



UNIVERSITY OF GOTHENBURG  
SCHOOL OF BUSINESS, ECONOMICS AND LAW

# The effects of financial markets in Tanzania

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*An evaluation of the insurance and credit markets'  
influence on risk behaviour*

Bachelor thesis in Economics/Finance, 15 credits

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## **Abstract**

The purpose of this essay is to examine if, and in what way, access to financial markets affects the risk behaviour among micro and small sized enterprises (MSEs) in Tanzania. To be able to do so, we have been collecting information from 52 different MSEs across Tanzania. By using the collected data we have studied three different measurements of risks. The first risk variable (*Risk1*) is constructed by considering whether the businesses prefer a varying or a stable income, and to what extent they do so. The second measurement (*Risk2*) is based on how the businesses would allocate an extra income within the firm. The third one (*Risk3*) is a measurement of how much each business would like to borrow per employee.

Each of these three risk measurements are used as dependent variables in a regression, where the independent variables represents the access and current use of financial markets, as well as some company characteristics. It was not possible to find any connection between *Risk1* and the independent variables. For *Risk2*, the regression result suggests that there is a significant correlation between whether the businesses are using insurance or not and the risk behaviour. Businesses with access to insurance seem to have a larger exposure regarding risk with their income. In the last regression, the one for *Risk3*, there are three factors that show a significant correlation to risk behaviour. These factors are whether the businesses have access to credit, if they are using credit and if they are located outside of the main economic region, Dar es Salaam. Businesses with access to credit that are not using it, on average, want to borrow less money per employee, while businesses that currently are using credit want to borrow more money per employee. Businesses located outside of Dar es Salaam, on average, instead want to borrow less money per employee.

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## 1. Introduction

Ever since the financial markets entered the scene, they have connected people and matched those who have capital with those who want it, as well as facilitated the raising of capital and transferal of risk. Nevertheless, the effect of having financial market access has not been not completely investigated. How does access to financial markets affect companies' behaviour regarding risk, and in what way? Do the financial markets make the stakeholders adjust the risk correctly after their preferences?

The objective of this thesis is consequently to evaluate and search for patterns in how access to financial markets affects risk behaviour in general. In order to accomplish this, three different risk measurements were created, all of which are based on data from interviews with micro and small sized enterprises (MSEs) residing in Tanzania.

Our hypothesis is that the uncertainties and level of risk taken by a company are very much affected by access to financial markets. With this said, this study do not take for granted that the risk level gets tilted in at any specific direction, but rather in both ways. A company which desires a lower risk profile faces the same difficulties as a company wanting a higher risk profile, and they are both equally aided by the financial system to correct for their preferences.

As previously stated, the target group for this survey will be the micro and small businesses. This is due to their crucial role in employment creation and their propelling force in economic growth (United Republic of Tanzania, Ministry of Industry and Trade, 2002). The micro as well as the small companies are neither bound to just urban areas, but can also be established in rural locations, stimulating the economy of the whole country. Due to their general availability, these companies also have a potential to play a very important role in poverty alleviation (ibid).

However, the companies also tend to have a more restricted access to financial markets than their larger counterparts, which is necessary for us to find an econometric relationship. Among the micro and small businesses there are two different categories, namely the formal and the informal sector, with the informal being the largest one (TCCIA, 2013-06-26). However, the research was made within the formal sector, mainly due to the difficulties associated with accessing the informal sectors financials.

Regarding the choice of country, there were mainly two reasons for us to elect Tanzania. The market in Tanzania has had a period of great liberalization, making the financial system more central, and giving it more weight. The financial sector is growing very rapidly and has experienced a huge expansion in the last five to ten years (TCCIA, 2013-06-26). Nevertheless, this does also mean that the financial market still is something fairly new to the vast majority of the people, implying that everyone are not completely familiar with the benefits it yields. Thereby, it is reason to believe that access to financial markets is limited in some extent, which is required for us to find a connection between access to financial markets and risk behaviour. The other reason for choosing Tanzania as a base for the survey was that the country has been relatively undisturbed regarding external conflicts, making it possible for the country to focus more on economic growth and the wellbeing of its people (Kessler, I., 2006).

Dodoma is the capital of Tanzania; despite this, Dar es Salaam is the largest city in the country. Dar es Salaam is also the leading commercial city, and on that basis it felt natural to choose it as a focal point. The research does however aim to cover all of Tanzania.

## 2. Theory review

For small businesses in Tanzania, lack of access to financing is a very severe constraint for companies' expansion, if not the most severe (Levy, B., 2013). This assumption is consistent with the models of credit allocation, since the banks are exposed to a larger risk when lending to a smaller company due to the lack of information on the borrowers (Stiglitz, J. & Weiss, A., 1981). It is therefore not inexplicable that a great deal of research has been done in this subject.

One must however keep in mind is that small businesses financing choices differ greatly between the companies residing in the developed world, where the bulk of the research has been carried out, and the ones residing in developing countries (Boateng, A & Abdulrahman, M., 2013). While bank loans are the principal source of external financing for small businesses within the UK, accessing bank finance remains one of the greatest challenges for companies in the developing world (ibid).

The problem of accessing bank loans is very much present in sub-Saharan countries, due to the generally poor educational background of the micro and small business entrepreneurs. According to A. Boateng and M. Abdulrahman does this make the businesses less likely to obtain a loan, since their ability to provide quality information gets reduced. For MSEs in Tanzania, the fear of the terms on which the loans are based are often cause for greater concern than the obstacle of not being granted loans. This makes companies that seem to have access to the credit market unable to actually secure loans. The anxiety does usually come from a fear of hidden costs etc., which would put the company out of business and put the family in debt (TCCIA, 2013-06-26). Additionally, most of the MSEs transactions are in cash, which further impairs the relationships with the banks (Boateng, A & Abdulrahman, M., 2013). A consequence of not being able to get a loan could be that the current manufacturers exit the business, as well as the potential newcomers never enters.



