>
</tr>
<tr>
<td>GDPPCap</td>
<td>0.000</td>
<td>1.41</td>
</tr>
<tr>
<td>CII2014</td>
<td>-0.052</td>
<td>-1.20</td>
</tr>
<tr>
<td>Constant</td>
<td>1.544***</td>
<td>3.68</td>
</tr>
<tr>
<td>Observations</td>
<td>20,648</td>
<td></td>
</tr>
<tr>
<td>R-squared</td>
<td>0.10</td>
<td></td>
</tr>
<tr>
<td>R2</td>
<td>0.102</td>
<td></td>
</tr>
<tr>
<td>chi2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1
5.3.3 Hypothesis 3 test
Table 7 tests H3 “The negative association between SMEs’ age and financial constraints decreases as collectivism increases”.

To test H3 we have done an interaction between AgeD and idv. We can see that R-squared is on a level of 10%. The interacted variable has a coefficient of -0.003, which interprets as a small number. For the coefficient of the interaction term, we observe an insignificant result. Therefore, we reject the hypothesis that the collectivism moderates the effect of age on the financial constraints. However, the interpretation of the interaction effect sometimes can be difficult. As a results, we also provide a marginal plot for the interaction to visually consider if there might be an association.

Table 7 Interaction effect

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>(1) Model with FinCon</th>
<th>(2) Tstat</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.AgeD</td>
<td>0.059</td>
<td>0.54</td>
</tr>
<tr>
<td>idv</td>
<td>-0.004</td>
<td>-0.78</td>
</tr>
<tr>
<td>1.AgeD#c.idv</td>
<td>-0.003</td>
<td>-1.27</td>
</tr>
<tr>
<td>Exp</td>
<td>-0.002</td>
<td>-0.78</td>
</tr>
<tr>
<td>Corrupt</td>
<td>0.259***</td>
<td>8.19</td>
</tr>
<tr>
<td>TaxA</td>
<td>0.172**</td>
<td>2.72</td>
</tr>
<tr>
<td>FinCred</td>
<td>-0.026</td>
<td>-0.51</td>
</tr>
<tr>
<td>ForeignD</td>
<td>-0.159***</td>
<td>-2.86</td>
</tr>
<tr>
<td>size</td>
<td>-0.070*</td>
<td>-1.80</td>
</tr>
<tr>
<td>GDPPPCap</td>
<td>0.000</td>
<td>1.42</td>
</tr>
<tr>
<td>CII2014</td>
<td>-0.051</td>
<td>-1.17</td>
</tr>
<tr>
<td>Constant</td>
<td>1.411***</td>
<td>3.04</td>
</tr>
<tr>
<td>Observations</td>
<td>20,648</td>
<td></td>
</tr>
<tr>
<td>R-squared</td>
<td>0.10</td>
<td></td>
</tr>
<tr>
<td>r2</td>
<td>0.102</td>
<td></td>
</tr>
<tr>
<td>chi2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
5.3.3.2 Marginsplot
The marginsplot visually investigate if the negative association between SMEs’ age and financial constraints decreases as collectivism increases. The Y-axis shows the level of financial constraint and the x-axis shows the level of individualism from 0 to 100. The interpretation of the plot tells us that higher level of collectivism in the country, creates higher financial constraint. In countries with high level of collectivism, the gap between young and old firms are almost non-existent, though the higher level of individualism in the country becomes, the more gap between young and old firms, according to access to credit. Though we can assume that in countries with high level of individualism, older firms have less financial constraint than young firms.

Figure 5 Marginsplot - Visual result of the interaction effect
6. Discussion of the Results

Based on our result and previous research we will here on provide a discussion and analysis following the theoretical frame of reference. We attempt to provide our perceived insights from the results as we provide the reader with its structural link to previous findings. We will methodically present our conclusions in order to make the line of argument easy to follow. Finally we present additional analysis to add close related insights beyond the spectrum of our research question.

6.1 Summary of findings

This study has questioned the predicted positive association between firm age and access to credit within SMEs. Further we have analysed the expected migrated effect of implementation of the cultural dimension of collectivism. In present moment, it is to our best knowledge that this is the first study to research the relationship between the main variables firm age and access to credit with the moderating effect of the cultural dimension of collectivism in consideration of SMEs on a cross-country level. The conducted research offers contribution to the extensive research on financial access within SMEs around the world by bridging the gap to cultural dimensions. Further we offer contribution to financial institutions e.g. TWB and the IFC regarding the understanding of the perceived obstacles SMEs face in obtaining credit within different cultures. We find that younger firms are perceiving higher obstacles to obtain credit than their older peers.

