

Mathias Husby Løken

## Marketplace lending: An analysis of the opportunities for lenders and borrowers in the Scandinavian market.

Lånebasert folkefinansiering: En analyse av mulighetene for långivere og låntakere i det skandinaviske marked.

Master's thesis in Economics and Business Administration  
Supervisor: Florentina Paraschiv & Ranik Raaen Wahlstrøm  
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Norwegian University of Science and Technology  
Faculty of Economics and Management  
NTNU Business School



# Preface

This master thesis is written as the final product of my 2-year master's degree program in Economics and Business Administration at NTNU Business School. The main profile being finance and investments.

Working on the thesis have been both educational and challenging. It has also given me valuable insight into the market of marketplace lending.

I would like to thank Ranik Raaen Wahlstrøm for valuable feedback, assistance and guidance throughout the whole semester. I would also like to thank Florentina Paraschiv for valuable input regarding possible tests.

# Abstract

In this thesis, I investigate the opportunities brought forth for investors and borrowers in the marketplace lending market in Scandinavia. I describe current regulations and the status of the market through descriptive statistics, as well as compare the market with the well-established market in the US through a mean equality analysis on two different platforms. The investors' opportunities in the market is further analysed through an exploratory regression analysis, while the borrowers' opportunities are investigated through a questionnaire. The results show that there are clear opportunities both for lenders to improve the risk/return trade-off by investing in bigger loans, as well as for borrowers to reduce their rate by dividing their requested loan amount into several smaller loans either on different platforms or over time when financing is needed.

My findings also indicate that the main reason why borrowers apply for loans through marketplace lending is due to the reduced demand for security on the loans. They also indicate that the borrowing rate currently is not competitive, comparing it to other financing opportunities.

To my knowledge, this study is the first of its kind investigating the Scandinavian market for marketplace lending, as well as its possibilities.

# Sammendrag

I denne masteroppgaven undersøker jeg mulighetene for både investorer og låntakere i markedet for lånebasert folkefinansiering i Skandinavia. Jeg beskriver gjeldende regelverk og markedets foreløpige status gjennom beskrivende statistikk, samt sammenligner det skandinaviske markedet med det veletablerte markedet for lånebasert folkefinansiering i USA gjennom en mean equality test av rådata fra to ulike plattformer. Investorenes muligheter i markedet analyseres videre gjennom en undersøkende regresjonsanalyse, mens låntakernes muligheter blir undersøkt gjennom en spørreundersøkelse. Resultatene viser at det er gode muligheter for både långiver/investor å forbedre forholdet mellom avkastning og risiko ved å investere i større lån, og for låntakere til å redusere lånerenten ved å dele opp det etterspurte lånebeløpet i flere mindre lån og fordele enten over flere plattformer, eller over tid etter når finansieringen er nødvendig.

Mine funn indikerer også at hovedgrunnen til at låntakere søker lån gjennom lånebasert folkefinansiering er reduserte krav til sikkerhet. De indikerer også at lånerenten foreløpig ikke er konkurransedyktig sammenlignet med andre finansieringsmuligheter.

Så vidt meg bekjent er denne studien den første som undersøker det skandinaviske markedet for lånebasert folkefinansiering, så vel som dets muligheter.

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# 1. Introduction

## 1.1 Motivation

After the financial crisis of 2008, the lending capacity of banks shrank the following years due to higher risk aversion (Fenwick, McCahery and Vermeulen, 2018). Small and medium-sized enterprises (SMEs) have bigger challenges in providing collateral and show sufficient cash-flows compared to larger firms (Fenwick, McCahery and Vermeulen, 2018; Leboeuf and Schwienbacher, 2018). In addition, they are considered unfavourable borrowers as risk analysis and risk management of SMEs are costly due to information asymmetry and relative agency costs. The consequence of this has been a growing demand for alternative financing sources, which marketplace lending helps cover. Marketplace lending is a fintech innovation where an online platform operates as an intermediary between a diversified set of potential investors with borrowers (Moldow, 2014).

## 1.2 Definition of scope

Crowdfunding, peer-to-peer lending (P2P), peer-to-business lending (P2B) and marketplace lending are different names of lending/funding beyond banking and obligations market. Crowdfunding means funding through several peers, and can be divided into lending-based, equity-based and donation-based crowdfunding, following the categorization based on tangibility of rewards by Paschen (2017), further explained in chapter 2.3. This can be narrowed even further as lending crowdfunding can be divided into three models; presale model, traditional lending model and forgivable loan (Paschen, 2017). For this thesis I will focus on lending-based crowdfunding through online platforms, following the forgivable loan model, providing loans to businesses. This form of lending to businesses from different peers has later become known as marketplace lending which is the general notation I will use throughout the study.

## 1.3 The market for marketplace lending

The first marketplace lending platform Zopa was launched December 2005 in the UK (Wang and Greiner, 2011). Shortly after, in February 2006 the first US marketplace lending platform Prosper was launched. Since then, this form of lending has become quite popular in China,

USA and some European countries. Lending Club, which is the biggest platform for marketplace lending have issued approximately 3.8 million loans totalling more than 47 billion USD. In Europe, the greatest portion of marketplace loans come from the UK who as of 2017 accounted for 68% of the total alternative finance market of Europe (Ziegler *et al.*, 2019).

In Scandinavia, the situation has been somewhat different. Even though marketplace lending has existed since 2005 and have had a huge growth after the financial crisis of 2008 (Nicoletti, 2017), it did not exist in Norway up until 2017 (Ziegler *et al.*, 2019). The Swedish market declined in 2015 due to the bankruptcy of a major platform, Trustbuddy, but have recovered greatly since then. The main expected reason for Norway to be lagging behind on the market growth is due to strict regulations which do not fit with the practises of marketplace lending (Ziegler *et al.*, 2019). In Sweden and Denmark, rules and regulations have not been a significant obstacle, but there are expected to come further regulations soon. As the whole market is under regulatory change and experiencing significant growth, knowledge regarding its potential is of great interest. As the market is quite new, there has not been done much research on it.

The Norwegian market is for the time being in a very early stage. The first marketplace lending platform opened with concession as loan intermediary in 2017 (Ziegler *et al.*, 2019). This form of lending first got regulated in 2017. From 2017 to 2019 the market has mainly been two major platforms with some smaller ones now starting to establish. According to Dushnitsky *et al.* (2016) lending platforms are sensitive to cultural and legal traits which might explain the situation in Norway comparing it to other European countries. The situation in Sweden and Denmark are slightly different. The size of the markets are slightly bigger, but also fast growing (Ziegler *et al.*, 2019), indicating that the Scandinavian market as a whole is still at an early stage.

## 1.4 Purpose of the thesis

The aim of this thesis is to provide insight into the potential of this newly established market of marketplace lending as well as its possible flaws, both from the perspective of lenders and borrowers. For the lenders perspective I will investigate the interest rate given, and what differs the loans when risk is seemingly equal. I will also conduct a comparative analysis on the Norwegian, Swedish and American market to see if there are significant difference

between the Norwegian and Swedish market being in an early stage, and the well-established American market.

When analysing the potential for the borrowers, I have chosen another approach. Instead of looking at their loan costs, I have conducted a quantitative analysis on the motivation behind borrowers choosing this form of funding through a survey analysis. Marketplace lending as a form of fintech utilizes on cost efficiency, giving the opportunity to reduce interest costs for borrowers as well as increase the interest rate for investors. In addition, not all loans provided through marketplace lending are secured, which opens a lot of new opportunities for businesses that does not have a lot of tangible assets. Finally, the marketplace lending offers a platform reaching out to several investors and can therefore also be seen as a form of marketing. Through my thesis I will investigate the motivation for firms to borrow money through marketplace lending and try to identify the advantages and disadvantages of this form of borrowing.

The data acquired shows that the current size of the market is still very small, however, the analysis shows several interesting findings regarding both investors and borrowers' opportunities in using the market. Lenders can reduce their risk exposure or increase interest while containing current risk exposure by rather invest in big loans than small loans. There are also incentives for choosing Norwegian loans rather than Swedish, and real estate loans rather than business loans as they offer a higher interest with equal risk. The main reason why borrowers choose to finance their business or project through marketplace lending is seemingly due to reduced requirements for security on the loans. The borrowing rate, however, is according to the results from the questionnaire not competitive with other alternatives at the current state.

## 2. Literature review

Through my literature review I will present current studies done within fintech, alternative forms of financing as well as specific studies on marketplace lending and its potential.

### 2.1 Fintech

Marketplace lending is one of many new innovative markets using new technology to compete with existing traditional financial services (Nicoletti, 2017). Nicoletti (2017) described the process done by fintech companies as a process of disintermediation through innovation, using big data, blockchain, robo-advisors and other both digital channels and mobile devices to effectively gain competitive advantage over traditional financial services. Nicoletti (2017) defined fintech as initiatives, with an innovative and disruptive business model, which leverage on information and communication technology in the area of financial services.

The relevance of fintech is getting bigger and bigger. New ideas and ways of operating existing financial procedures or institutions by using technological inventions has created both new markets such as marketplace lending, as well as optimizing existing forms of finance. Digital development has made many new innovations possible within the finance sector. The financial crisis of 2008 contributed to the increase of interest in fintech opportunities as it led to a loss of faith in banks among a lot of customers and them becoming interested in alternative ideas (Nicoletti, 2017).

### 2.2 Alternative finance

Alternative finance can be seen as forms of financing beyond the traditional forms of bank loans, bonds and stocks (Zegal, 2016). Baeck, Collins and Zhang (2014) presented nine different forms of alternative financing sources as part of “The UK Alternative Financing Industry Report 2014”. Alternative finance is not limited to these nine forms mentioned, but these are the main sources of alternative finance at present. They are as follows:

**“Peer-2-Peer (P2P) business lending”:** Debt based transactions between individuals and businesses where many lenders contribute to each loan. This form is also known as peer-to-business lending (P2B) which is mentioned shortly in the introduction.

**“Peer-2-Peer (P2P) consumer lending”:** Personal loans where individuals borrow from a number of individual lenders.

**“Equity-based crowdfunding”**: Sale of a stake in a business to several investors.

**“Reward-based crowdfunding”**: Individuals donating towards a project with the intention of getting a tangible-reward or product in return.

**“Donation-based crowdfunding”**: Individuals donating towards a charity project with no intention of receiving financial or material return.

**“Invoice trading”**: The business sell their invoices with a small discount in order to receive funds immediately rather than waiting for maturity of the invoice.

**“Community shares”**: Community participants co-operate in financing a common need or desire, receiving shares in the financed project/business.

**“Pension-led funding”**: Allows SMEs to re-invest their pension funds back into their own businesses.

**“Debt-based securities”**: Similar to bonds, but with different rights. Lenders receive a debt obligation, paid back over a certain number of periods.

The most prevalent form of alternative finance is crowdfunding (Zegal, 2016), which covers five out of the nine types presented by Baeck, Collins and Zhang (2014); P2P business lending, P2P consumer lending, equity-based crowdfunding, reward-based crowdfunding, donation-based crowdfunding.

## 2.3 Crowdfunding

As a collective term for funding through several peers, crowdfunding can be divided into subcategories according to the payback. The most common is to divide into four subcategories; donation, equity, lending and reward (Belleflamme and Lambert, 2014).

Paschen (2017), however, chose to divide into three categories according to tangibility of the reward as shown in top of Figure 1. Whereas Belleflamme and Lambert (2014) had an own subcategory for reward-based crowdfunding, Paschen (2017) divided this into “reward donation” and “presales” and placed this under the subcategories “donation” and “lending”. Reward donations are mainly donations which does not require nor expect a tangible reward in return, but personal recognition or experiential rewards (Paschen, 2017). Presales offer the finished product, and the contribution by investors/lenders are based on the market value of the end product (Paschen, 2017).