There are however numerous downsides of not having access to the financial system. With a lack of financial markets the companies might face difficulties borrowing, or borrowing at reasonable interest rates, which may force the companies to a more conservative use of the corporations' cash flow, considering the need for self-financing. This may in turn very well slow down the expansion of the company in question, as they need to finance all or most of their expansion with their own cash flow (Carpenter, R. & Petersen, B., 2002). For many companies, some investments have a cost similar to several years of accumulated cash flows (ibid). According to financial theory, accumulating a great deal of excess cash in a company is very rarely an efficient use of capital (Mishkin, F. & Eakins, S., 2009). On an aggregated level it is likely that this will slow growth down as it may prevent potentially profitable investments, just due to lack of financial markets.

Subsequently, financial markets seem to increase the movability of capital. Countries with well-developed financial sectors generally amend the capital allocation after the markets preferences. They invest more in industries on the rise, and also decrease the capital invested in industries on the downfall in a higher extent than the countries with less developed financial systems (Wurgler, J., 1999).

The insurance market is also a part of the financial system, and without the opportunity to insure against different types of threats to the enterprise, such as natural disasters, accidents or crimes, it is possible that the company experience a greater need for being more cautious when it comes to investing, cash spending and borrowing. An unintentionally uninsured company may therefore be more restricted regarding investments than it would be if it had had the opportunity to engage in the insurance market.

### 3. Methodology

Since our aim is to examine whether there is any connection between access to the credit and insurance markets, and the risk behaviour among MSEs in Tanzania, 55 different companies around the country (of which 52 are included in the regression) have been interviewed, to use in a quantitative regression analysis. The data has been exclusively gathered by interviewing company owners and/or employees, directly via first-hand experience in a primary research. However, due to linguistic difficulties, an interpreter was used most of the times.

The questions used in the interview regarded the companies' access to financial markets, current use of financial markets, risk behaviour and other general business characteristics. In the analysis, the data was put through several regressions where the different measurements for risk behaviour were used as dependent variables. The other inputs were used as independent variables. The general formula for regression with the different risk variables is as following:

$$RiskY = \beta_0 + (A_C \times \beta_1) + (A_I \times \beta_2) + (U_C \times \beta_3) + (U_I \times \beta_4) + (E \times \beta_5) + (L \times \beta_6) + \varepsilon,$$

where Y can be one of the different risk variables, described below. In this regression,  $\beta_0$  is the intercept,  $A_C$  is a dummy variable denoting access to the credit market, while  $A_I$  is a dummy variable representing access to the insurance market and  $U_C$  and  $U_I$  are dummy variables specifying current use of credit and insurance, respectively. The variable  $E$  represent the current number of employees at the company, and  $L$  is a variable determining whether the company is located outside of Dar es Salaam or not. The last term,  $\varepsilon$ , is a random error term.

The different regressions will be analysed one by one in order to find correlations and possibly even causal effects between the different independent variables and the risk measurements. A summary for the different variables can be seen below in *Table 1*

*Table 1*

**Variable summary**

Observations 52				
<i>Coefficient</i>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Min</b>	<b>Max</b>
<i>Access to credit</i>	0.635	0.486	0	1
<i>Access to insurance</i>	0.827	0.382	0	1
<i>Using credit</i>	0.385	0.491	0	1
<i>Using insurance</i>	0.212	0.412	0	1
<i>Location outside of Dar es</i>				
<i>Salaam</i>	0.442	0.502	0	1
<i>Number of employees</i>	12.789	11.839	1	45
<i>Risk test</i>	0.679	0.337	0	1
<i>Allocation of extra income</i>	0.519	0.163	0.25	1
<i>Desired amount of borrowing</i>				
<i>per employee</i>	2 101 521	8 678 958	0	62 200 000

**3.1 Dependent variables**

As it is not completely clear how to measure companies' risk level, a basic review of the variables composition is made below. In this thesis, three different measurements of risk are used to get a better estimation of a company's risk level, and to reduce for vulnerability following with making all conclusions based on data coming from one single question. This is very important, as we have constructed our risk measurements ourselves.

### 3.1.1 Risk test (Risk1)

*Risk1* is calculated using four questions (see Appendix A Figure A.1) to find the preferred level of risk. Each question consists of two choices, where the interviewee is asked to choose either a definite or a varying profit, where the varying is yielding either less or more than the fixed one. The interviewee was then told to consider the questions such as the profits would devolve upon the company. The varying alternative has two predetermined outcomes, of which the selection between these is completely random.

The *Risk1* is constructed so that it takes a higher value if the interviewee prefers a fluctuating profit, due to the riskier nature of fluctuating profits. If an employee answers that he/she prefers the fluctuating profit, the value of 1 will be recorded, and if he/she prefers the fixed profit, the value of 0 will be recorded. The sum of the recorded answers is then to be divided by four (as there are four questions) to get the mean value. A company that prefers fluctuating profit in all cases thereby gets a mean value of 1, and a company that prefers a varying profit in 50% of the cases gets a mean value of 0.5. The order of the answers does thereby not affect the result. Hence, the *Risk1* variable can take 4 different values, namely 0, 0.25, 0.5 and 1.

### 3.1.2 Allocation of extra income (Risk2)

The second dependent variable, *Risk2* (see Appendix A Figure A.2), is decided upon the interviewees' response regarding how they would spend the money in case of that they received an additional income. The respondent is asked to split the extra income, in percentage, between four different categories: *Investments*, *Savings for investments*, *Savings for bad times* and *Payout to owner(s)*. The answer is then used to determine *Risk2*, which stretches from 0 to 1, where 1 also in this case represents the highest risk level.

