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Master Thesis

Financing to micro-enterprises
Microfinance versus crowdlending: what future ?

by

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1. ABSTRACT

Whenever Small and Medium-sized Enterprises (SMEs) consider external finance for their investment projects or cash flow need, they essentially make use of bank lending. However, access to traditional lending becomes challenging when these SMEs are very small, innovative or when they are in their early stage of development as they are more informationally opaque, hence their profile is riskier (Wehinger 2014)[iv]. Although progress has been made towards financial inclusion, two billion people worldwide were still lacking access to regulated finance in 2015[v]. This problem is on the agenda of most of the governments as it is associated to unemployment.

Microfinance, which is the practice of granting small loans, has therefore proven to be an efficient alternative as it allows bridging this gap by giving the opportunity to disadvantaged groups and unemployed people to access finance and be able to start an activity and make a living from it. In Europe, although this market is still immature and fragmented, it does create jobs via self-employment, which is considered a viable alternative to wage-earning.

However, more and more doubts are being raised about the effectiveness of microfinance and its impact on poverty. In particular, there are concerns about whether it should address improved welfare for the population or whether Microfinance Institutions (MFIs) shall reach financial self-sustainability[1], all the more so as most of these institutions rely on public funding, what tends to bring discredit on the model as high interest rates are applied.

On the other hand, because of the loss of confidence in banks that resulted out of the financial crisis and thanks to the rapid growth of Fintech, other forms of alternative finance such as crowdfunding[2], where projects are financed by the crowd over the Internet, are gaining market share. In particular, lending-based crowdfunding (hereinafter referred to as 'crowdlending') is of particular interest of study as it is the form of crowdfunding, where a large number of people pool together small amounts that they lend to an SME, through a platform, in exchange for a financial return or for philanthropic purposes. While the phenomenon has developed at lightning speed over the last few years, the model has nevertheless some drawbacks.

This paper, through an in-depth analysis of each model and a comparison between each other, is intended to shed some light on the future of microfinance in Europe and test whether both microfinance and crowdlending will continue to co-exist as alternatives to traditional lending or whether Fintech will take over and change the financial landscape irrevocably.

In particular, a complete description of each model, including that of the traditional bank loan, is provided in sections 5 to 7 while section 8 elaborates on their differences and similarities as well as on their strengths and weaknesses, where information asymmetry and more specifically the way it is dealt with in each case is the connecting thread. Section 9 then provides some elements of analysis through a case study for further reflection.

2. INTRODUCTION

2.1 Background

The rationale behind the existence of the banking industry is mainly explained in the theory of financial intermediation by the asymmetries of information and the high transaction costs related to the direct exchange on the market. Another reason is that entrepreneurs either lack financial capacity or do not wish to use their own saving for their business needs. Since Modigliani and Miller's capital structure theories issued in the 1960s, it is also established that entrepreneurs opt for indebtedness for tax benefit purpose.

The analysis of intermediation theory on the banks' effectiveness in solving information problems is however based on the assumption of a formal context, where loan applicants are able to provide the banks with the necessary formal elements such as financial statements and appropriate securities. In order to ensure their financial self-sustainability, banks must indeed ensure that the borrowers have the capacity to reimburse their loans. To do this, banks developed models that allow them to determine if and how much to lend. Most of these models are taking various factors into consideration but

1 The content of this thesis is limited to the financial self-sustainability (or profitability) of MFIs and does not look at social efficiency.

2 In the literature, crowdfunding is sub-divided into four categories as follows: donation-based and reward-based crowdfunding where no material return is provided to the lenders, and equity-based and lending-based crowdfunding, where a financial return is eventually expected according to predefined conditions

the most relevant is the collateral that borrowers are required to pledge, which is an asset that is used as a security by the lender in case the borrower fails to reimburse the loan. The literature distinguishes two types of collateral: the internal collateral, the object of which is to increase the positions in the order of repayment in case of realization of the asset, and the outside collateral which does not affect the priority but allows the holder to have access to a personal patrimony. In law, internal and external collaterals are referred to as real securities, respectively personal securities. This requirement helps banks solve the problems linked to information asymmetry, i.e. moral hazard (Boot, Thakor and Udel (1991))[ix] and adverse selection (Bester (1985))[vi] as it allows reducing the loss for the lender in case the borrower defaults.