	Donation Crowdfunding		Lending Crowdfunding			Equity Crowdfunding	
	Pure Donation	Reward Donation	Forgivable Loan	Presales	Traditional Loan	Investor-Led	Entrepreneur-Led
	no tangible reward ←				→ tangible reward		
<b>Reward Type</b>	No reward	Recognition, tokens, or other non-tangible rewards	Interest only if the project has revenue or profit	Finished product	Fixed-term interest	Securities, revenue, or profit sharing; projects accessible to accredited investors only	Equity, bond-like shares, securities, revenue, or profit sharing; projects accessible to all investors
<b>Platform Examples</b>	Kopernik Crowdrise	Indiegogo Experiment	Quirky TubeStart AppsFunder	Kickstarter PledgeMe	SoMoLend Lending Club	Angellist Seedrs EquityNet	Crowdcube Fundable

Figure 1 Categories of crowdfunding according to tangibility of the reward. Reprinted from "Choose wisely: Crowdfunding through the stages of the startup lifecycle" by Paschen, J., 2017, *Business Horizons*, 60, p 180

The first form of crowdfunding in Figure 1, donation crowdfunding, is where the investors don't expect to get anything in return and the money is donated to the purpose (Paschen, 2017). Organisations or projects seeking this form of funding are often charities. The second form is lending crowdfunding, which consists of forgivable loans where interest is paid if what is funded has revenue or profit, presales where funders receive the final product at the end of the campaign, and traditional loans giving a fixed interest rate. The last form of crowdfunding is equity crowdfunding where funders are as investors, gaining ownership of the firm or project.

### 2.4 Marketplace business lending

In this thesis I address what is called marketplace lending. This is one of the new innovations that have emerged from the fintech industry, competing with existing traditional financial services (Nicoletti, 2017). I will thus focus on what Paschen (2017) define as lending crowdfunding through the traditional loan model, since marketplace lending belongs to this category. Studies done on lending crowdfunding with the traditional loan model address this form of crowdfunding as P2P and P2B lending. As lenders operating on loan brokerage platforms has shifted from being only individual investors to also institutional investors, the more generalized term for the lending part of alternative finance has become marketplace lending (Mateescu, 2015).

Marketplace business lending is a way of crowdfunding where lenders can lend money to businesses through an online marketplace. This form of financing connects lenders and borrowers, and let the lenders choose which borrowers to lend to. By removing the bank as an

intermediary, the idea is to provide better rates and opportunities for the borrowers as well as an investment opportunity for the lenders.

As there are many terms for marketplace lending which are for the same phenomenon, I will shortly explain their nature and differences. P2P lending started as a simple system connecting individuals online as lenders and borrowers (Mateescu, 2015). As the lending model developed, it attracted more investors, and borrowers which again created new definitions of different directions. As bigger investors as hedge funds, investment firms, and even banks started to invest in the market, the new term including these peers has increasingly shifted towards marketplace lending (Mateescu, 2015).

The marketplace lending is very comparable to the bond market or more specific debt securities. Debt securities, also called fixed-income securities promise income of a fixed stream or formula (Bodie, Kane and Marcus, 2014). The loan agreement has a predetermined interest rate (yield), a repayment plan (coupons) and a time to maturity. As the borrower can repay the debt before maturity it might be most accurate to compare with callable bonds. This gives the issuer the opportunity to redeem the bond before maturity.

What determines the yield of a bond is the risk of the buyer not getting his claims repaid. The default risk, or credit risk is measured and given a rating by Moody's investor services, S&P Corporation and Fitch Investors service where a high rating of AAA or Aaa indicates low to no risk of default. CCC or Caa and lower are on the other hand poorly rated with higher possibility of default (Bodie, Kane and Marcus, 2014).

### 2.4.1 Lender behaviour

According to Yum, Lee and Chae (2012), information asymmetry is one of the main problems faced by marketplace lending platforms. In the transaction between borrower and lender, the borrower will provide both hard and soft information regarding the business to the lenders (Yum, Lee and Chae, 2012). The information provided for the lenders are limited to what is available and provided by the borrowers. Yum, Lee and Chae (2012) found that when information on creditworthiness is limited, lenders seek the wisdom of crowds by considering other lenders information, opinions and behaviour.

There has been done a lot of research on lender behaviour in the marketplace lending markets. Findings indicate that looks and race of borrowers in marketplace consumer lending

on the American market, affect the borrowing rate and funding (Ravina, 2008). Black people pay higher rates than white people all else equal, and not good-looking borrowers are less likely to get funded and they pay higher interest (Ravina, 2008). Gao, Lin and Sias (2018) found that linguistic style and positivism in loan applications had significant impact on funding. Further, Gao, Lin and Sias (2018) found that more readable and a highly positive description were more likely to get funded, through both getting more and higher bids.

## 2.4.2 Pricing mechanisms in marketplace lending

For a loan to get funded it needs to be of interest to the lenders. From an economic point of view, investors expect a risk premium relative to the risk taken as most investors are risk averse (Bodie, Kane and Marcus, 2014). The challenge is therefore to set an interest rate on the loan that is as low as possible for the borrower, but at the same time high enough to attract the needed investments. Ma, Zhou and Hu (2017) analysed three different forms of pricing mechanisms used by marketplace lending platforms. These three pricing mechanisms are auction pricing mechanism (APM), borrower pricing mechanism (BPM) and platform pricing mechanism (PPM). Up until 2010, the first US marketplace lending platform Prosper used the APT model but has later changed to PPM (Ma, Zhou and Hu, 2017).

These pricing models have their advantages and disadvantages. For the APM model, the interest rate is the lowest of which is offered. Borrower creates a loan application which lenders can bid on. Lenders can then fund as much they want and for the interest rate they want. However, if the loan gets funded 100% further bids can be made, and the ones with the highest interest rate will get outbid. In the end, lenders might get different interest rate on the same loan. After the loan is funded, the borrower can choose whether they will take the loan as in some cases the interest rate might be too high. In this case, borrowers will not accept a too high interest rate, but lenders might find themselves giving a lower rate than what would be suggested from thorough risk analysis. This can be due to information asymmetry, little research or little knowledge. A study on data from Prosper.com showed that investors were able to predict default even better than the credit rating by using the information provided by the borrower (Iyer *et al.*, 2015). Another study on another platform using the APM model, however, showed quite different results where the market seemed unable to price the default risk at all (Mild, Waitz and Wöckl, 2015).

The PPM and BPM models differ from the APM as the interest rate is set when loans are launched on the platform. For the PPM model, the platform conducts a risk analysis on the

loan and gives each loan an interest rate based on different risk factors (Ma, Zhou and Hu, 2017). The borrower then chooses whether to accept the rate before the loan application gets launched. The PPM model relies on the platform acting as a third-party giving reliable credit risk ratings of the borrowers. The BPM model is slightly different as the borrower sets their own interest rate (Ma, Zhou and Hu, 2017). Ma, Zhou and Hu (2017) further described the process of interaction between lenders and borrowers on a BPM market as a game between borrowers and lenders where borrowers initially want the lowest borrowing rate possible while the lenders want the highest interest rate possible. If the borrower then offers a low interest rate, it might not get funded as lenders may want a higher interest for the risk taken by lending (Ma, Zhou and Hu, 2017).

The APM might be the optimal solution for businesses but it gives less incentives for investors as it might be riskier and less rewarding than the PPM and BPM model (Ma, Zhou and Hu, 2017). According to Ma, Zhou and Hu (2017) this might also be the reason why Prosper switched away from the APT model as it made them unable to maintain market leadership. The studied and inquired platforms in this thesis are all following the PPM model.

### 2.4.3 Credit rating

To give a credit score, platforms tend to use FICO scores and additional self-reported information from the company (Mateescu, 2015). The FICO score is a credit score, ranging from 300-850 (myFICO, 2019) calculated by an algorithm developed by Fair Isaac Corporation using hard information about the borrower (Arya, Eckel and Wichman, 2013). The Scandinavian platforms in this thesis, Monner and Kameo, use Experian credit score alongside self-reported information to set the risk grade (Monner, 2019; Kameo, 2019). Experian credit score ranges from 0 to 999 where a high score indicates low risk and a low score indicates high risk, illustrated in Figure 2

<b>Excellent</b> 961 - 999	You should get the <b>best credit cards, loans and mortgages</b> (but there are no guarantees).
<b>Good</b> 881 - 960	You should get most credit cards, loans and mortgages but the <b>very best deals may reject you.</b>
<b>Fair</b> 721 - 880	You might get OK interest rates but your <b>credit limits may not be very high.</b>
<b>Poor</b> 561 - 720	You might be accepted for credit cards, loans and mortgages but they may have <b>higher interest rates.</b>
<b>Very Poor</b> 0 - 560	You're more likely to be <b>rejected for most credit cards, loans and mortgages</b> that are available.

Figure 2 Experian credit score (Experian, 2019)

The Experian credit score is built on the credit history of the person or company applying. The information used to determine the score is payment history, credit utilization rate, type of credit, total debt, public records, recently opened credit accounts and the number of inquiries (Experian, 2019). Depending on the Experian score and the additional relevant information gathered, the platforms set a certain risk grade as well as an interest rate.

The credit risk for the different risk grading categories are seemingly the same for the two big Scandinavian platforms Monner and Kameo as we can see in Table 1. This is probably due to them both using Experian credit scoring. Monner does not provide information about the loss given default for the specific risk gradings, but from reading their expected return compared to the return from Kameo, it is clear they expect higher losses given default for medium and high-risk loans than for low risk loans. Kameo estimates a 30% loss given default for all risk grades. The given rates and estimated return of all credit scores on these two platforms are shown in Table 1.

Riskgrading	Platform	min. interest	credit risk	LGD	Expected loss	estimated return
A	Monner	5 %	<0.25 %			4.90 %
	Kameo	5 % - 7 %	<0.24 %	30 %	<0.1 %	4.9%-6.9%
B	Monner	5 % - 6.5 %	0.25 % -< 0.75 %			4.9%-6.2%
	Kameo	6 % - 8 %	0.25 % - 0.74 %	30 %	0.1 % - 0.2 %	5.9%-7.8%
C	Monner	6.5 % - 8.9 %	0.75 % -< 3 %			6.2%-7.4%
	Kameo	8 % - 11 %	0.75 % - 3 %	30 %	0.2 % - 0.9 %	7.8%-10.1%
D	Monner	8.9 % - 12.2%	3 % -< 8 %			7.4%-8.2%
	Kameo	11 % - 13 %	3 % - 8 %	30 %	0.9 % - 2.4 %	10.1%-10.6%
E	Monner	Not given loan	>8 %			
	Kameo	13 % - 15 %	>8 %	30 %		10.6%-12.6%
F	Monner	Not given loan	-	-	-	-
	Kameo	Not given loan	-	-	>2.4 %	-

Table 1 Interest, risk and estimated return for Kameo and Monner.  
Data from (Holm, 2019) and (Kameo, 2019)

According to Kameo (2019), the expected credit risk is gathered from UC which is a Swedish credit information company. As there has not been enough loans to set a credit risk based on historical data, using a credit analysis from a comparable market is a possible estimation technique. Prosper initially used the Experian data on average default rate for borrowers with a debt-to-income ratio less than 20% to show expected default and expected return on investment (Wang and Greiner, 2011). Comparing this estimate with the actual default rates from the first operating year of Prosper showed higher default rates for all Prosper credit grades (Wang and Greiner, 2011).

#### 2.4.4 Credit risk

Studies done on the credit risk of marketplace lending show that there is a significant relationship between default and credit score. Polena and Regner (2018) found in their study that low-risk loans with A rating had a default rate of 6.6% while very high-risk loans with ratings D to G had a default rate of 20.1%. These findings were similar to the study of Serrano-Cinca *et al.* (2015) who found the default rate of A rated loans to be 5.6% and D, E, F and G to have 17.2%, 19.7%, 25.3% and 38.2% respectively, although should be mentioned they are both studies using Lending Club data, over overlapping but different time periods.