The variable is calculated by ranking the different alternatives stated above according to the presumed risk level related to each of the four options. *Savings for bad times* is considered to be the least risky and therefore will take the value of 0. Income allocated to *Savings for investments* will take the value of 1, while *Investments* gets the value of 2. *Payout to owner(s)* is considered to be the most risky and thereby gets the value of 4. As the last alternative implies that money will be deducted from the company, this alternative is significantly more perilous than the other alternatives, motivating for the value of 4 instead of the value of 3. The value connected to each alternative is then multiplied by the percentage the respondent chose for each of the given alternatives, and then summed together and divided by 4 to get a normalized value between 0 and 1. For example, if the interviewee puts 25 % in each of the four alternatives the risk level would be  $(4*0,25+2*0,25+1*0,25+0*0,25)$  divided by 4, which equals 0.4375.

For really small (micro) companies, this approach might however give a biased result. When an owner can transfer cash between his/hers private account and the firm's account unrestrictedly, there might not be any difference in risk between *Savings for bad times*, and *Payout to owner(s)*, as there are not any clear distinction between the firm's and the owner's money. We do however believe that this predominantly just is the case for companies that are family owned, with a mutual economy, and for companies with very few employees.

### **3.1.3 Desired amount of borrowing per employee (Risk3)**

*Risk3* (see Appendix A Figure A.3) is a variable constructed in order to measure the additional amount of money that each business would like to borrow per each employee working at the company. The wanted amount of borrowing is divided by the number of employees so that a larger company won't seem riskier, just due to its size. However, the businesses were asked how much they would like to borrow at three different rates, namely 15 %, 20 % and 25 %. The amount of money they would like to borrow at the different rates is then added together and divided by three to get the average amount the businesses would like to borrow.

Even though the loans often are denominated in dollars, the loans were referred to as in Tanzanian shillings to reduce the need for exchange-rate calculations for the firms that were visited. When they found it easier to communicate their loans in dollars, a recalculation to Tanzanian shillings was made. The equation of *Risk3* looks like the following:

$$Risk3 = \frac{Wanted\ amount\ at\ 15\% + Wanted\ amount\ at\ 20\% + Wanted\ amount\ at\ 25\%}{3 \times Number\ of\ employees}$$

The purpose of having three different interest rates was to seize to whole market. Instead of trying to figure out an exact interest rate, which in turn would have been almost impossible since different rates are not equally reasonable for different firms, a broad spectrum of interest rates was used, to appeal to as many firms as possible.

A consequence of this formula will be that companies that just want to borrow at the lowest interest rate might seem less willing to borrow overall. It will therefore look as they are taking a lower risk. This is however not so odd, as borrowing at a lower interest rate causes a lower risk than the ditto with a higher interest rate.

### 3.2 Independent variables

To improve the general understanding, all the independent variables used in the model will be explained below.

#### 3.2.1 Access to credit ( $A_C$ )

This is a dummy variable that takes the value of zero if the business currently does not have access to credit, or if the company finds it too difficult, too expensive or too risky to get a loan. The reason for putting companies without access to credit together with companies that finds it too difficult to get a loan is that if a company finds it too difficult to get a loan, it indicates that they in fact do not have a reasonable access to credit. This could be that they do not understand the terms, that they do not know how to apply etc.

The decision to put businesses answering that it is too expensive to get a loan in to this category was a more difficult choice, but with support by the information from Tanzania Chamber of Commerce Industry & Agriculture (TCCIA), it was decided it was the best way. According to TCCIA most businesses can get some kind of credit, but at terrible terms, which debatably rarely are the case with a reasonable access to financial markets.

The decision to put businesses that finds it too risky to borrow in the same group as businesses that do not have access to credit was also a hard choice. This choice was also based on information from TCCIA. According to them, many businesses are afraid that the terms of the loans may contain some hidden costs that might put them out of business. As the decisions concerning whether to include businesses that find it too risky or too expensive in the group that do not have access to credit was hard, the regressions with different possible combinations of including/excluding too risky/too expensive are included in the appendix (Appendix B Table B.2-B.7). Businesses that are regarded to have access to credit are those that currently have loans and those that have stated that they have access with credible reasons, such as religious motives or that they do not need it. These businesses that actually are perceived as having access to credit will take the value of one in this variable.

### **3.2.2 Access to insurance ( $A_I$ )**

This dummy variable divides the businesses into two groups depending on if they have access to insurance. The first group of businesses consists of those that do not have access to insurance including those that finds it too difficult to get insurance. The reason for including those that finds it too difficult is similar to the reason or including it in  $A_C$ , if a company finds it too difficult it is likely that they do not have a reasonable access to insurance. In this first group businesses will take the value of zero.

The group that is treated as they have access to insurance consists of companies that currently have insurance as well as those that stated that they have access, but did not use it due to reasons that are easy to believe. Such reasons could for example be that they do not need it or that they found it too expensive. The companies belonging to the latest mentioned group will take the value of one in this variable.

### 3.2.3 Currently using credit ( $U_C$ )

To separate the businesses that currently are using credit from those that are not, a dummy variable was created. Companies using credit takes the value of one and companies not using credit takes the value of zero. This variable is included in order to determine if there is any difference in risk behaviour among businesses that use credit compared with those that do not use credit. Since the companies that use credit per definition have access to the credit market, these companies are included in both  $A_C$  and  $U_C$ . Therefore, when examining how the companies that currently are using credit differ from the base group, i.e. the ones without access, the coefficients of  $A_C$  have to be added to the coefficient of  $U_C$ .

### 3.2.4 Currently using insurance ( $U_I$ )

This is a dummy variable that separates businesses that currently are insured from the businesses that are not insured, independent of their access to the insurance market. The reason for including this variable is to be able to find out if use of insurance has any effects the companies risk decisions, and if so, in what way. Businesses that are insured will take the value of one and businesses that are not insured will take the value of zero in this variable. Just as in the case of  $U_C$ , to find out the real effect of the companies that are currently using insurance, one have to add the coefficients of  $U_I$  to the coefficients of  $A_I$ , otherwise it is just showing the relation to the group with access to insurance.