The results are ambiguously related to previous research. It contradicts, to some extent the research of (Kuntchev, 2014, et al p. 3; Minh Le, 2012, p. 94) that has neglected the explanatory power of firm age to access to credit. Hence we have found that firm age is explaining the perceived access to credit to a greater extent than firm size that is more supported by the theories of (Liu et. al, 2015, p. 34; Hope et al, 2011, p. 944). The link between firm age and access to credit is to some extent explained by the survival bias (Kuntchev, 2014, p. 3). By this previous support that ceteris paribus there is a positive association between age of firm and access to credit within SMEs. we find it even more relevant to analyse the asymmetry between cultures concerning SME access to credit. (Zheng et. al, 2013 p. 363) finds that national culture holds impact on bank lending, followingly that collectivism has impact on bank lending corruption.

We test if country’s level of collectivism is positively related to the level of financial constraints and if The negative association between SMEs’ age and financial constraints decreases as collectivism increases. Our result shows a tendency in linear with our hypothesis and are according to our findings in line with the following authors: (Zheng et. al, 2013 p. 363) But we find our results not significant. This negates our prediction of the migrated effect on the positive association between age of firm and access to credit within SMEs if collectivism is applied. However, we see clearly through the margins plot that a certain trend neglects younger enterprises to a larger extent than their older peers. This implies that there might be a common problem for all young SMEs in collectivistic countries to obtain needed financial support. Thus, implying more need for financial support programs by financial institutions in order to fill the gap of lack of formal credit in the private sector. But as we mentioned we cannot statistically prove this, we only suggest that there are indications that points in this specific direction.

6.2 Limitations

There are some limitations that is important to have in mind when interpreting the findings from a study like this. There could occur some measurement problem, since our data have been maintained
Even though the risk is negligible that the data would have shown different result if it were maintained today, we want the reader to have this in mind. When merging the cultural dataset from Hofstede, the unique countries decreased from 129 to 39. This drop is not crucial for the reliability of the test, since the data still includes countries from all around the world and therefore also includes enough different cultures. We want the reader to have in mind that a dataset with more unique countries on culture level could affect the outcome of our result. To the initial processing of our research we have collected previous research from online databases. To some extent we have been limited by the access given by University of Umeå and Google scholar. This implies that we might have been limited in our selection process by external access of research. Further we have collected keywords, that have been tested through database search tools. This implies that we have limited our research to the narrow subjects concerning our own specific research. However, this limits the thorough research collection since we have not utilized our scope by including more languages and walked through branch data on finance all over the world.

6.3 Truth Criteria

Within the theories of Truth criteria. Bryman & Bell (2011, p. 41) declares three criteria to determine the quality of business research. These criteria are Reliability, replication and validity. These have been declared in the methodology chapter and will be evaluated here. Reliability estimates the ability to replicate research in the future. As we have inserted our statistical process of sorting our DO-file. We believe that future research easily can employ our process to replicate the dataset. However, data can change and variables can be renamed, this can complicate the process of replicating previous research. As we have declared all information on what sources we have used, e.g. enterprise survey & Hofstede's cultural dimensions, we believe that the information is accessible for future information retrieving. By using these acknowledged databases, we minimize the risk for lack of reliability. Thus, these databases are understood to accurate information by previous acknowledged authors.

Regarding validity there is a risk that our variables does not represent the complete accurateness that we aim to answer by our research, however we insert a formal explanation developed by the variable founder making it more easily understood and the chance for misinterpretations are less probable. By that measure we believe that we hold high validity through our work.
6.4 Conclusion

The purpose of our study was to investigate the association of financial constraint and young Small and Medium Enterprises (SMEs, hereafter) and how this association is affected by the level of collectivism.

SMEs are suggested to be important all over the world because they are one of the main elements for the world economic growth. One of the reason behind the economic importance of the SMEs is the fact that they contribute to the labor market by hiring people, and additionally they add innovations to the economy (Ayyagari, 2005, p. 2). By trying to identify the underlying effects regarding SMEs financial constraints, we attempt to provide additional evidence to the financial institutions, helping their daily operation of creating efficient financial support programs. Further how to adapt to the cultural differences that might increase the corruption in bank lending. Thus, we study whether a country’s level of collectivism is related to the level of financial constraints.

Our dataset contains 31422 observations and 38 unique countries, whom has been used to do quantitative tests, in order to statistically test these associations. The dataset enables us to do broad observations among very different countries, however, we believe that there is undiscovered potential in the data that can be analysed further.