Both studies found that loans to small businesses had significantly higher risk of default compared to other types of loans. In particular Serrano-Cinca *et al.* (2015) found that the risk of small business loans are 2.279 times higher than loans for other purposes. Regarding

probability of default, a study by Đurović (2017) showed a significant difference between 36 and 60 month loan term structure on a 95% confidence level, and significant difference in default probability between different loan purposes. These findings are supported by earlier studies by Serrano-Cinca et al. (2015), and later by Polena and Regner (2018), Lending Club being the data source in all these three studies with different but overlapping observation period.

#### 2.4.5 Profit risk

Another way of evaluating the market performance proposed by Serrano-Cinca and Gutiérrez-Nieto (2016) is called profit scoring. Instead of evaluating performance according to default risk, they calculated the internal rate of return (IRR) of the loans to see which loans gave better value. Credit risk is a measure of the risk connected to defaults among borrowers. A weakness to this measure, however, is that it does not distinguish between loans that were almost fully paid and loans that were not paid back at all. This might again give false impressions of the risk as some loans may have higher payback before defaulting than others. Evaluating the profit risk, eliminates this by evaluating the IRR, which consider all repayments, their size and their date. By calculating IRR, one can find the expected return of the loans. A fully repaid (non-defaulted) loan will have the same IRR as the interest paid. Thus, it is of interest to study the average IRR for loans in the different risk grades, as well as the expected IRR given default.

The study by Serrano-Cinca and Gutiérrez-Nieto (2016) showed that high-risk loans on average were less profitable than low and medium-risk loans. This is interesting as one does expect high risk loans to compensate the risk with a higher premium. Serrano-Cinca and Gutiérrez-Nieto (2016) conducted a regression analysis with seven different models where three of the models tested the effect on the IRR done by purpose of the loan. Results indicated that small business loans were the loans giving lowest IRR, having significant negative impact at 1% level on all three models, while credit card debt repayment loans were the loans with highest IRR with significant positive effect on 1% level for all the three models.

## 2.4.6 Comparative studies

Due to demographic differences, culture, regulations and technology, two markets with the same product and model might develop differently across borders. The market for alternative finance in Europe has increased from 1.12b to 10.44b from 2013 to 2017 (Ziegler *et al.*, 2019). Ziegler *et al.* (2019) also compare different markets according to both total and relative size. They showed great differences across different countries. This is illustrated in Table 2, which shows statistics from Ziegler *et al.* (2019) for Scandinavian countries and the UK.

Country	Volume	Platforms operating	Volume pr capita	Markeplace lending volume
Norway	11.79m€	14	2.23€	2.9m€
Sweden	196.38m€	8	19.51€	137.8m€
Denmark	43.47m€	4	7.53€	12.9m€
UK	7.060b€	62	107.04€	

Table 2: Volume, platforms and volume pr capita Alternative Finance.  
Source: Ziegler *et al.* (2019)

Another approach used to compare the situation of markets in different countries is used by Chen and Han (2012) who compared the US and Chinese market of marketplace lending and their practises. The study performed a thorough literature review to compare these two markets. The findings indicates that credit rating and risk control are more thoroughly done in the US than in China (Chen and Han, 2012).

“For the Prosper.com in the USA, the credit ratings of borrowers are directly extracted from the third party – Fair, Isaac Credit Organization (FICO) according to the borrower’s social security number. However, there’s no such agency in China, the credit scores of borrowers are mainly calculated from the information submitted by the borrowers themselves.” - (Chen and Han, 2012)

Weak risk control and credit rating opens for significant information asymmetry. Borrowers may provide information that only improves their risk rating. Borrowers getting a better risk grade than anticipated will accept, while borrowers getting a worse grade will decline, making the average riskier. Fraudulent inquiries may also be harder to distinguish from serious inquiries as no thorough background checking is being done. In April 2016, Ezubao, a big marketplace lending platform in China was found to be a Ponzi scheme creating fake



investment projects to scam investors for more than 50 billion RMB (Huang, 2018). As of June 2016 the China Banking Regulatory Commission reported that there were 1778 problematic platforms in China (Huang, 2018).

### 3. Rules and regulations

The growth of crowdfunding in different European countries is very dependent on economic as well as cultural and legal factors (Dushnitsky *et al.*, 2016). Ziegler *et al.* (2019) addressed the issue of regulations, and found that 67% of Norwegian, 50% of Danish and 50% of Swedish debt-based platforms perceived the regulations as excessive and too strict. As mentioned in the introduction, even though the market had become huge in bigger countries like the UK, US and China, it was still at a very early state in Norway even as late as 2017. As the development of rules and regulations in the market is very important regarding further growth I will in this chapter go through key elements of the regulations within the Nordic countries, as well as the EU.

#### 3.1 The Scandinavian market

In Norway there are some rules and regulations that apply for the lender and the platform that distributes the loans. However, these rules may not be that clear and the Financial Supervisory Authority of Norway are considering further regulations of the market to both clarify current rules as well as to increase customer/investors protection.

To operate as a marketplace lending platform in Norway one needs concession as loan intermediary (Finansdepartementet, 2018). This is needed to operate as a pure intermediary between lender and borrower. The loan intermediary is required to be impartial and to safeguard both lender and borrowers' interests. The platforms are not allowed to have a contingency fund as this requires concession as insurance business, and resale(transferring) of loans may be trading of securities which requires concession as an investment company (Finansdepartementet, 2018). Lenders were up until 1<sup>st</sup> of June 2019 regulated by finansforetaksloven §2-1, stating that lenders without concession as a financing business only can provide loans in "individual cases". From 1<sup>st</sup> of June 2019, the Norwegian Ministry of Finance implemented an exemption from this rule for lending through authorised platforms, where lenders now are allowed to lend up to 1 million NOK each year.

In Sweden, there are currently no special regulation of platforms within marketplace lending. They can operate either without any form of concession or with concession based on the organisation of their business (Finansdepartementet, 2018). There are however new rules and regulations underway. The latest proposal for regulations suggests that platforms need permission and will be under supervision by the Swedish FSA “finansinspektionen”. There has also been suggested rules regarding the operational activities of the platform such as handling conflict of interest, complaints and both gathering and providing of information (Finansdepartementet, 2018).

In Denmark, there are no direct regulations of crowdfunding or marketplace lending, and platforms are therefore regulated by the laws regarding payment institutions (PSD2) and investment firms (MiFID II) (Finansdepartementet, 2018).

### 3.2 Regulations in EU

The European Commission (EC) provided a proposal on the 8<sup>th</sup> of march 2018 regarding regulations of European Crowdfunding Service Providers (Finansdepartementet, 2018). The Committee of Economic and Monetary Affairs provided a proposal with some changes from the one from EC. Further, as of 26<sup>th</sup> of June 2019 the Council of the European Union presented an updated proposal based on previous proposals. At the time of writing, these proposals are still at an early stage of consideration, and there are for the moment no regulation of the market in EU.

## 4 Data and sampling

In this chapter, I will present the data used in the analysis as well as explain the limitations and assumptions made.

When conducting this thesis, 14 different marketplace lending platforms in Europe were asked about the possibility of providing data regarding a study, of which 5 were Scandinavian. 6 replied whereby only one had and were interested in providing a dataset for analysis. Two Scandinavian platforms replied positively but did not have a dataset to provide at the time being.

The data used in the analysis of lenders perspective is provided by Kameo, which is a platform operating in the Scandinavian market. It is anonymized raw data on loans and their

performance from the launch of the platform in 2016 up until the retrieval of data at 15<sup>th</sup> of February 2019. The loans are real estate or business loans with a risk grading from A to D. The dataset consists total 129 different loans in Norway, Sweden and Denmark. The dataset includes amount borrowed, country, credit score, interest rate, duration of the loan, status of the loan, date paid out, date repaid, security, LTV, number of investments, average amount invested, type of loan, amount subscribed, unique lenders, date published, date closed, days live on platform and actual loan duration. The diversity of the loans will be presented in the descriptive statistics.

To analyse the Scandinavian market and compare it to a well-established market, I will use data from Lending Club. Lending Club is a marketplace lending platform, connecting lenders with borrowers requiring funding for several different purposes. Lending Club offers free download of loan data and their performance from 2007, updating every quarter. Most loans on the Lending Club platform are consumer loans, while only a small portion are small business loans Serrano-Cinca and Gutiérrez-Nieto (2016). A noticeable difference in loans provided by Lending club compared to loans on Kameo is the duration. While borrowers on Kameo choose their own term structure, borrowers on Lending Club can choose between 36 months and 60 months repayment period. From economic theory longer time to maturity implies higher risk (Bodie, Kane and Marcus, 2014). To reduce the possible impact from different times to maturity when comparing these two markets, I will only use 36-month loans for small businesses from Lending Club for the analysis over the period 2016-2019 which is the same time period of loans provided by Kameo.

For the analysis of the borrower's potential, I have conducted a survey that was E-mailed out to several companies that have taken marketplace loans. On the big platforms Kameo and Monner, projects are presented, and one can find information about the company behind each project. I went through the 235 different loan applications through the online platforms of Monner and Kameo at 18<sup>th</sup> of June 2019, finding 85 different companies. From these I was able to find contact information for 70 of these companies. All were contacted through E-mail with the request of participating, using the contact-form shown in the appendix A.1. Those who did not respond within two weeks got a second notice. Initially, only 11 responded to the invitation, and additionally 3 responded after the second notice. This led to a total of 14 respondents among the 70 contacted. This is unfortunately a very low respond rate, and the total number of respondents is also too low for the results to be generalized. However, through analysing the data I hope to find indications or patterns to why our

respondents chose marketplace lending, and see if there is a certain mutual opinion amongst the respondents.

## 5. Methodology

The goal of this thesis is to provide insight into the potential for lenders and borrowers within the marketplace lending market. For that reason, I have chosen to study the lenders and the borrower's potential separately through separate methods. For the lenders, I will analyse the performance and the opportunity of economic gains through a quantitative analysis on loans from a Scandinavian platform. Lenders incentives can differ from being solely economical, however I have here chosen to focus on the economical aspect. For the borrowers, marketplace lending reduces intermediary costs by utilizing technological innovations, and is therefore expected to provide a better borrowing rate. However, this is not the only incentive for borrowers to seek financing through marketplace lending. Banks require a security on the loans given to cover for their own losses if defaulted. This can be an issue for companies that do not own a lot of infrastructure. To investigate the potential and interest from borrowers I will conduct a qualitative analysis on the motivation behind seeking the loan.

### 5.1 OLS regression analysis

The classical assumptions for ordinary least square estimators to be the best available is presented by Studenmund and Johnson (2017):

- I. The regression model is linear, correctly specified, and has an additive error term
- II. The error term has a zero population mean.
- III. All explanatory variables are uncorrelated with the error term.
- IV. Observations of the error term are uncorrelated with each other (no serial correlation).
- V. The error term has a constant variance (no heteroskedasticity).
- VI. No explanatory variable is a perfect linear function of any other explanatory variable(s) (no perfect multicollinearity).
- VII. The error term is normally distributed (this assumption is optional but usually invoked).

According to the Gauss-Markov theorem, if the first six classical assumptions are met, OLS is BLUE "Best linear Unbiased Estimate", meaning it is an unbiased estimator with the

smallest variance (Studenmund and Johnson, 2017). If all seven assumptions are met it is not just BLUE but also the best unbiased estimator (Studenmund and Johnson, 2017)

In my thesis of the Scandinavian market I will perform a regression analysis on the interest rate using the available information about each loan to see what affects the interest rate. The variables are chosen based on availability of data and theoretical effect on the interest rate according to economic theory. I will in chapter 6.3 present four different exploratory models to visualize the significance and effect from the variables presented in chapter 5.1.3 on the dependent variable, interest rate.