### **3.2.5 Location outside of Dar es Salaam (*E*)**

As Dar es Salaam is the economic centre in Tanzania; a rather sizeable part of our answers comes from companies located within Dar es Salaam. However, the study includes data from other areas of Tanzania as well. This independent dummy variable was included to be able to spot differences emerging from the fact whether the company were located in Dar es Salaam or not. A business located outside of Dar es Salaam will take the value of one in this variable.

### **3.2.6 Number of employees (*L*)**

This variable includes the number of fulltime working employees within the business. It does however include part time working employees as well, counted as their fulltime equivalent. The reason for including this variable is that it is important to be able to see connections between our risk measurements and the number of employees. The number of employees is also a good variable to use to get an approximation of the company's size. This is especially true in a land such as Tanzania, where most of the industries are very labour intensive.

## **3.3 Data issues**

The survey questionnaire may contain errors or biases, and may be plagued with respondents who refuse or are unable to answer questions truthfully. One of the drawbacks with the personal interviewing is that the interviewer may allow his or her own biases to influence the interview process. One additional weakness was our use of an interpreter. No matter how good communication we had, there is still a possibility that the translator interpreted the answers from his perspective, being influenced by his background and culture.

We did also have minor problems with companies accepting to answer the questions, but then changing their mind while in the process. It was approximately equally common with companies in our target population that declined to answer immediately. This affects the data negatively in two ways. For a start, fewer respondents mean that we will get a higher random error. More severely, it does also mean that we might have got a skewed result, and a systematic error, if the missing respondents diverged from the rest of the group.

Consequently, in a worst-case scenario, our random sample is no longer representative. There were approximately 30 companies that declined to answer, in comparison with our 55 completed questionnaires; we could however not see anything unique in common between the companies that did not want to participate. With this said, it does not mean that this is an absolute truth. Additionally, three of the 55 enterprises had over 50 employees, and were therefore excluded from the analysis.

By contacting SIDO (the Small Industries Development Organization), a possibility to access their network of small businesses arose. This opportunity has influenced our report in such way that a great deal of the questioned companies has a close connection to SIDO, which means that many of the interviewed companies have some kind of governmental support.

However, due to difficulties in the data collection, combined with dubious answers, there was a need to delimit the thesis from investigating the effect of hedging. This study does therefore only consider the credit and insurance market. Furthermore, companies have not been asked whether they would like to lend money or not. Potentially, the companies that did not want to borrow might have had a desire to lend instead. As a consequence of this, the thesis does not capture this part of the effects from the financial markets.

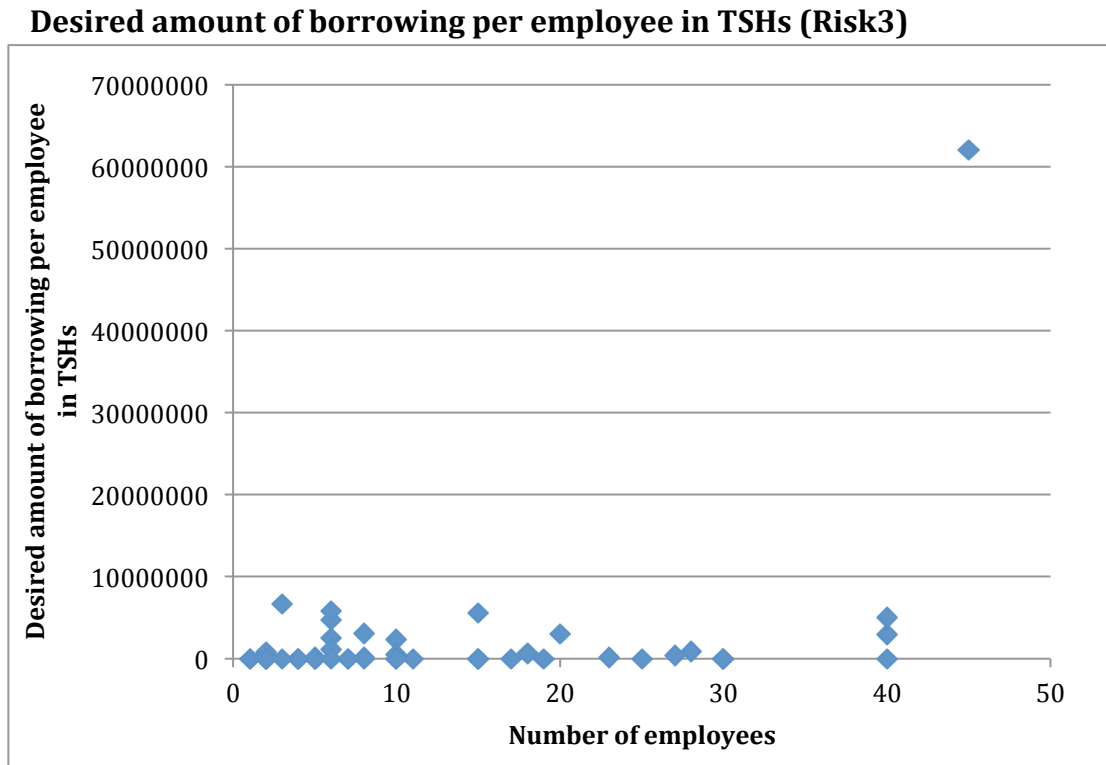
Regarding our result, the F-tests for our regressions are insignificant, which suggests that the weighted significance of all the variables in our models is low. That is however a common problem when working with small samples. Unfortunately we are unable to extend the sample with more observations as the data was collected by us during a Minor Field Study.

In *Risk3*, the error term,  $\varepsilon$ , most likely exhibit heteroskedasticity. This does essentially mean that  $\text{Var}(u|x)$  depends on the x-value, thus the variance is non-constant. Heteroskedasticity also occurs when the dispersion around the response variable is not constant. The heteroskedasticity does not cause inconsistency in the OLS estimator, but when under influence of it, it is no longer the best linear unbiased estimator (BLUE).