Our findings show that firm age has a positive association on access to credit, in fact, the younger the company is, the more financial constraint it will face. This is a step forward when coming to understand the underlying factors that affect financing constraints. Since SMEs are a core element of world economic growth, not least for the unemployment rates (Ayyagari, 2005, p. 2). Furthermore, it is important to identify the reason for why younger firms faces higher level of financial constraints. It would not be strange to assume results in the opposite direction, since governments wants to decrease these unemployment rates. To do so it would be profitable to create opportunities for young firms when it comes to access to credit.

Collectivism has an impact on the level of corruption in bank lending and previous research suggest that corruption and bribes are not as common in young firms as in old firms (Liu et. al, 2015, p. 8). Our results tell us that corruption has a negative association due to access to credit. Even though we see a clear pattern between the association of collectivism on firm age and access to credit, our test did not show significant result. By adding control variables such as management experience, we can see that even though the young companies have considerably experienced managers, they still face more financial constraints. Thus, mature leaders with important financial relationships does not change the fact that young firms still face more financial constraint and might argument for the insignificant result of the migrating effect of collectivism. Ultimately, we draw the conclusion that financial constraint is affecting the economy and SMEs all over the world. This limits the incentive of entrepreneurial activity and thereby world economic growth. We derive that the socio-economic view of depending on in-group resources, as done in collectivistic national setting might “slow down” the economic development and growth of young firms due to bank lending corruption, thus, in institutional setting, deflating needed national economic growth.
Additionally, the result might have been different if we would have used a dummy-variable for idv, since, it possibly would have identified the countries with high level of collectivism on a more efficient way, we suggest further research to test this. To have in mind, by narrowing our samples to young SMEs we have also refined the potential findings of patterns in the business environment on a global scale.

We find it relevant to do more extensive research on the subject of access to credit. Thus, extending the existing knowledge, mainly since there are many unexplained factors to SMEs access to credit. By including more cultural dimensions and more updated research we believe that the scope is broadened to the subject. However, we believe that there are many unexplained influences in the pre-existing set of the enterprise survey that needs to be analysed further, as well as broadened by external databases. We have explored the cultural variable of collectivism and found that it was complicated to grasp the spread of observations. The suggestion is clear, that these cultural dimensions influence the young SMEs globally. However, to prove this link we suggest that more in-depth analysis must be done to determine if the link withholds false associations.

Further, the methodology of our research have conducted a study from one point of time reference. Thus, making this study less considerate of time changing effects on societal factors. We recommend future authors to conduct research that are considerate of the time span analysis, taking the time changes in the business environment into consideration. The study is conducted from a global, cross-country perspective. By not analysing the specifics of countries we have not utilized the in-depth knowledge on what factors that can explain outliers, or greater spread among countries. We therefore wish that future researchers are conducting studies that collect detailed data on specific countries to make more extensive conclusions than those that have been possible within this research.

Finally, as mentioned, we attempt to provide additional evidence to the financial institutions to help their daily operation of creating efficient financial support programs. However, we stress the importance of that our result remain suggestion of associations and not causal links. To prove causal relationship we suggest more extensive research to be conducted.
7. Reference list


Beck, T., & Demirgüç-Kunt, A., & Maksimovic, V. (2004). Financing patterns around the world: Are small firms different?. Robert H Smith School of Business University of Maryland


Kuntchev, V., Ramalho, R., & Rodríguez-Meza, J., & Yang, J.S. (2014). What Have We Learned from the Enterprise Surveys Regarding Access to Credit by SMEs?. Enterprise Analysis Unit


Noymer, nd. UC Irvine Handout for 221B. Logged dependent variables


Tomqvist, D., & Gustafsson F., & Inger Klein. (n.d) GLR Tests for fault detection over sliding data windows. Department of Electrical Engineering Linkoping universitet


Appendix

*DO-FILE - The Migrating effect of Collectivism on young SMEs Access to Credit

*Installing the required Packages
ssc instal unique
ssc instal outreg2

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

use "C:\Users\Marcel\Documents\Examinerande arbeten\C-uppsats\Data\Final dataset\Ent Sur\Datasets\New_Comprehensive_Mar_11_2016.dta", clear

* Splitting the Variable Country
split country , p(2)
drop country2
drop country
rename country1 country

* Merging the current dataset with the dataset that contains the official code for each country.
merge m:1 country using "C:\Users\Marcel\Documents\Examinerande arbeten\C-uppsats\Data\Final dataset\Ent Sur\Datasets\CountryCodesMain.dta"

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
* Merging the current dataset with the dataset that contain some country-level indicators.