### 5.1.1 Scatterplot of residuals

Heteroscedasticity is an issue that occurs when there is not a constant variance from the observations (Studenmund and Johnson, 2017). An example can be as the dependent variable increases, so does the variance of the observations. A tool used to see if there is heteroscedasticity is by interpreting the scatterplot of the residuals. The scatterplot of the residuals should indicate “white noise”, which means that the residuals should not form a certain pattern, but rather show randomly scattered residuals around the regression line. Further I will conduct a Breusch-Pagan test to see if there is any significant heteroscedasticity. Breusch-Pagan tests for heteroskedasticity in the error term by testing if the squared residuals can be explained by proportionality factors (Studenmund and Johnson, 2017).

### 5.1.2 testing for multicollinearity

Multicollinearity occurs when a variable is a linear function another variable (Studenmund and Johnson, 2017). A common way of testing for multicollinearity is by looking at the variance inflation factor (VIF). This is a test showing at what extend a given explanatory variable can be explained by the other explanatory variables. Studenmund and Johnson (2017) also states that there is no test that makes it possible to reject multicollinearity with real certainty, but regarding the VIF test, a rule of thumb is that if the VIF is bigger than 5, the multicollinearity is severe.

### 5.1.3 Variable selection

From an economical point of view, the lender will be interested in the interest rate received from the investment, and the risk associated with it. In this thesis, I wish to address to what degree the different types of risks affect the interest rate given for each investment, as well as try to identify other possible causes for any level of the interest rate. The dependent variable is therefore interest rate. The regression model is an exploratory model based on the study of Serrano-Cinca and Gutiérrez-Nieto (2016) regarding borrowers interest rate. As the available variables differ due to different data and data sources, the model is adjusted according to available information with theoretical influence on the dependent variable.

Variable	Definition
<i>Dependent variable</i>	
Interest rate	Interest rate given on the loan.
<i>Independent variables</i>	
Credit rating	Credit rating on the loan provided by Kameo, ranging from A to D.
Type of loan	There are two types of loans provided on the platform, business and real estate loans.
Loan amount	Amount borrowed in NOK. Swedish and Danish loans have been adjusted by the exchange rate with NOK on the day when the loan was paid out.
Duration	The number of months until the full debt has been repaid according to the repayment plan.
Country of business	Either Norwegian, Swedish or Danish.
Security	Security on the loan. Collateral in case of default to cover for investors losses. Dummy variable as either secured or unsecured.
LTV	Loan to value of the security.

*Table 3: Variable list and definitions*

Independent variables are given in Table 3, and differ to some degree compared to research as the available information is different. Compared to Serrano-Cinca and Gutiérrez-Nieto (2016) who studied Lending club and the different purposes of borrowing, I explore fewer

purposes with only business or real estate loans, but also take into account the effect of cross border lending and securities. Below are descriptions of each of the independent variables.

**Credit rating** is the rating given by the platform regarding the risk of default taken by lender. A is the lowest risk while D is the highest risk in the dataset. The effect of increased risk might not be linear. Risk averse investors might require an exponential increase in interest for the increased risk. As it is also possible for investors to invest very small amounts into loans, some investors might be risk seeking and rather invest in higher risk loans as one might find joy in taking risk. Due to this I have decided that having dummy-variables for the credit rating to be the best approach. Dummies are therefore created for B, C and D where value of 1 is given if the loan has the particular credit rating, and else given the value 0. The credit score of A is kept as reference in the constant of the regression whereas the  $\beta$  values for B, C and D shows change in the interest rate as the loan changes from credit rating A to the given credit rating value. According to economic theory, and previous findings from Serrano-Cinca *et al.* (2015), Đurović (2017) and Polena and Regner (2018), I expect that a worse credit score will increase the expected interest rate.

**Type of loan** is either Business or real estate loans. All else equal, there should be no effect from the type of loan as the risk and return would be the same. However, as mentioned in chapter 2.4.4, studies have shown a significant difference in expectations from different loan types. In marketplace lending, the lenders might also invest based on other interests than purely economical, investing as a good deed. Therefore, an effect might be possible. To investigate the effect, I have created a dummy for business loans.

**Loan amount** is the amount borrowed by the borrower. A relatively high amount would increase the debt ratio and gearing of the business, affecting the credit risk. A higher loan amount does not itself mean it is riskier. The way loan amount might trigger an effect on the interest rate can be explained through simple supply and demand modelling. As lenders diversify their investments they might operate with a maximum investment on each loan. With limited number of investors, a single big loan might not get fully invested as all interested investors have maxed out their investments. The borrower might then have to increase the interest rate to either attract more investors, or attract current investors to invest even more, taking on higher risk due to less diversification for a slightly higher interest rate. When the loan amount is low, there might be a competition among investors to be part of the loan, while when the amount is high, there might not be enough interested investors to fulfil

the loan. Due to this, the effect of an increase in amount borrowed when initially the loan amount was low might have a smaller impact than when the loan amount increases, and the loan amount was already relatively high. To cope with this, and to better visualize the effect of an increased loan amount I have scaled the loans from 1 to 5. 1 being loans ranging from 0 to 1 000 000, 2 being loans from 1 000 001 to 2 500 000, 3 being from 2 500 001 to 5 000 000, 4 being 5 000 000 to 7 500 000 and 5 being more than 7 500 000.

**Duration** is the number of repayment periods. One period equals 1 month. A longer time to maturity is expected to increase the risk for the lender in several ways. A longer time to maturity means that there is a bigger chance of default, as the business can become delinquent within a longer time span. Interest risk also applies as interest rates can go up, leaving you with a less rewarding debt obligation as the rates of the loans are pre-set and does not change during the borrowing period. A longer duration is therefore expected to increase the interest on the loan.

**Country** in the exploratory regression analysis is either Norway, Sweden or Denmark. The economy across borders might differ, and therefore the interest rate might as well be different. As all loans are on the same platform, and investors can invest in all three countries, even considering currency risk and exchange costs, this is expected to reduce the possible effect.

**Security** is the collateral given to the lender in case of default. The dataset distinguishes between different types of securities such as 1<sup>st</sup> priority on certain properties, parent company guarantee (PCG), personal bail among others. The value of the security is calculated through LTV if possible. Additional effect on the interest rate from different types of security might be possible as some might be easier to sell to fulfil ones claim than others. To avoid spurious regression with many variables however, I will use a dummy variable for unsecured loans to see if there is an effect of having security.

**LTV (loan to value)** is an estimation of the value of the security on the loan. LTV is a measure of the size of the loan compared to the expected value of the security. It is found through the formula  $LTV = \frac{Loan}{Value\ of\ security}$ . The lower the value, the more secured is the loan, as a low LTV indicates that the value of the security is relatively higher than the amount borrowed. Some loans where borrower has a personal guarantee, or when value on the underlying security is hard to measure, there is not calculated a value. Values for LTV ranges between 10% and 85% while some are not available (N/A). To study the effect, I have



created dummies indicating whether the LTV is low, in the middle, high or N/A. LTV of 0 through 40% are low, higher than 40% through 60% is medium, and higher than 60% are considered high LTV.

## 5.2 Welch test equality of means

I will also be conducting a mean equality test between the Norwegian, Swedish and the US data. One of the strengths of Welch test of equality of means is that it does not assume equal variances. To test for this, one can use Levenes test which usually stands out in terms of strength and robustness against nonnormality (Lim and Loh, 1996). Levenes test, tests for the equality of variances between the samples. As this test shows there is significant difference in variances, Welch is preferred before student's t and ANOVA as these tests assume equal variances.

Estimations of defaults given the different credit ratings shown in chapter 2.4.3, alongside the estimated loss given default, there are supposed to be incentives of taking high risk loans. However, as shown by Wang and Greiner (2011), the number of defaults can differ a lot from the initial estimation. I will therefore investigate if there are any significant difference in return given in these countries, to see whether the two markets are comparable or not. Equality of means test can be used to decide whether the samples are drawn from the same normal population (Alexander, 2008). In this case I test for equal population even if demographic location differs. The purpose of this is to see if equal credit rating gives the same interest rate for these markets.

## 5.3 Quantitative study on borrower potential

To study the borrowers, I will conduct a survey on the borrowers' motivation behind borrowing money through marketplace lending. When choosing how to address the borrower's intentions and motivation, it is possible with both a quantitative and a qualitative approach. A qualitative approach would have served the research well as it is a great approach for the purpose of, among others; exploration, verification and problem identification (Leedy and Ormrod, 2015). It could have been helpful gaining additional insight into a little-studied phenomena (Leedy and Ormrod, 2015).

A quantitative approach on the other hand, gives the possibility to examine relationship between the different variables, here making it more likely to provide information which

might lead to conclusions about different motivations among different types of businesses. Through a quantitative research using questionnaires, I might also be able to gather information from more respondents as it is easier and less time consuming to participate. A mixed method approach might therefore have been the optimal approach to answer the research question, but as conducting both would be very time-consuming, I have chosen a quantitative approach.

## 5.4 Limitations

As all loans are anonymized, it is not possible to see who took the different loans and thereby not possible to see if the same company is behind many different loans. The questionnaire is also anonymized, so that there is no way to see who have answered the questionnaire and who has not.

The Scandinavian market is still in a very early stage. Our dataset is very small compared to other studies of the market in the US or UK, and therefore not suitable for risk analysis on the default rates. To conduct and draw conclusions from an analysis one should have at least 30 observations. My dataset is 129 different loans which is enough, but only four loans that are defaulted. As these extreme cases only have occurred four times, they are not suited for an analysis of extreme cases. As 48.84% of the loans are still live at the time of retrieving the data, there is also still a big uncertainty regarding the actual default rate among the loans.

The response on the survey where only 14 responded of the 70 businesses asked to participate equals a respond-rate of 20% which is quite low. As the number of loans checked were 235 at the time of retrieving the data, divided on 85 different companies, the average number of loans were 2,76 each firm. However, based on the survey, most of the respondents only have one loan from the market. 15 of the businesses did also not have any form of contact information, excluding them from participating as I was unable to deliver an invitation. Uncertainty regarding the motivation behind responding or not responding alongside low respond-rate, excluded firms, and findings indicating a different mean in loans per firm might indicate that the population is not a completely random selection, which is what we want when studying a population through a selection.

## 5.5 Assumptions

Some of the loans have a given LTV for the security. This value shows the amount loaned compared to the estimated value of the security. For values where estimated LTV is noted as

an interval, I have chosen to use the average value. When the LTV is listed as a less than value I have chosen to analyse as the given value.

The data contains both Norwegian, Swedish and Danish loans. The Scandinavian countries do not share a common currency. To align for this, I have transformed the Swedish and Danish loan amounts in SEK and DKK to NOK according to the exchange rate at the date when the loan was paid out. This is done for the Scandinavian market for the regression analysis and descriptive statistics on the Scandinavian market.

When converting Swedish and Danish loans to NOK I have used the daily exchange rates from Norges bank on the date when the loan was paid out (NorgesBank, 2019). For days when exchange rates are missing, I have used a weighted average of the last observation before, and the first observation after the given date.

When discussing defaulted loans, loans who defaulted where lenders were able to recover their losses through the loan security are still categorized as defaults.

## 6. Empirical findings

### 6.1 Descriptive statistics

In this chapter I will present some of the descriptive statistics of the quantitative data. The first part will be descriptive statistics of the Scandinavian platform Kameo, followed by descriptive statistics of the American platform Lending Club as well as some comparative descriptive statistics.

#### 6.1.1 Kameo

Table 4 shows that the majority of loans at Kameo are B or C rated loans. The average amount invested by each investor is quite equal between the different grades, while the average amount invested in each loan is highest for B graded loans and lowest for D graded loans. The average size of the loans also differs with B rated loans on average being the biggest loans, while D rated loans on average are the smallest.

Looking at the different loan types we can clearly see that the majority of loans are real estate loans, and that these loans also on average are bigger than the business loans. One can imagine that businesses apply for loans through marketplace lending to expand current business or to finance production or purchases. For small businesses this will in most cases be less costly than financing the purchase or construction of real estate, which might explain this difference.

It can also be seen from Table 4 a weak growth of number of loans, as well as total amount invested, from 2017 to 2018. An expectedly big reason for this is the injunction to stop operating in Norway by the Norwegian Financial Services Authorities as of May 2018 (Haga, 2018).