As the heteroskedasticity had taken an unknown form in *Risk3*, we used robust standard errors to correct the conventional formula when computing the standard errors. Fortunately, this approach is valid for samples containing heteroskedasticity as well as for those exhibiting homoscedasticity. There are however reason to test whether the data sample exhibits heteroskedasticity, even though the robust standard errors are consistent no matter if fulfils the homoskedasticity assumption or not. This is due to the fact that the usual t-statistic has an exact t-distribution under the assumption of normally distributed errors and homoskedasticity, and also due to that it is possible to obtain an even more efficient estimator than the OLS-estimator (WLS) given that the form of heteroskedasticity is known.

There was also a case with outliers in *Risk3*. As seen in *Figure 1* below, one company had an, for MSEs in Tanzania, very high debt per employee. In this case, it was a freshly started company in the automotive business, which was in the middle of a period of heavy investing.

*Figure 1*



A large part of these investments were funded by bank loans, and since the automotive industry is very capital intensive, loans per employee in relative terms skyrocketed. Since the size of our data is rather limited, a company with this value would affect the whole regression in a way we found indefensible.

The outcome with the outlier included is presented in Appendix B, table B.1.

## 4. Results

The results of our regression can be seen below, with *Risk1* to *Risk3* in numerical order. As the data sample is rather small, a significance level of 10% will be used.

### 4.1 Risk test (Risk1)

In the regression for *Risk1*, where the independent variables influence over whether businesses prefers a stable profit over a fluctuating one and vice versa is investigated, no connections were found. None of the variables were significant, which can be seen in *Table 2* below, and thus it is not possible to draw any conclusions regarding it.

*Table 2*

#### **OLS regression of Risk1 on all five independent variables**

R-squared 0.066	
Observations 52	
<b><i>Coefficient</i></b>	
<i>Access to credit</i>	-0.0720 (0.1295)
<i>Access to insurance</i>	0.0761 (0.1388)
<i>Using credit</i>	-0.0133 (0.1307)
<i>Using insurance</i>	-0.1181 (0.1469)
<i>Location outside of Dar es Salaam</i>	-0.0769 (0.1066)
<i>Number of employees</i>	-0.0038 (0.0045)
<i>Constant</i>	0.7729** (0.1516)

Standard errors in parenthesis. significant at 10%, \*\* significant at 5%.

## 4.2 Allocation of extra income (Risk2)

In the regression analysis for *Risk2*, which is a measure of how businesses would like to spend their income, there is one independent variable that is significant, namely *Access to Insurance*. This means that the null-hypothesis is rejected and that the parameter of this independent variable corresponding to *Risk2* is different from zero. It can therefore be stated that the fact whether businesses have access to insurance or not, have a statistically significant correlation with regards to *Risk2*. The results can be viewed in *Table 3* below.

*Table 3*

### **OLS regression of Risk2 on all five independent variables**

R-squared 0.1744	
Observations 52	
<b><i>Coefficient</i></b>	
<i>Access to credit</i>	0.0329 (0.0589)
<i>Access to insurance</i>	0.1368** (0.0631)
<i>Using credit</i>	-0.0936 (0.0594)
<i>Using insurance</i>	-0.0904 (0.0668)
<i>Location outside of Dar es Salaam</i>	-0.0145 (0.0485)
<i>Number of employees</i>	0.0009 (0.0021)
<i>Constant</i>	0.4344** (0.0689)

Standard errors in parenthesis. \* significant at 10%, \*\* significant at 5%.

Businesses with access to insurance have, on average, a 0.137 higher value in the *Risk2*-variable than businesses without access to insurance. This means that businesses with access to insurance on average are willing to take greater risks with their cash flow. The regression does also show signs of that businesses that are using insurance, on average, allocates their income in a less risky way than businesses that are not using insurance. However, the result concerning current use of insurance is insignificant, with a  $P > |0.183|$ . Our opinion is nevertheless that it is still good to keep this variable in mind, while discussing the correlation regarding companies with access to insurance with respect to *Risk2*. It does indirectly suggest that it is mainly the businesses that have access to, but are not using insurance that takes higher risks, rather than that all businesses with access to insurance are allocating their income in a more risky way.

For the other six independent variables, none are significant under the 10% significance level. Thus it is not possible to conclude whether those variables have any connection to the dependent variable, i.e. there is no evidence suggesting that they correlates with the risk level connected to cash flow decisions.

#### **4.3 Desired amount of borrowing per employee (Risk3)**

Regarding the third regression, where the dependent variable is a measure of how much each business desires to borrow per employee, robust standard errors are used to compensate for heteroskedasticity. Moreover, under the 5% significance level, companies that are currently using credit seem to want more credit. The results suggests that the null-hypothesis can be rejected, saying that current use of credit does correlate with how much money a company wants to borrow. The results can be seen in *Table 4* below.

Table 4

**OLS regression of Risk3 on all five independent variables**

R-squared 0.2037	
Observations 51	
<b>Coefficient</b>	
<i>Access to credit</i>	-919 778* (491 843)
<i>Access to insurance</i>	690 806 (573 153)
<i>Using credit</i>	1 651 930** (676 211)
<i>Using insurance</i>	-1 088 065 (817 961)
<i>Location outside of Dar es Salaam</i>	-1 146 513** (541 510)
<i>Number of employees</i>	36 544 (23 177)
<i>Constant</i>	601 611 (717 125)

Standard errors in parenthesis. \* significant at 10%, \*\* significant at 5%.

According to our data, it appears as the companies which already possesses loans on average wants to loan 1 651 930 Tanzanian shilling more than its counterparts which have access to credit but does not have any loan. The regression does however also say, under the 10% significance level, that the companies with access to the credit market want to borrow 919 778 Tanzanian shilling less compared with companies without access. This may seem odd, but when taken in consideration together with the result of *Using credit*, it appears as it is companies with access, but without a current use of credit that wants to borrow less money. As these companies actively have decided not to use credit, it is a rather expected result.