* No. of Observations
unique ISO3
*Number of unique values of ISO3 is 135
*Number of records is 118206
sort ISO3
*****************************************************************************
merge m:1 ISO3 using "C:\Users\Marcel\Documents\Examinerande arbeten\C-uppsats\Data\Final dataset\Ent Sur\Datasets\Indicators.dta"
*****************************************************************************
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 the datasets with the other datasets such as:
merge m:1 ISO3 using "C:\Users\Marcel\Documents\Examinerande arbeten\C-uppsats\Data\Final dataset\Ent Sur\Datasets\CII.dta"
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

merge m:1 ISO3 using "C:\Users\Marcel\Documents\Examinerande arbeten\C-uppsats\Data\Final dataset\Ent Sur\Datasets\Rule of Law.dta",
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 with the dataset that contains the cultural dimensions information
merge m:1 ISO3 using "C:\Users\Marcel\Documents\Examinerande arbeten\C-uppsats\Data\Final dataset\Ent Sun\Datasets\Cultural Dimensions.dta"

drop if _merge==1
drop if _merge==2
drop _merge

*************************** Creating the required Variables ***************************

* Creating a variable for Financial Constraints - Response to a question of whether "access to financing" is a problem - (Take Values from 0 (no obstacle) to 4 (severe obstacle).
  tab k30

  * No. of Observations
unique ISO3
*Number of unique values of ISO3 is 39
*Number of records is 55116
* We lost 58977 observations

  * as you see, it needs cleaning.
   drop if k30==-7
   drop if k30==-8
   drop if k30==-9

gen FinCon=.
replace FinCon= k30

  * No. of Observations
unique ISO3
*Number of unique values of ISO3 is 39
*Number of records is 54253
* We lost 863 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 j30f
  * Cleaning
   drop if j30f==-9
   drop if j30f==-8
   drop if j30f==-7
   drop if j30f==-3
   gen Corrupt=.
replace Corrupt= j30f

* Creating an indicator variable of whether annual financial statements are reviewed by an external auditor.
  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 39
*Number of records is 51932
* We lost 2321 observations

* Creating an indicator variable of CEO is female.
  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
  * Winsorizing.
  winsor b7 , gen(Exp) p(0.1)

* Creating an indicator variable of whether the firm is headquartered in the country's capital city.
  gen Capital=.
  replace Capital=0 if a3b==2
  replace Capital=1 if a3b==1

* Creating a country level variable which shows the GDP per capita.
  gen GDPPCap=GDPpercapitaPPPIntUSD

*Creating a variable showing that the company get audited by the tax officials.
  gen TaxA=.
  replace TaxA=0 if j3==2
  replace TaxA=1 if j3==1

* No. of Observations
unique ISO3
*Number of unique values of ISO3 is 39
* Number of records is 51932
* We lost 0 observations

* Creating a variable for the company's ages.
* Cleaning: We drop the very old companies. And also companies that were established 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 39
* Number of records is 51218
* We lost 714 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=1 if Age>5
replace AgeD=0 if Age<5.1

* Creating a dummy for corruption
gen CorrD=.
replace CorrD=0 if Corrupt==0
replace CorrD=0 if Corrupt==1
replace CorrD=0 if Corrupt==2
replace CorrD=1 if Corrupt==3
replace CorrD=1 if Corrupt==4

* No. of Observations
unique ISO3
* Number of unique values of ISO3 is 39
* Number of records is 51218
* We lost 0 observations

* Creating variable for the industry
tab sector
drop if sector==0
drop if sector>31
tabulate sector, gen(IndDummy)

* No. of Observations
unique ISO3
* Number of unique values of ISO3 is 39
* Number of records is 51130
* We lost 88 observations

```
drop if a14y==2016
drop if a14y==2301
drop if a14y==.
tabulate a14y, gen(YearDummy)
```

* No. of Observations
unique ISO3
* Number of unique values of ISO3 is 38
* Number of records is 39880
* We lost 11250 observations

* Creating a Size variable that categorize compaies in small and medium
  gen size = size_cat

```
drop if size == 3
```

* No. of Observations
unique ISO3
* Number of unique values of ISO3 is 38
* Number of records is 31422
* We lost 8458 observations

* Create a dummy for Foreign

```.
  gen ForeignD = .
  replace ForeignD=1 if b2b>20
  replace ForeignD=0 if b2b<20
```

* No. of Observations
unique ISO3
* Number of unique values of ISO3 is 38
* Number of records is 31422
* We lost 0 observations

```
sort ISO3 year
```