Amount invested in NOK							average invested by each investor	Average amount invested
	N	Default	Total	min	max			
Total	129	4	258 846 542	66 365	9 810 000			
Grade								
A	16		29 603 675	66 365	7 355 970	10 467	1 850 230	
B	41		99 929 343	131 340	9 810 000	11 415	2 437 301	
C	62	3	117 391 701	147 990	5 486 400	13 994	1 893 415	
D	10	1	11 921 823	276 360	3 000 000	10 141	1 192 182	
Purpose								
Real estate	98	2	226 708 889	131 340	9 810 000	13 847	2 313 356	
Business	31	2	32 137 653	66 365	2 904 988	7 984	1 036 698	
Country								
Norway	39	2	59 664 500	100 000	3 300 000			
Sweden	87	2	198 851 607	147 990	9 810 000			
Denmark	3	0	330 435	66 365	132 730			
Loan status*								
Active	63		127 150 296					
Repaid	62		123 695 946					
Defaulted	2		8 000 300					
Year								
2016	8		7 275 500					
2017	53		110 166 307					
2018	56		119 188 966					
2019	12		22 215 769					

Table 4 Amount invested at Kameo

\* the amount under active and defaulted loans does not represent outstanding claims, but the total amount borrowed

Table 5 shows the interest rate on loans at Kameo at the different risk gradings as well as for the different purposes, real estate and business loans. As we can see from Table 5, the mean and median of interest rate increases with the risk grading of the loan. This is expected as investors, who I assume to be risk averse, require compensation for taking on higher risk. However, as we can see from the highest and lowest interest rate on each risk grading, they tend to overlap, and some less risky loans yield higher return than riskier loans. There are many possible reasons for this, which will be further analysed in the exploratory regression analysis in chapter 6.3.

	N	Default	Interest rate			
			Mean	median	Highest	Lowest
Total	129	4	9.70 %		12.50 %	5.00 %
Grade						
A	16		6.00 %	5.50 %	8.00 %	5.00 %
B	41		9.00 %	9.00 %	11.00 %	7.00 %
C	62	3	10.80 %	11.00 %	12.50 %	8.00 %
D	10	1	12.10 %	12.00 %	12.50 %	11.00 %
Purpose						
Real estate	98	2	9.90 %	10 %	12.50 %	5 %
Business	31	2	9.30 %	10 %	12 %	5 %

Table 5 Interest on loans at Kameo

Table 5 shows that the mean interest rate of real estate loans is 9.9% whereas business loans average 9.3%. This does not say much on its own, as it does not consider the risk distribution. However, as we can see from Table A 5 in the appendix, there are relatively less business loans with credit rating B while there are relatively more business loans with credit rating A, C and D. As there are relatively more business loans with higher risk grading one should expect the mean interest rate to be higher, and not lower as shown in Table 5, but as there are many more possible reasons for this I will address the issue further under the exploratory regression analysis.

The platform in this thesis operates in all three Scandinavian countries. At the time of retrieving the data, they had just opened in Denmark. Due to this, there are not that many loans from Denmark as we can see from the statistics. These loans will be included when analysing the Scandinavian market but excluded during the equality of means test and market comparison across borders.

### 6.1.2 Descriptive statistics from Lending club

Lending club differs from Kameo in several ways. Borrowers can apply for loans of minimum 1000USD and maximum 40 000USD. This implies that even the maximum amount at Lending Club, using any exchange rate NOK/USD between 2016 and 2019 is less than the average amount invested each loan at Kameo. Lending Club also accepts loan applications from businesses rated below D. For the descriptive statistics, I have chosen to combine E, F

and G rated loans under the same category named very high-risk loans as they will be excluded from the Welch equality of means test. For the same period as the data gathered from Kameo, from 2016 up until the first quarter of 2019, Lending club have issued 11 644 small business loans. Table 6 shows number of loans and amount invested at Lending Club from 2016 through the first quarter of 2019, and their credit rating. As we can see from the table, most business loans have credit ratings of C or B, followed by A and D, which is a comparable distribution to Kameo.

	N	Defaults	Amount invested in USD			
			Invested	min	max	Mean
Total	11 644	1 318	179 335 075	1 000	40 000	15 401.5
Grade						
A	2 267	70	41 123 900	1 000	40 000	18 140.83
B	2 899	199	44 129 125	1 000	40 000	15 222.19
C	3 412	419	48 529 975	1 000	40 000	14 223.32
D	2 036	349	31 213 550	1 000	40 000	15 330.82
E	755					
F	195					
G	80					
Very high risk	1 030	281	14 338 525	1 000	40 000	13 920.9

Table 6 Amount invested in Lending club from Q1 2016 to Q1 2019.

The interest rates offered at Lending Club is, however, higher than the loans of equal risk grading at Kameo as we can see from Figure 3. As shown by Serrano-Cinca and Gutiérrez-Nieto (2016), a higher interest rate does not necessarily result in higher returns, due to the correlating increase in defaults. Table 8 shows the loan status the loans in the thesis from Lending Club. From the table we can also see that when only considering A-D rated loans there is still a high default rate of 9.77%, which we can assume to be even higher as 62% of the loans are still active at the date of data gathering. Considering that 62.09% of the loans are still active, one can expect the number of defaults to increase even further. Comparing this to the default estimations done by Kameo and Monner on the Scandinavian market, we can clearly see that the expectations on the Scandinavian market, and the state of Lending Club differs. Another interesting observation from Table 8 is that the number of small business loans provided at Lending Club does, go down every year from 2016 to 2018.

	Interest rate		Mean
	min	max	
Total	5.31 %	30.99 %	13.73 %
Grade			
A	5.31 %	8.81 %	7.02 %
B	8.24 %	13.08 %	10.68 %
C	11.99 %	17.19 %	14.34 %
D	15.41 %	28.80 %	18.92 %
Very high risk	6 %	30.99 %	24.86 %

Table 7 Interest rate Lending club

Year	Number of loans			
	Total		A to D rated loans	
2016	3811	32.73 %	3313	31.21 %
2017	3692	31.71 %	3371	31.76 %
2018	3306	28.39 %	3157	29.74 %
2019	835	7.17 %	773	7.28 %
<b>Loan status</b>				
Charged off	1318	11.32 %	1037	9.77 %
Current	6988	60.01 %	6590	62.09 %
Fully Paid	2992	25.70 %	2676	25.21 %
In grace period	72	0.62 %	64	0.60 %
Late (16-30 days)	46	0.40 %	44	0.41 %
Late (31-120 days)	228	1.96 %	203	1.91 %
Total	11644	100.00 %	10614	100.00 %

Table 8 Numbers of loans Lending club

Based on the difference in actual default rate of Lending Club and the expected default rate of Kameo, one would expect the interest on Lending Club to compensate this by providing a higher interest rate on the different risk grades. This is strongly indicated in Figure 3 where we can see that the interest rate given the different risk gradings in both Norway and Sweden, deviates from the curve of the interest rate offered by Lending Club. The significance of this will be further analysed in the Welch equality of means test in chapter 6.2, and reasons be discussed in the discussion in chapter 7.



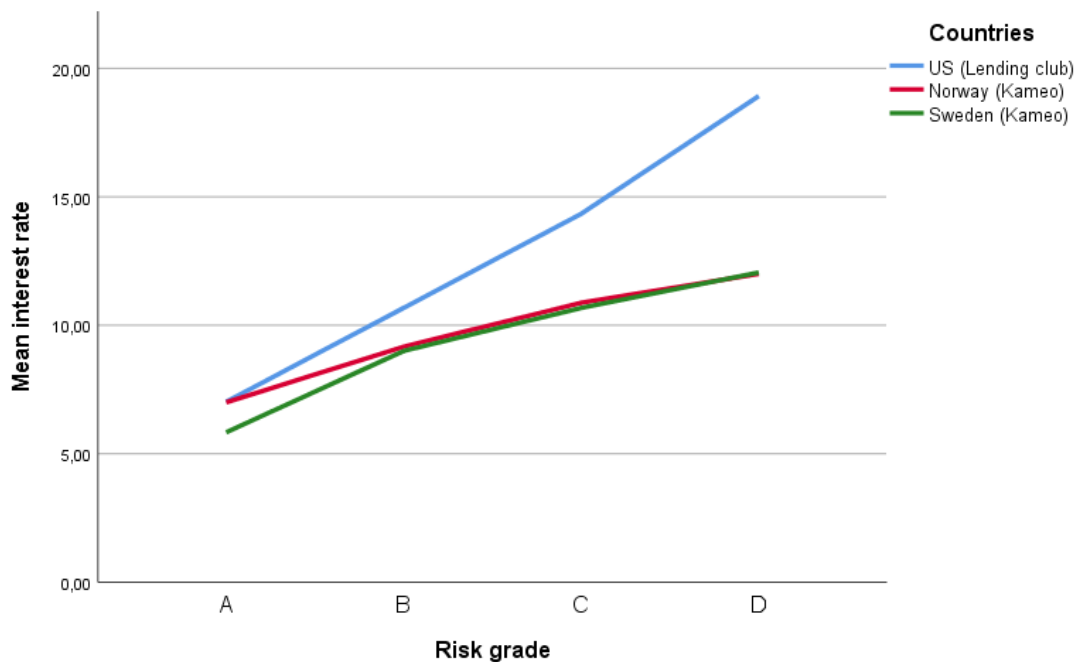


Figure 3 Mean interest on given risk grades for loans in the US (Lending club), Norway (Kameo) and Sweden (Kameo).

## 6.2 Welch equality of means test

Due to very few observations from the Danish market, they are excluded when performing the Welch-test. As mentioned in the descriptive statistics of Lending Club, they operate with a maximum borrowing amount of 40 000USD, which is way lower than the average of Kameo using any exchange-rate during the timespan of the observations. Therefore, what is of interest regarding the analysis between the bigger market from lending club and the Scandinavian market is the interest rate. As there are unequal observations, and Levene's test being significant, showing unequal variances, Welch test for equality of means test is the best suited test. For pairwise analysis I have used the Games-Howell approach which is similar to the Welch as it does not assume equal variances and sample sizes (Toothaker, 1993). Further, Welch analysis is not conducted for A and D rated loans as there are too few observations of Norwegian loans.

The Welch test presented in Table 9 shows significant difference in interest rate both considering all loans, as well as for the risk gradings B and D which were the only two risk gradings with sufficient number of observations from all markets. From the Games-Howell post hoc test also presented in Table 9 we can see where the significant difference is at, and how big the difference is. Except for A rated loans, we see that there is a significant difference at 1% level between the US and Norway, and for all risk gradings between US and

Sweden. We can see that as the risk increases, the difference in the means also increases between the US and the Scandinavian platforms. Between Norway and Sweden, we see that the difference in offered interest rate is not significantly different with the exception of A rated loans, which might be due to the few observations of A rated loans in Norway.

Welch test					
	Total	A	B	C	D
Welch F dist stat	136.34***	-	33,48***	393.04***	-
Mean difference					
Games-Howell					
Nor-US	-2,48%***	-0.02%	-1,51%***	-3,46%***	-
Nor-Swe	0.57%	1,17%***	0.17%	0.20%	-
Swe-US	-3,04%***	-1,19%***	-1,68%***	-3,66%***	-6,87%***

Table 9 Welch equality of means test

\*\*\* indicates significant result at 1% level, \*\* significant result at 5% level, \* significant result at 10% level.

One thing that is of interest is the fact that for all risk grades and the total, the interest rate of Norwegian loans have a higher mean than Swedish loans. The effect from loans being from different Scandinavian countries will be further investigated through the exploratory regression analysis.

### 6.3 Exploratory regression analysis

From the exploratory regression analysis of the interest rate we can see that as expected, a lot of the variance is explained by the credit score where all models show significant values.