When comparing businesses that are using credit with the ones that do not have access to credit there are good reasons to consider the coefficients from both *Using credit* and *Access to credit*, as businesses that are using credit obviously also have access to credit. The result will be that the businesses that are using credit, on average, wants to borrow 732 125 more per employee compared to businesses that do not have access to credit.

It does also seem like companies outside of Dar es Salaam are not as keen to borrow money as the companies residing within the city. With a t-value of 1.90, it is possible to reject the null-hypothesis in the 10% significance level here as well. The companies outside of Dar es Salaam does averagely want to borrow 1 044 732 Tanzanian shilling less than the companies which are located in Dar es Salaam. It is not possible to conclude anything about the other independent variables connection to *Risk3* under the 10% significance level.

## 5. Discussion

In this section we will try to answer our initial stated question, regarding how access to financial markets affect companies' behaviour regarding risk, and in what way. We will also try to draw a conclusion whether financial markets actually helps the stakeholders to adjust the risk. Moreover, we will discuss some pros and cons with our models, as well as giving our opinion on the result, and our belief regarding why it looks as it does.

### 5.1 Risk test (Risk1)

In the regression concerning *Risk1*, none of the seven independent variables shows to correlate with *Risk1*. In other words we cannot draw any conclusions regarding the differences in preferred types of profits base on our independent variables. Whether the businesses in our study prefers a stable or a fluctuating profit seems to be independent of if the businesses have access to either credit, insurance, both of them or none. There is no evidence that access to financial markets have any correlation with companies' decisions regarding risk measured as preference towards stable or fluctuating profits according to this study. One potential reason to this might be that the company owners/employees did not conceptualize the question as in regards of their company, but rather answered what they just would prefer for themselves, as individuals. It is also possible that we did not fully succeed in explaining the questions during the interviews. In a few cases, it might also have been so that the person who answered our questions was not in a position of substantial influence in the company, meaning that no matter of the opinion of the employee, the strategic management of the firm would not change.

## 5.2 Allocation of extra income (Risk2)

For the analysis regarding *Risk2*, one of the seven independent variables seems to have a significant relation to *Risk2*. The result of this study suggests that businesses with access to insurance on average takes greater risks, when the risk measure is based on the companies' decisions regarding allocation of extra income. This means that access to financial markets (insurance in this case), according to our study, correlates with the risk behaviour of MSEs in Tanzania.

Even if *Using insurance* is slightly insignificant it does provide us with some interesting information, as stated in the result. It shows signs of that the businesses that are using insurance, on average, takes lower risks with their income. The implication of this is that the enterprises that don't use the insurance market, but still have access seem to allocate their extra income more risky. This is contradictory to the theory about adverse selection, which states that the most risky individuals/businesses are the ones that should be using insurance, as it will be to the greatest benefit for them. Our result suggests that business that takes the highest risks does not want to use insurance. A reason for this could be that these businesses do not want to spare their funds on insurance but instead want to use it for investments or payouts. Implicit this also means that businesses that prefer to take lower risks with their extra income are more likely to be using insurance. It looks like those that prefer lower risks are willing to use some funds to get insured, which as well is in conflict to the theory about adverse selection.

It is also possible to view the result from a revealed risk preference perspective. In this perspective, we assume that there is a wide variety of risk-taking among the companies from the beginning. Consequently, it is the company's initial risk willingness that determines whether the company will want to insure or not. All the companies can be assumed to live in a rather risky world, meaning that there should be incentives to insure for all companies. Hence, the companies who have chosen to insure might just be more risk-averse, i.e. the companies do not want to bear the risk. The same idea goes for the companies who do not insure. It might just be so that these companies don't mind the risk in the same extent as

the companies who insure. Therefore, it may seem like the companies who insure also takes on less risk, and vice versa, while it actually just is a sign of how risk-averse the business is.

Furthermore we cannot find any direct evidence of that businesses in our study tried to use the credit market in order to regulate their risk level. A business could however use the credit market in many different ways to adjust their level of risk. For example, if a business would like to spend all of the extra income on investments or payouts it is realistic to assume that they then in some cases could have done this without any extra income. Instead they could have used credit to be able to make this investment or payout.

The absence of a connection between *Risk2* and *Using credit* could indicate that the managing persons from the MSEs in this study may lack knowledge in risk management and/or the potential benefits of financial markets. On the other hand there could be several different reasons for not using financial markets to adjust your risk level even if you have access to it. Some businesses may find it improper to go in debt in order to invest and would even more likely refuse the approach when considering a payout. There may also be trust issues towards the financial institutions regarding their purpose and/or ability to fulfil their duties. Some interviewees also states religious reason as a factor for avoiding interaction with certain parts of the financial market.

### **5.3 Desired amount of borrowing per employee (Risk3)**

In the results for the regression on *Risk3*, we are able to find three significant variables. One is regarding if businesses currently are using credit or not. It suggests that businesses that are using credit on average wants to borrow more money per employee than businesses that are not using credit, with different magnitude depending on their access to credit. There may be several different reasons for this, but one reason that we find likely are that companies that already are using credit have gained experience about the process of borrowing.

Arguably they have learned more about the potential benefits as well as the potential disadvantages. Altogether it seems that, on average, businesses that have been using credit finds the pros greater than the cons, resulting in that the businesses using credit wants to increase their borrowing more for every employee they got, in comparison with the other companies. Possibly they have seen the different possibilities that come by when using credit, such as the potential to expand the business.

There is however another way to see it. Instead of just reasoning about the group who are using credit, one can see to the base group of which it is compared to. If we compare companies that want to borrow, and have access to the credit market, with the companies that do not have access to the credit market it gets clear that there is something affecting their risk behaviour. An initial thought could be that those without access should have a greater urge of borrowing than those with access, as those with access already could have fulfilled their needs.