* Creating a stata file that will be used for the analysis.
save "C:\Users\Marcel\Documents\Examinerande arbeten\C-uppsats\Data\Final dataset\Analys\beforeanalysis.dta", replace
use "C:\Users\Marcel\Documents\Examinerande arbeten\C-uppsats\Data\Final dataset\Analys\beforeanalysis.dta", clear

******************************************************************** Analyses and Tables ********************************************************************

* Define the Global list
  global xlistCEO Exp
  global xlistFirm Corrupt TaxA FinCred ForeignD size
  global xlistMacro GDPP Cap CII2014
  *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

* Cheking the No. of Observations
  unique ISO3
  *Number of unique values of ISO3 is 38
  *Number of records is 31422

******************************************************************** Table 1 - Variable definition ********************************************************************
  sum FinCon Age idv Corrupt TaxA FinCred ForeignD size GDPP Cap CII2014 RuOfLaw Exp

* Table 2 - Sample Construction Table. Use unique after each section, then

******************************************************************** Table 3 - Descriptive Statistics Tables ********************************************************************
  univar FinCon LnAge idv $xlistCEO $xlistFirm $xlistMacro
  univar FinCon idv $xlistCEO $xlistFirm $xlistMacro , by(AgeD)

******************************************************************** Table 4 - Correlation Tables ********************************************************************
  pwcorr FinCon LnAge AgeD idv $xlistCEO $xlistFirm $xlistMacro , star(0.05)
  pwcorr FinCon LnAge idv $xlistCEO $xlistFirm $xlistMacro if AgeD=1 , star(0.05)
  pwcorr FinCon LnAge idv $xlistCEO $xlistFirm $xlistMacro if AgeD=0 , star(0.05)

******************************************************************** Table 5A - Regression - Dimension 1 ********************************************************************
* Column 1  
reg FinCon LnAge $xlistCEO $xlistFirm $xlistMacro, r cluster(UN)  
outreg2 using "C:\Users\Marcel\Documents\Examinerande arbeten\C-uppsats\Data\Final dataset\Analys\Table\Table 8.xls", replace  
sideway stats(coef tstat) ctitle( Model with FinCon)  
keep (LnAge idv $xlistCEO $xlistFirm $xlistMacro) e(r2 chi2) bdec(3) dec (2)  

* Column 2  
reg FinCon AgeD idv $xlistCEO $xlistFirm $xlistMacro, r cluster(UN)  
outreg2 using "C:\Users\Marcel\Documents\Examinerande arbeten\C-uppsats\Data\Final dataset\Analys\Table\Table 5.xls", replace  
sideway stats(coef tstat) ctitle( Model with FinCon)  
keep (AgeD idv $xlistCEO $xlistFirm $xlistMacro) e(r2 chi2) bdec(3) dec (2)  
vif  

* Column 3  
reg FinCon c.LnAge##c.idv $xlistCEO $xlistFirm $xlistMacro, r cluster(UN)  

* Column 4  
reg FinCon idv $xlistCEO $xlistFirm $xlistMacro if AgeD==1, r cluster(UN)  

* Column 5  
reg FinCon idv $xlistCEO $xlistFirm $xlistMacro if AgeD==0, r cluster(UN)  

* Column 6  
reg FinCon i.AgeD##c.idv $xlistCEO $xlistFirm $xlistMacro, r cluster(UN)  
outreg2 using "C:\Users\Marcel\Documents\Examinerande arbeten\C-uppsats\Data\Final dataset\Analys\Table\Table C6.xls", replace  
sideway stats(coef tstat) ctitle( Model with FinCon)  
quietly margins AgeD, at(idv=(10(10)100)) vsquish  
marginsplot, recast(line) recastci(rarea)  

*Column 7 - idv removed  
reg FinCon AgeD $xlistCEO $xlistFirm $xlistMacro, r cluster(UN)  
outreg2 using "C:\Users\Marcel\Documents\Examinerande arbeten\C-uppsats\Data\Final dataset\Analys\Table\Table 4.xls", replace  
sideway stats(coef tstat) ctitle( Model with FinCon)  
keep (AgeD $xlistCEO $xlistFirm $xlistMacro) e(r2 chi2) bdec(3) dec (2)  
vif  

*Column 8- margin plot for column 2  
reg FinCon i.AgeD c.idv $xlistCEO $xlistFirm $xlistMacro, r cluster(UN)  
quietly margins AgeD, at(idv=(10(10)100)) vsquish  
marginsplot, recast(line) recastci(rarea)  

*Column 9 - Vif test when including the variable years  
reg FinCon AgeD idv $xlistyear $xlistCEO $xlistFirm $xlistMacro, r cluster(UN)  
vif  

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