Table 10 shows the unstandardized betas from the four exploratory models of the interest rate. Model 1 considers the risk grades, amount borrowed, country, LTV, duration, security and type of loan to test for the effect of all variables explained in chapter 5.1.3.

Model 2 considers risk grades, amount borrowed, duration and unsecured. This model assumes that the effect of loans being from different countries, and have different purpose is not theoretically significant as the loans origin on the same platform, and that loan purpose does not affect the loan performance as risk related to the loans are covered in the risk grading. Further it does not consider LTV to be of significance as the highest LTV in the dataset is 0.85 implying that all security valuations cover the given loans.

Model 3 explores the effect when only risk grading is considered to influence the interest rate, here excluding all other variables, also to see how much of the variance is explained by only the risk grades.

Finally, model 4 like model 1 includes risk grading, amount borrowed, country, LTV and type of loan. However, it excludes duration and unsecured which were both not significant in model 1 and model 2.

	Model 1	Model 2	Model 3	Model 4
Constant	5.68***	5.22***	6.00***	5.85***
Risk grades				
B	2.52***	2.83***	3.05***	2.53***
C	4.43***	4.61***	4.75***	4.45***
D	5.91***	5.76***	6.05***	6.27***
Amount	0.49***	0.43***		0.46***
Swedish	-0.71***			-0.70***
Danish	0.20			0.18
LTV NA	0.32			0.31
LTV high	0.37			0.31
LTV medium	0.17			0.13
Duration	0.01	0.00		
Unsecured	0.75	0.87		
Business	-0.80***			-0.88***
Adj. R square	0.775	0.748	0.716	0.776

Table 10 Exploratory regression models of Kameo

\*\*\* indicates significant result at 1% level, \*\* significant result at 5% level, \* significant result at 10% level

From the regression risk grades are all significant with an expected increase as the risk increases. Amount borrowed is also significant. For countries, Swedish loans have a significantly lower interest rate than the Norwegian loans, while the Danish loans are not significantly different, which was not expected as the number of loans are low. For LTV we can see that a high LVT and when LTV is not available, gives a higher interest rate than medium and low LTV. This is according to expectations although it is not significant. Duration does not seem to have any effect on the interest rate, while unsecured loans as expected increases the interest rate, although not significant.

The values of the different variables shown in Table 10 does not vary much across the models. The adjusted R square value, which is an indicator of how much the model explains changes in the independent variable is highest for model 4 which excludes duration and

security as variables, which were found insignificant in model 1 and 2. However, the difference between adjusted R square of model 1 and model 4 is very small, so one can argue that model 1 is the better model as it includes variables that are theoretically important explanatory variables. From model 1 we can see that every increase in risk grade increases the interest rate with a decreasing effect. From rating A to rating B the interest rate increases with 2.52%, whilst from B to C, interest rate increases with 1.91% and from C to D, interest rate increases with 1.48%.

Amount borrowed is also a significant variable in all the three models where it is used. From model 1, the value is 0.49. As the amount variable here is made from grouping the different loans according to their size as explained in chapter 5.1.3, this implies that when moving up from one group to the next in matter of size of the loan, the interest rate applied to the loan increases with 0.49%. Going from group 1 which is loans ranging from 0 to 1 000 000 to group 5 which consists of loans bigger than 7 500 000, would then imply an increase in the interest rate on the loan of 1.96%.

Dummy for business loans are applied to model 1 and model 4 where both show a significant difference as business loans appear to have a lower interest rate than real estate loans. For model 1 the value is -0.8 which shows that the interest rate on business loans all else equal gives 0.8% less interest than real estate loans. Possible reasons for this will be further discussed in the discussion.

## 6.4 Results from questionnaire

As the number of respondents are very low, the results from the questionnaire cannot be generalized, but might however support findings and provide valuable information regarding possible trends or reasonings as well as make a foundation for further possible research.

Table 11 shows the questionnaire respondents' self-reported company size, industry, number of marketplace lending loans and other sources of financing. From this table we see that the respondents are small companies with few employees, and that they don't have many loans through marketplace lending. Most of the respondents are also financed through bank loans, which is quite interesting as bank loans are considered harder to get for SME's as mentioned in chapter 1.1.

Question 8: Company size (number of employees)	1-10	11-25	other		
	11	3	0		
Question 7: Industry	Real estate	healthcare	Retail	Technology	Service
	5	2	4	2	1
Question 2: Number of loans through marketplace lending	1	2-3			
	10	4			
Question 1: Other financing	Bank loans	issue of securities	donationbased crowdfunding	equity crowdfunding	angelinvestors
	9	4	0	1	4

Table 11 Respondent characteristics from the survey

Question 3 of the questionnaire consisted of 8 statements where respondents had to mark each statement on a scale from 1 to 7 where 1 indicates that the claim is not correct and 7 indicates it is very correct. The results from this questionnaire can be seen in Table 12. As we can see, most of the claims have a mean between 3 and 5. Only one claim did not have the average of 4 between the 95% confidence interval, which was regarding the interest rate given on the loan. This is very interesting as most of the respondents does already have bank loans, indicating that the interest rate from marketplace lending might not be a competitive interest rate despite profiting on fintech solutions to reduce the intermediary costs.

Statement:	95% confidence interval			
	mean	Lower bound	upper bound	std error
We chose to finance our business through marketplace lending because				
We wanted to try something new	3.29	2.12	4.45	0.539
It gave us better interest than other alternatives	2.14	1.36	2.92	0.361
It gave us a fixed rate through the whole repayment period	3.79	2.40	5.17	0.639
We did not get loan elsewhere	4.29	3.26	5.31	0.474
It gave us good terms regarding security	4.50	3.18	5.82	0.609
We could reach out to potential lenders and customers	4.21	2.95	5.48	0.585
Lenders through marketplace lending are easier than banks	3.36	2.10	4.61	0.580
The borrowing process was easy	4.36	3.41	5.31	0.440

Table 12 Results from question 3 of the survey

Question 4 on the questionnaire asked the respondents to rearrange the following according to importance when deciding to finance the business or project through marketplace lending; borrowing rate, having a fixed rate, reduced requirements for loan security and marketing of project through platform. The respondent then rearranged these factors from 1 (most important) to 4 (least important). The results are given in Table 13 and show that the most important factor seems to be the reduced requirements for security, while the least important factor is marketing of project. Good terms regarding security was also the statement with the highest mean from question 3 shown in Table 12, which then again supports this finding showing that good terms regarding security might be the most important factor for businesses choosing to finance through marketplace lending. We can also see from Table 13 that the borrowing rate is the second most important factor amongst the four when choosing marketplace lending. This is an interesting find, as question 3 shown in Table 12 indicate that the respondents finds the interest to be worse than other alternatives. Table 13 also shows that marketing of the project is the least important of the four. The platform is intentionally a place for lenders and borrowers to meet, and the number of potential customers one can reach through applying for a loan might be too low for it to have a significant impact on the decision-making process. It is therefore reasonable that businesses might see this as a possible bonus, but not an important reason for choosing marketplace lending as a source of finance.

Rearrange according to importance when you chose marketplace lending as a source of financing	95% confidence			
	mean	st error	lower	upper
Borrowing rate	2.21	0.32	1.53	2.90
fixed rate	2.64	0.17	2.28	3.01
Reduced requirements for security	2	0.33	1.28	2.72
marketing of project	3.14	0.29	2.51	3.78

Table 13 Question 4 from questionnaire, what is of most importance when choosing marketplace lending.

## 7. Discussion

From the descriptive statistics of the Kameo loans, we see that the offered interest rate from a lenders perspective is quite good compared to current risk free rate opportunities. This however does not tell us much about the expected profit, as higher interest loans come with higher risk and might therefore be less profiting as shown by Serrano-Cinca and Gutiérrez-Nieto (2016). Due to the market being at such an early stage, any form of profit analysis will

be inaccurate, but from the descriptive statistics we can see indications that Kameo might have less defaults than Lending Club.

The regression analysis showed as expected that higher risk increases the interest rate. Swedish loans are also according to the regression analysis, offering a lower interest than the Norwegian loans. As Kameo operates in both markets, and lenders are able to invest in both markets, that might have reduced the impact. Investing across borders however does expose the investor to currency risk as well as it might come with exchange costs making it less attractive. The security and LTV did have the expected effect on the interest rate. Higher LTV gave a higher interest rate, and unsecured loans also does pay higher interest, however these variables were not significant.

The duration however showed a non-significant value of 0.01 for model 1 and 0.00 for model 2, which indicates very low effect on the interest rate. A longer duration means a higher risk exposure, so one would expect the duration to be significantly positive and larger value. Possible reasons for this not being the case might be that to get a well-diversified portfolio one will need to invest in longer term loans as there are not many loans possible to invest in at a time. The duration on the loans in general might also be too short for it to affect the interest rate.

Further, the different type of loans is significantly affecting interest rates. Business loans give a lower interest rate than real estate loans. In theory, all else equal, the loan purpose would not affect the interest. There are several possible reasons for this to nevertheless have an effect. As real estate loans often rely on a sale of the real estate, at the end of the duration of the loan, it is quite common that loans are balloon loans where much or all of the borrowed amount is repaid at the end of the loan duration, and prior repayments are mostly or only interest. This means that the whole amount lent is at risk through the duration of the loan. Repayment is also very dependent on real estate sale which compared to a continuous stream of sales by businesses might seem riskier by investors.

Finally, the amount borrowed is a significant factor for interest rate. As investors don't take extra risk, and the cost of supply is equal, this might be an indicator of a insufficient market and give opportunities for increased profits or a lower risk for investors. From an economic point of view the marketplace lending model can be compared to the supply and demand model. The supply costs do not directly apply to lenders, but the number of lenders is currently limited as to when demand rises, so does the interest as it is needed to attract new

investors or higher investments by current investors. For investors this means one can get a higher interest at the same risk, or the same interest at a lower risk by investing in bigger loans. For borrowers this might give incentives to spread the loan over time if possible, or over different platforms to reach more investors while keeping a lower rate.

Comparing the different markets showed a significant difference between the platforms regarding interest rate as one can also see from Figure 3. A difference was expected since the platforms are in different markets and have different lending models. As shown by Serrano-Cinca and Gutiérrez-Nieto (2016), the high risk loans with higher interest are overall less profitable due to defaults, and loans also being unsecured. Regarding default risk on the Scandinavian market, it is still too early to come with good estimates based on historical values. As shown by Wang and Greiner (2011), the platforms estimation of default probability might also significantly deviate from actual default-rates.

Regarding the borrowers, what is quite interesting is that the borrowing rate is not better than other alternatives according to the respondents. The marketplace lending model uses technological inventions to reduce intermediary costs, with the target of providing a better loan rate than other financial institutions. A possible reason why the borrowing rate is higher than other alternatives might be due to the uncertainty. As we can see from the respondent's characteristics in Table 11, the respondents are very small businesses, and financial information may be deficient. In these cases, the uncertainty will be an extra risk factor, implying higher interest on the loans. Another possible explanation is that the security needed for a bank loan is significantly higher than on marketplace lending. The exploratory regression analysis found indications that unsecured loans had higher interest, and low LTV had lower interest than high LTV. Considering the relative number of businesses who already had bank loans from the questionnaire, it is possible that even the provided security has a too low value for the platforms to set a competitive interest.

## 8. Conclusion and further research

For the conclusion, the goal is to bring answers to the purpose of the thesis regarding the potential of the market from the perspective of both lenders and the borrowers.

For lenders, marketplace lending gives an opportunity to invest even small amounts of money for a potentially high return with periodically repayments. It also grants a new opportunity to further diversify an investment portfolio, even for small investors.



From the exploratory regression analysis, there were a few very interesting observations to be made. As expected, taking on higher credit risk gave a higher interest. Having a low LTV gave a lower interest than having high LTV, and unsecured loan paid higher interest in general than secured loans, although these variables were not significant. What is very interesting however, is that duration does not seem to have any particular effect on the interest, while type of loan and amount borrowed have significant impact, which will be addressed in the next section. Duration should according to economic theory have an impact on the interest. Both based on the underlying expectation of changes in the economy affecting the risk-free rate, and a longer time until final repayment increases the risk of delinquency from possible changes in the operations of the company or changes in the market.