By looking at the results, this is however not the case. Instead it seems as there is something holding the companies without access back in their wishes. One feeling that emerged while doing the interviews was that the companies without access to the credit market generally had distrust for the financial system. Many companies thought of loans as something very risky and difficult to understand. Even if they wanted to expand and needed money, our perception of the situation was that they did not dare to borrow. Many of the entrepreneurs were afraid of hidden costs etc., which would set them out of business and set their family in debt. This is also consistent with the information gathered at TCCIA. However businesses that have access to credit but that do not use want to borrow the least per employee, which is reasonable, as those businesses could have taken loans if they had wanted to.

The last significant variable suggests that businesses that are located outside of the main economic region in Tanzania, Dar es Salaam, on average want to borrow less money per employee compared to businesses in Dar es Salaam. This could indicate that businesses outside of Dar es Salaam lack knowledge about financial markets and its benefits. On the other hand areas outside of the main economic region with more rural characteristics could arguably be more conservative to new unknown possibilities especially when it concerns money and other assets. When someone has a limited knowledge about something it is common to see that the disadvantages will be viewed as more important than if the matter is well known to the person that makes the decision (Elke Weber, 2013-09-26). It is also very possible that the financial structure has not yet expanded to rural villages, i.e. that there are not any banks within reasonable reach. This scenario would probably have a negative effect on borrowing, as it requires more effort to get in contact with a bank, and as the link between the banks and the potential borrowers is very weak, the banks get further alienated. There is also a potential flaw in our study. As we asked companies regarding their principal location, there might be some companies which have their main office in rural areas, but which are also present in the cities. The same flaw might be found if a company has moved out from the city. These companies are in some way incompatible with our analysis, as it is likely that these companies are as familiar with the financial markets as the companies that have their principal office within Tanzania. There are also some cities in Tanzania that are rather large beside of Dar es Salaam, such as Mwanza and Arusha. We do however believe that these companies are in a minority, as many of the companies we interviewed were very small, and generally rather young.

The other three independent variables did not give us any significance and therefore we are not able to say that any of those correlates with the amount that businesses want to borrow per employee.

## 6. Conclusion

Altogether our results suggest that attitudes towards financial decisions among MSEs in Tanzania are rather polarized. Businesses that have access to the insurance market, but do not insure, would on average allocate their income in a riskier way than companies without access to insurance.

This is the exact opposite to the theory about adverse selection. In one of our theories, it seems like the MSEs in our study that are actively avoiding insurance are risk seeking, and vice versa. If this data is representative for Tanzania as a whole it suggests that insurance companies in Tanzania could be really profitable, as it seems like the most risk preferring businesses are the ones that use insurance the least, at least when it comes to risk based on cash flows.

The same polarized pattern could be seen when the risk measurement is based on how much money each business wants to borrow per employee. Businesses that currently are using credit, on average, want to increase their borrowing per employee more than the companies that do not have access to credit.

Furthermore businesses that have access to credit but that do not use it, on average, want to borrow less money than businesses that do not have access, which also means that they want to borrow even less money per employee than those businesses that are using credit. All together it seems like it is all or nothing for many companies in Tanzania. One seldom has a balanced approach, which was also noticed during our data collection for the *Risk1* variable. Out of the 52 interviewed companies, 24 answered just plain A's or plain B's, meaning that they preferred a fixed income in all cases, or a fluctuating income in all cases. This equals to a 46% of the total answers, which is considerably more than the totally random outcome, which would have been 12,5% (2 out of 16 alternatives).

The polarization combined with the credit situation, where a great deal of companies do not seem to dare to take loans indicates that there is some kind of information gap between the financial market and the MSE's. In case of that our data is representable for the whole population, there is a need to inform the business managers/owners about different risks and potential benefits different products in the financial market have to offer.

Another thing that might be a problem is that the Tanzanian shilling (TSH) is a currency that is, and usually have been, depreciating heavily against major currencies. Therefor many loans are given in dollars, as many financial institutions do not want to bare the risk. This may make it even more difficult for businesses to borrow, as they often have to do it in a foreign currency. Arguably a vast majority of the businesses in the study have a vast majority of their revenue in TSHs, which makes it difficult to calculate if they can afford a loan in dollars due to potential movements in the exchange rate. This will probably affect the amount that businesses in our study want to borrow overall but it is hard to say if it affects any group of businesses in particular. However we believe that there are good reasons for the Tanzanian government to try to make the Shilling more stable in relation to the major currencies of the world, so that risks connected to borrowing in dollars will decrease. However if that would be the case the loans could just be in TSHs instead.

According to us, one of the biggest weaknesses in our study is the small sample that we are working with. As all data used were collected by our assistant, and ourselves it was not possible to acquire a much larger sample. A larger sample would have made our regression analysis more reliable. On the other hand there are as well benefits with the procedure of collecting the data ourselves. We were able to specify the questions ourselves to get the data needed for just this study.



As finishing words, we believe that there is a need for more research in this area, especially to investigate the hypothetical information gap that seems to exist. Our analysis was somewhat inhibited due to this fact, as our initial focus rather was to spot the differences between the companies which had real access to financial markets and those that did not. We were not prepared on the situation with a great deal of companies stating that they had access to financial markets, just that they did not dare to take a loan. We believe it would be very rewarding to make an investigation with greater depth, to look at the actual terms of the credit and comparing this with the reality as perceived by the company managers/owners.

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## APPENDIX A

Figure A.1

**Which one do you prefer, A or B?**  
 If choosing A in the first question, you have a 50% chance of getting \$40 000, and a 50% chance of getting \$140 000. You will just get one of the alternatives, and it is completely random. If you choose B you are guaranteed \$100 000, and there is no randomness whatsoever. Note that there are 4 different questions.