Type of loan, when all else is equal should not affect the interest. However, the market of marketplace lending does seemingly take higher interest from real estate loans than business loans. This is interesting as it gives incentives for investors to invest in real estate loans at an equal risk, but with higher interest. Possible reasons for this can be many, and will not be further analysed, but discussed in this section. What eventually decides the interest rate is the willingness to lend from the lenders. To lenders, real estate loans might be of higher perceived risk, as one might be afraid of property bubbles. Another reason might be self interest in the project. While businesses often present their product in the loan applications, which might be of interest for lenders/customers, real estate companies build houses for rent or sale, which might be of low or no self-interest for the lender. A third and final possible explanation can be due to diversification. As shown in Table 4, most loans on the platform are real estate loans. As business loans can be loans to several types of businesses operating in several different markets, real estate loans are for businesses operating with real estate. If an investor wants to diversify his/her portfolio within marketplace lending, most investments would be within the business category. This unbalance in supply and demand might be a key reason for this difference in the interest rate.

From the exploratory regression analysis, we could also see that amount borrowed had a significant impact on the interest rate. This is a very interesting finding as it implies an opportunity for investors to get a better interest/risk trade-off. As explained under chapter 5.1.3 about the amount variable, a higher relative amount, leading to a higher gearing of the company would increase the risk. However, a higher amount alone does not imply a higher risk. The fact that amount therefore have a significant effect on the interest rate implies that

investors can get a higher interest at equal risk, or lower risk with equal interest by investing in bigger loans.

For the borrowers as we can see from Table 12, the respondents from the questionnaire found the interest rate on the loans to be higher than other alternatives. The finding from the exploratory regression analysis regarding amount borrowed might be a way also for the borrowers to reduce their interest. Instead of borrowing the full amount through one loan, spreading the total amount over several loans either over time when the financing is needed, or over several different platforms might reduce the borrower's rate. This shows that the market offers opportunities both for lenders and borrowers which might even out when the market gets more stabilized. Further, the results from question 4 shown in Table 13 and question 3 in Table 12 it is clear that the main reason why the respondents chose marketplace lending was due to reduced demand for loan security, and that the lending model still is not fully competitive with regards to interest rate.

A limitation to the study is, as mentioned in chapter 5.4, that the dataset, both loans from Kameo used to analyse the market, as well as the number of respondents to the questionnaire is small. The findings might therefore not be generalized, and some of the findings may be randomly caused.

To my knowledge, this study is the first of its kind investigating the Scandinavian market of marketplace lending, analysing existing loans on the market. The market however is as shown through the thesis in a still very early phase, which has reduced the possibilities of a thorough market analysis. As many of the loans analysed are still active, it would be interesting for further research of the actual performance of the loans, and if possible, at a later stage study the profit possibilities through historical performance of loans on the market.

This thesis investigates the interest rate. However, when the market gets more stable, and one gets data for a longer period, it would also be interesting to see how the risk premium is affected. From the exploratory regression we saw that there was significant difference in interest for Norwegian and Swedish loans, where Norwegian loans had higher interest. For a future study of the market it would be interesting to see if this difference is due to the risk-free rate being different.

A new study considering several platforms when the market develops might also give further insight into the possibilities for investors and borrowers through this lending form.

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# Appendix

Model	Unstandardized Coefficients			Collinearity Statistics	
	B	Std. Error	Sig.	Tolerance	VIF
1 Constant	5.684	0.489	0.000		
B	2.515	0.302	0.000	0.345	2.899
C	4.428	0.286	0.000	0.334	2.994
D	5.912	0.521	0.000	0.350	2.855
Amount	0.487	0.110	0.000	0.681	1.469
SEK	-0.711	0.205	0.001	0.735	1.360
DKK	0.195	0.603	0.747	0.825	1.213
LTV NA	0.315	0.382	0.411	0.388	2.576
LTV high	0.365	0.253	0.152	0.459	2.177
LTV medium	0.173	0.260	0.507	0.476	2.101
Duration (month)	0.005	0.018	0.775	0.852	1.174
Unsecured	0.752	0.667	0.261	0.411	2.432
Business loan	-0.800	0.282	0.005	0.468	2.136

Table A 1 Model 1 regression with level of significance and VIF

Model	Unstandardized Coefficients			Collinearity Statistics	
	B	Std. Error	Sig.	Tolerance	VIF
2 Constant	5.215	0.389	0.000		
B	2.829	0.301	0.000	0.386	2.590
C	4.611	0.282	0.000	0.382	2.616
D	5.758	0.531	0.000	0.377	2.654
Amount	0.432	0.101	0.000	0.903	1.108
Duration (month)	0.002	0.019	0.896	0.869	1.151
Unsecured	0.872	0.666	0.193	0.461	2.170

Table A 2 Model 2 regression with level of significance and VIF

Model		Unstandardized Coefficients		Sig.	Collinearity Statistics	
		B	Std. Error		Tolerance	VIF
3	Constant	6.000	0.263	0.000		
	B	3.049	0.310	0.000	0.411	2.430
	C	4.752	0.295	0.000	0.395	2.532
	D	6.050	0.424	0.000	0.667	1.499

Table A 3 Model 3 regression with level of significance and VIF

Model		Unstandardized Coefficients		Sig.	Collinearity Statistics	
		B	Std. Error		Tolerance	VIF
4	Constant	5.851	0.421	0.000		
	B	2.529	0.296	0.000	0.357	2.800
	C	4.448	0.282	0.000	0.341	2.930
	D	6.268	0.406	0.000	0.574	1.742
	SEK	-0.702	0.204	0.001	0.737	1.357
	DKK	0.180	0.601	0.765	0.826	1.211
	LTV NA	0.313	0.380	0.412	0.389	2.569
	LTV high	0.310	0.247	0.213	0.477	2.095
	LTV medium	0.133	0.256	0.604	0.491	2.039
	Business loan	-0.875	0.272	0.002	0.499	2.003
	Amount	0.456	0.106	0.000	0.731	1.367

Table A 4 Model 4 regression with level of significance and VIF

	A	B	C	D
Real estate	10 (10%)	38 (39%)	43 (44%)	7 (7%)
Business	6 (19%)	6 (10%)	57 (61%)	12 (10%)

Table A 5 Distribution of real estate and business loans and their risk grading (Kameo)

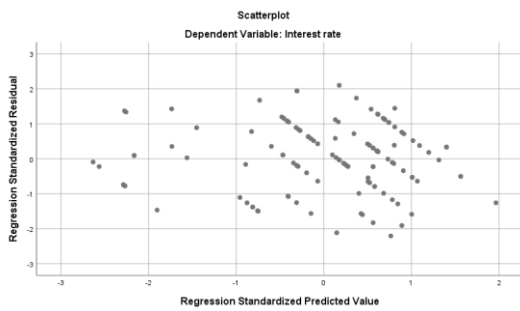
Pearson	Interest rate	LTVNADU LTVHIGHD LTVMEED													
		B	C	D	Just	SEK	DKK	M	UM	UM	UM	Duration (month)	usikret	type of loan	
Interest rate	<b>1.000</b>														
B		<b>1.000</b>													
C			<b>1.000</b>												
D				<b>1.000</b>											
Amount					<b>1.000</b>										
SEK						<b>1.000</b>									
DKK							<b>1.000</b>								
LTV NA								<b>1.000</b>							
LTV high									<b>1.000</b>						
LTV										<b>1.000</b>					
Medium											<b>1.000</b>				
Duration (month)												<b>1.000</b>			
Unsecured Business loan													<b>1.000</b>		
														<b>1.000</b>	
															<b>1.000</b>

Table A 6 Correlation between the regression variables

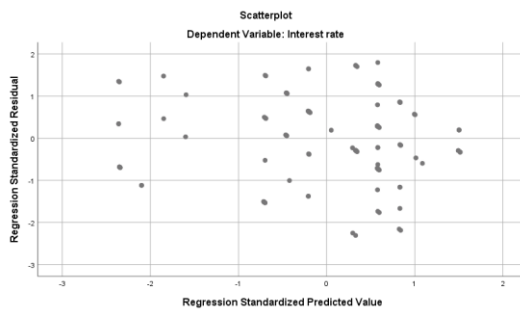
Breuch-Pagan	LM	sig,
	Model 1	8.534
Model 2	5.037	0.539
Model 3	6.219	0.101
Model 4	7.087	0.717

Table A 7 Breuch-Pagan test for the 4 models in the regression analysis  
A significance of 0.05 or lower indicates heteroscedasticity.

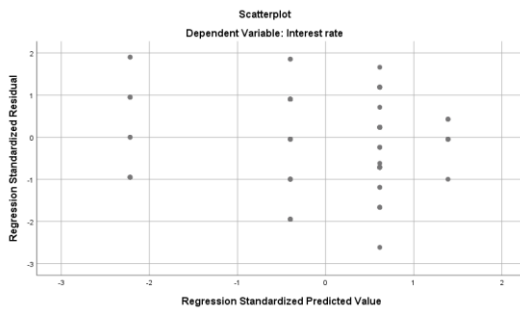
Model 1



Model 2



Model 3



Model 4

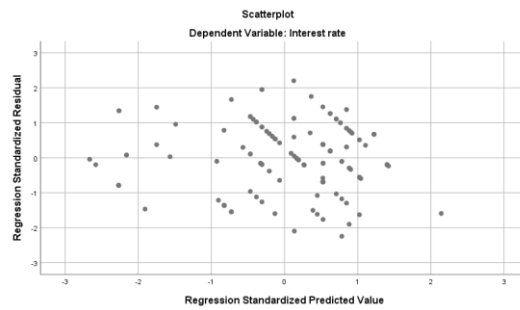
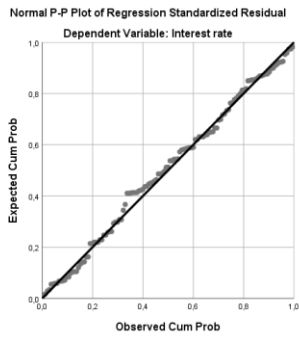


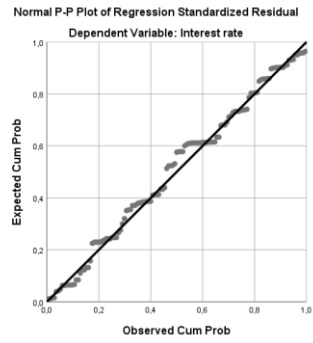
Figure A 1 Scatterplot of residuals for regression models 1,2,3 and 4



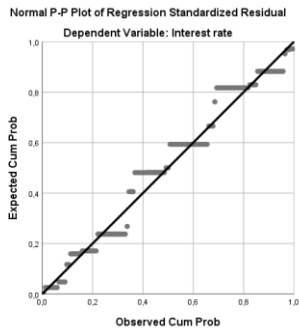
### Model 1



### Model 2



### Model 3



### Model 4

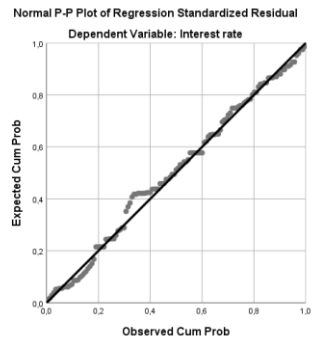
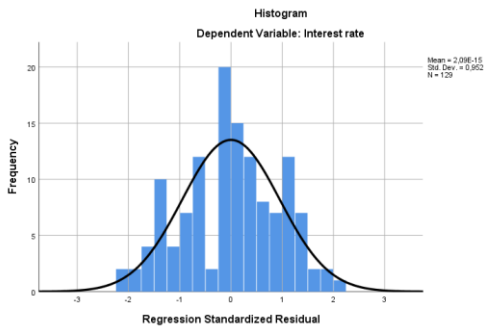
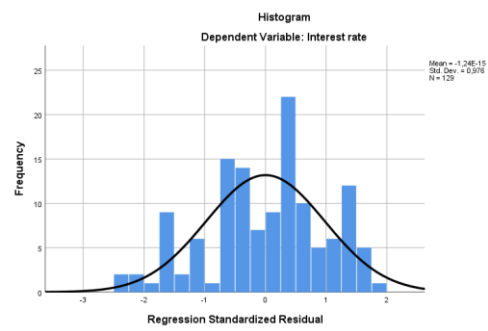


Figure A 2 P-P plot of residuals

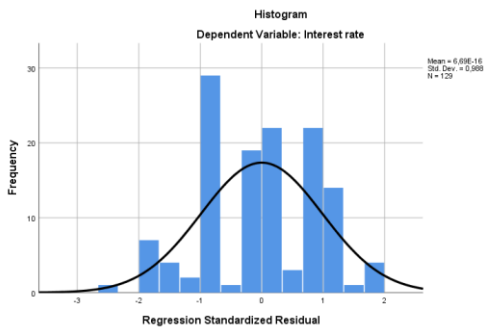
### Model 1



### Model 2



### Model 3



### Model 4

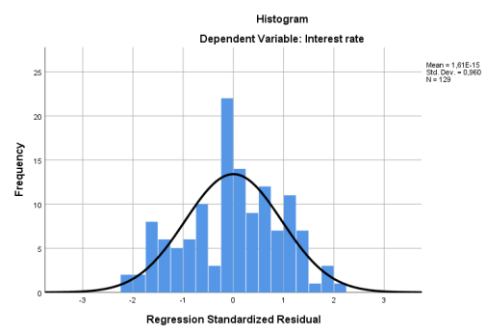


Figure A 3 Histogram of residuals, comparing to a normal distribution curve

## A.1. Contact form – In Norwegian

Hei!

Mitt navn er Mathias Løken og jeg jobber for øyeblikket med en masteroppgave som skal være ferdig August 2019. I den forbindelse hadde jeg satt stor pris på om du kunne satt av 5 minutter til å svare på en liten spørreundersøkelse.

Jeg ser at dere har tatt opp et folkefinansiert lån, og kunne tenkt meg å høre om hva som er viktig for dere når dere tar opp et slikt lån. Jeg ønsker at oppgaven skal kunne gi økt innsikt, kjennskap og kunnskap omkring denne finansieringsmuligheten og potensielt på sikt kunne bidra til å øke bevisstheten rundt fordeler og eventuelt ulemper ved denne finansieringsformen både for låntaker og långiver.

Spørreundersøkelsen er laget kompatibel for de fleste enheter og kan derfor besvares både via datamaskin eller telefon. Hele undersøkelsen er enkel med få og konkrete flervalgsspørsmål og tar omtrent 5 minutter å gjennomføre. Spørreundersøkelsen kan besvares enten på norsk eller på engelsk etter eget ønske.

Norsk (Norwegian): <https://www.surveio.com/survey/d/D9J8Y2V2L2I6C3M9Z>

Engelsk (English): <https://www.surveio.com/survey/d/T9A8J9T9L8U4I3H9A>

Om ønskelig kan jeg sende funnene og det ferdige produktet pr mail til de som deltar om man ønsker det. Alle svar er 100% anonyme.

Kontakt meg eller min veileder, gjerne på mail: [REDACTED] eller telefon: +47 [REDACTED] om du lurer på noe.

Med vennlig hilsen

Mathias Husby Løken

Student ved NTNU Handelshøyskole

+47 [REDACTED]  
[REDACTED]

Veileder:

Ranik Raaen Wahlstrøm

NTNU Business School | Faculty of Economics and Management  
[REDACTED]

## A.2. Follow-up contact form – In Norwegian

Hei!

Sendte deg en mail for omtrent tre uker siden vedrørende et forskningsprosjekt, og kan ikke se at du har besvart spørreundersøkelsen.

Kanskje den er glemt eller forsvunnet i mail-systemet. Uansett årsak ville jeg satt stor pris på om du kunne gjennomført denne undersøkelsen. Basert på de svarene jeg foreløpig har fått inn tar det omtrent 3 minutter å gjennomføre.

Da min oversikt over de som har gjennomført kun er basert på mailrespons kan det hende du har fullført uten at jeg er klar over dette da studien er helt anonym. I så fall trenger du naturligvis ikke å besvare undersøkelsen på nytt.

Jeg hadde satt stor pris på å få høre din opplevelse av folkefinansierte lån gjennom denne spørreundersøkelsen, og er avhengig av flere svar for å styrke kvaliteten på oppgaven.

Legger ved link til undersøkelsen under, som kan besvares både på engelsk og norsk og er kompatibel for nettbrett, mobil og PC.

Norsk: <https://www.surveio.com/survey/d/D9J8Y2V2L2I6C3M9Z>

Engelsk: <https://www.surveio.com/survey/d/T9A8J9T9L8U4I3H9A>

Hvis det skulle være spørsmål eller andre kommentarer, ta gjerne kontakt med meg eller min veileder.

Med vennlig hilsen

Mathias Husby Løken

Student ved NTNU Handelshøyskole

+47 [REDACTED]  
[REDACTED]

Veileder:

Ranik Raaen Wahlstrøm

NTNU Business School | Faculty of Economics and Management  
[REDACTED]

## A.3. Questionnaire (Norwegian)

### Lånebasert folkefinansiering

Hei

Du har blitt invitert til å gjennomføre denne spørreundersøkelsen om lånebasert folkefinansiering. Spørsmål vil være knyttet deres opptak av et slikt lån og motivasjonen bak. Svar vil være 100% anonyme, og kun benyttet i forbindelse med masteroppgave.

Vi setter stor pris på at du fyller ut dette spørreskjemaet.

#### 1. Hvilke andre finansieringsmetoder enn lånebasert folkefinansiering har bedriften benyttet?

Hjelp med spørsmål: *Velg ett eller flere svar*

- Banklån
- Emisjon (utstedelse av verdipapirer)
- Donasjoner (donasjonsbasert folkefinansiering eller andre donasjoner der tilbakebetaling ikke forventes)
- egenkapitalbasert folkefinansiering (folkefinansiering mot eierandel i bedriften)
- Engelinvestor (En eller få investorer som tilfører kapital mot eierandel eller konvertibel gjeld)
- Annet (Skriv ditt svar her)

#### 2. Hvor mange lån har bedriften tatt opp gjennom lånebasert folkefinansiering?

Hjelp med spørsmål: *Velg ett svar*

- 1
- 2-3
- 4-5
- 6-7
- 8<
- Ikke tatt opp lån

### 3. På en skala fra 1 til 7 hvor godt stemmer påstanden under for dere? Jeg/vi valgte å benytte lånebasert folkefinansiering fordi

Hjelp med spørsmål: *Velg ett svar i hver rad*

	1 stemmer dårlig	2	3	4	5	6	7 stemmer godt
jeg/vi ønsket å prøve noe nytt	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Renten jeg/vi fikk var bedre enn andre alternativ	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
det ga oss en fast rente gjennom hele låneperioden	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jeg/vi ikke fikk lån andre steder	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jeg/vi fikk gode vilkår med tanke på å stille sikkerhet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Det ga oss muligheten til å nå ut til mange potensielle långivere og kunder	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Långivere ved folkefinansiering er lettere å ha med å gjøre enn banker og andre långivere	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Låneprosessen var enkel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### 4. Ranger følgende faktorer etter viktighet for valget av lånebasert folkefinansiering som finansieringskilde

Hjelp med spørsmål: *Endre rekkefølgen til å samsvare med det som er viktigst (1(øverst) - mest viktig, 4(nederst) - minst viktig)*

Rentesats	<input type="text"/>
rentesatsen er fast	<input type="text"/>
Redusert krav til sikkerhet	<input type="text"/>
Markedsføring av prosjekt gjennom plattform	<input type="text"/>

### 5. Dersom andre forhold var avgjørende enn de fire nevnt ovenfor, gjerne spesifiser.

---

## 6. Når søkte dere for første gang etter et folkefinansiert lån?

Hjelp med spørsmål: *Velg ett svar*

- Før 2013
- 2013
- 2014
- 2015
- 2016
- 2017
- 2018
- 2019

Spørsmålene på denne siden omhandler bedriften og er ikke obligatoriske, men svar vil gi økt innsikt i hvordan forskjellige bedriftstyper kan dra nytte av lånebasert folkefinansiering. Ønsker du ikke svare på disse spørsmålene, gå videre.

## 7. Hvilken bransje opererer bedriften din innenfor?

---

## 8. Hvor mange ansatte har bedriften?

Hjelp med spørsmål: *Velg ett svar*

- 1-10
- 11-25
- 26-50
- 51-100
- 101-250
- 250-500
- 500<

## 9. Når ble virksomheten deres etablert?

---

Tusen takk for at du tok deg tid til å gjennomføre denne spørreundersøkelsen! For å sende inn svarene trykk neste. Dersom du ønsker å få tilsendt den ferdige masteroppgaven eller har spørsmål i forbindelse med undersøkelsen, send en forespørsel til [REDACTED]

## A.4. Questionnaire (English)

### Lending crowdfunding

Hi

You have been invited to participate in this survey about marketplace lending, also known as lending crowdfunding or P2P lending. Questions will be tied to your experience and motivation behind choosing this form of financing. Answers will be anonymized and only used for conducting the master thesis.

We appreciate you taking your time to fill out this questionnaire.

#### 1. What forms of financing other than marketplace lending have you used?

Hjelp med spørsmål: *Select one or more answers*

- Bankloan
- Share issuing
- Donations (donationbased crowdfunding or other donations where repayment is not expected)
- equitybased crowdfunding (Crowdfunding where funders get ownership of the company)
- Angel investors (One or few investors providing capital for ownership equity or convertible debt)
- Others (write which here)

#### 2. How many loans have the company taken through marketplace lending

Hjelp med spørsmål: *Select one answer*

- 1
- 2-3
- 4-5
- 6-7
- 8+
- No loans



3. On a scale from 1 to 7 how correct is the statement below? I/We chose to finance our business through marketplace lending because

Hjelp med spørsmål: *Select one answer in each row*

	1 not accurate	2	3	4	5	6	7 very accurate
I/We wanted to try something new	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The borrowing rate I/we got was better than other alternatives	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It gave us a fixed rate through the whole repayment period	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I/We did not get a loan anywhere else	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I/We got good terms regarding security on the loan	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It gave me/us the possibility to reach out to many potential lenders as well as customers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lenders through marketplace lending are easier to deal with than banks and other lenders	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The borrowing process was simple and easy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. Rearrange the following in order of importance when you chose marketplace lending as a source of financing your business/project

Hjelp med spørsmål: *Change the order according to your preference (1.(top) - most important, 4(bottom) - least important)*

Borrowing rate	<input type="text"/>
Having a fixed rate	<input type="text"/>
reduced requirements for loan security (marketable assets as collateral)	<input type="text"/>
Marketing of project through platform	<input type="text"/>

5. If other matters than the four above were crucial in you choosing marketplace lending, please specify

## 6. When did you apply for a loan through marketplace lending for the first time?

Hjælp med spørgsmål: *Select one answer*

- Before 2013
- 2013
- 2014
- 2015
- 2016
- 2017
- 2018
- 2019

Questions on this page is about your firm and are not mandatory, but answers will give better insight into how different types of businesses can benefit from marketplace lending. If you do not want to fill in these questions, press next.

## 7. Which industry does the company operate within?

---

## 8. How many employees works within the firm?

Hjælp med spørgsmål: *Select one answer*

- 1-10
- 11-25
- 26-50
- 51-100
- 101-250
- 250-500
- 500<

## 9. When was the firm established?

---

Thank you very much for completing the survey! To submit your answers, press next. If you wish to receive the finalized master thesis or have any other questions related to the survey, please send a request to [REDACTED]