A	B	
50% chance for \$40 000 50% chance for \$140 000	100% chance for \$100 000	A OR B
50% chance for \$50 000 50% chance for \$150 000	100% chance for \$100 000	A OR B
50% chance for \$60 000 50% chance for \$160 000	100% chance for \$100 000	A OR B
50% chance for \$70 000 50% chance for \$170 000	100% chance for \$100 000	A OR B

Figure A.2

Suppose you earn X TSH each period, pretend that you will earn 2X next period, how would you use the extra X? (Doubled

Investments in company	Savings for investment	Savings for bad times (e.g. payback loans)	Payout to owners
PERCENTAGE	PERCENTAGE	PERCENTAGE	PERCENTAGE

Figure A.3

	Minimum	Maximum
How much would you borrow at an interest rate of 15%?	SUM	SUM
How much would you borrow at an interest rate of 20%?	SUM	SUM
How much would you borrow at an interest rate of 25%?	SUM	SUM

## APPENDIX B

Table B.1

### OLS regression of Risk3 on all five independent variables

(With outlier)

R-squared 0.2487	
Observations 52	
<b>Coefficient</b>	
<i>Access to credit</i>	-1 725 496 (1 489 899)
<i>Access to insurance</i>	2 748 862 (2 375 343)
<i>Using credit</i>	4 662 660 (2 882 138)
<i>Using insurance</i>	315 951 (2 205 799)
<i>Location outside of Dar es Salaam</i>	-2 320 009 (1 440 170)
<i>Number of employees</i>	304 966 (235 047)
<i>Constant</i>	-3 810 600 (4 174 442)

Standard errors in parenthesis. \* significant at 10%, \*\* significant at 5%.

As can be seen, this result differs greatly from the Risk3 of which we are using, when excluding the outlier. Instead of having three significant variables we do not get a single one under the 10% level of significance. We do however have two variables very close to get significant, with t-values of 1,61 and 1,62. However, these two variables are significant when excluding the outlier. As can be seen, the variable *Access to credit* is the variable that gets affected the most. When including the outlier, the t-value drops from 1.87 to 1.16, and it gets far away from being significant.

Table B.2

**OLS regression of Risk2 on all five independent variables**

(“Too expensive” is included in Access to Credit)

R-squared 0.1745	
Observations 52	
<b>Coefficient</b>	
<i>Access to credit</i>	0.0345 (0.0615)
<i>Access to insurance</i>	0.1337** (0.0643)
<i>Using credit</i>	-0.0854 (0.0518)
<i>Using insurance</i>	-0.0909 (0.0666)
<i>Location outside of Dar es Salaam</i>	-0.0150 (0.0483)
<i>Number of employees</i>	0.0010 (0.0020)
<i>Constant</i>	0.4263** (0.0737)

Standard errors in parenthesis. \* significant at 10%, \*\* significant at 5%.

Table B.3

**OLS regression of Risk2 on all five independent variables**

(“Too expensive” and “Too risky” is included in Access to Credit)

R-squared 0.1691	
Observations 52	
<b>Coefficient</b>	
<i>Access to credit</i>	-0.0114 (0.0779)
<i>Access to insurance</i>	0.1464** (0.0660)
<i>Using credit</i>	-0.0714 (0.0490)
<i>Using insurance</i>	-0.0986 (0.0658)
<i>Location outside of Dar es Salaam</i>	-0.0205 (0.0486)
<i>Number of employees</i>	0.0012 (0.0021)
<i>Constant</i>	0.4501** (0.0803)

Standard errors in parenthesis. \* significant at 10%, \*\* significant at 5%.

Table B.4

**OLS regression of Risk2 on all five independent variables**

("Too risky" is included in Access to Credit)

R-squared 0.1688	
Observations 52	
<b>Coefficient</b>	
<i>Access to credit</i>	-0.0055 (0.0598)
<i>Access to insurance</i>	0.1443** (0.0635)
<i>Using credit</i>	-0.0710 (0.0539)
<i>Using insurance</i>	-0.0984 (0.0659)
<i>Location outside of Dar es Salaam</i>	-0.0200 (0.0485)
<i>Number of employees</i>	0.0011 (0.0021)
<i>Constant</i>	0.4456** (0.0702)

Standard errors in parenthesis. \* significant at 10%, \*\* significant at 5%.

Table B.5

**OLS regression of Risk3 on all five independent variables**

("Too expensive" is included in Access to Credit)

R-squared 0.2147	
Observations 51	
<b>Coefficient</b>	
<i>Access to credit</i>	-1 087 653* (612 193)
<i>Access to insurance</i>	805 355 (689 308)
<i>Using credit</i>	1 460 905** (630 353)
<i>Using insurance</i>	-1 101 362 (810 127)
<i>Location outside of Dar es Salaam</i>	-1 145 308** (520 876)
<i>Number of employees</i>	33 096 (22 934)
<i>Constant</i>	898 371 (769 201)

Standard errors in parenthesis. \* significant at 10%, \*\* significant at 5%.



Table B.6

**OLS regression of Risk3 on all five independent variables**

("Too expensive" and "Too risky" is included in Access to Credit)

R-squared 0.1875	
Observations 51	
<b>Coefficient</b>	
<i>Access to credit</i>	-931 377 (919 059)
<i>Access to insurance</i>	779 503 (761 417)
<i>Using credit</i>	1 247 616** (607 747)
<i>Using insurance</i>	-936 119 (761 119)
<i>Location outside of Dar es Salaam</i>	-1 113 694** (544 330)
<i>Number of employees</i>	38 462 (25 687)
<i>Constant</i>	855 975 (818 928)

Standard errors in parenthesis. \* significant at 10%, \*\* significant at 5%.

Table B.7

**OLS regression of Risk3 on all five independent variables**

("Too risky" is included in Access to Credit)

R-squared 0.1746	
Observations 51	
<b>Coefficient</b>	
<i>Access to credit</i>	-469 089 (543 713)
<i>Access to insurance</i>	609 795 (602 089)
<i>Using credit</i>	1 292 175* (644 603)
<i>Using insurance</i>	-919 407 (768 679)
<i>Location outside of Dar es Salaam</i>	-1 073 783* (546 560)
<i>Number of employees</i>	36 813 (23 177)
<i>Constant</i>	496 422 (750 180)

Standard errors in parenthesis. \* significant at 10%, \*\* significant at 5%.