Therefore, when entrepreneurs are not able to provide this formal information, they lose the right to access traditional finance. In developing countries, their last resort is often to rely on informal finance such as local loan sharks, what usually creates endless poverty and income inequality (Cull, Demirgüc-Kunt, Morduch (2006))[xiv]. This is specifically the case of poor and disadvantaged people or entrepreneurs wishing to launch a new business.

Microfinance was therefore positively welcomed when it was initiated in the 1970s as it offers financial services tailored to fit the needs of entrepreneurs, who are denied access to traditional finance. Following the success of the Grameen Bank in Bangladesh in 1976, more and more MFIs launched their activity in other developing countries, in particular in South America and in Africa, allowing microfinance to develop as an industry as of the 1990s.

At about the same time, sustainable development started becoming a global concern all over the world, what led the United Nations World Commission on Environment and Development issue in 1987 its report 'Our Common Future' (the Brundtland Report)[li], which among other things initiated the 1992 Earth Summit, where it was highlighted that impoverished people were the most impacted people everywhere in the world and that measures shall be taken in order to remedy this situation. Under the leadership of the United Nations, world leaders eventually started agreeing on a set of 8 Millennium Development Goals (MDGs), the first of which being to halve poverty and hunger rates recorded in 1990 by the end of 2015 and to reach full and productive employment for all the working-age population, including women and young people[lii].

From that point onward, financial inclusion and microfinance became top of the list priorities for policy makers and international organizations all over the world. During the G20 summit held in Toronto in June 2010, the Global Partnership for Financial Inclusion was launched with the purpose of job creation and income generation as it was acknowledged that access to finance provides stability and help people, business and the whole economy to progress.

These initiatives gave the financial community and regulators incentives to develop tools and programmes targeting the concerned population, all the more so as the World Development Indicators report issued by the World Bank in 2004 highlighted that, even though global poverty rates were falling, there was still a lot to be done ahead in order to achieve the MDGs, which remained a great challenge (see Figure No 1 below).

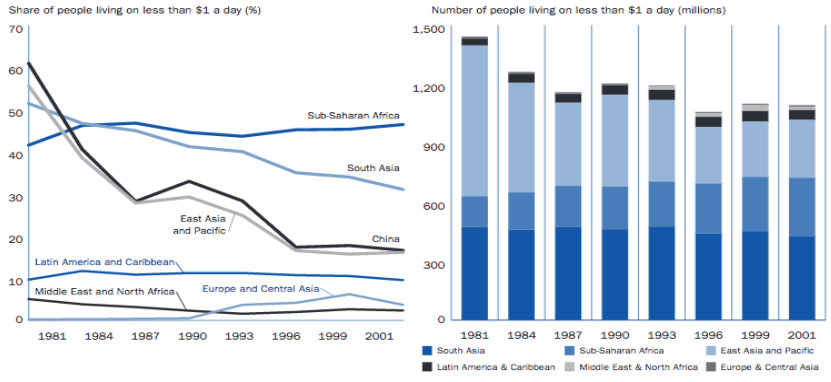

Figure No 1: Evolution of poverty rates in the world from 1981 to 2001
Source: World Bank, "WDI 2004", 2010

Nowadays, there are more than 10,000 MFIs globally, including credit unions and cooperatives, non-government organizations (NGOs), government agencies, private companies and commercial banks (Etzensperger (2014))[xxxi].

However, although high repayment rates are the norm in such a market, most MFIs are not self-sustainable and still rely on donations and subsidies, meaning the revenues they generate do not cover their costs (Cull, Demirgüc-Kunt, Morduch (2006))[xiv]. Since the 1990s, the debate regarding the profitability of MFIs has been ongoing, with various ideologies being developed in this respect. In addition, there is also the fear that, once MFIs reach self-sufficiency, they

might drift their original mission of financing poor people due to their newly-established ability to borrow on the commercial market and start financing wealthier customers, who can absorb larger loans. In so doing, they would not rely on external funding any longer (Ghosh, Van Tassel (2008))[xxxiii]. Much has been written on the subject over the years but the conclusion of the paper written in 2009 by Cull, Demirgüc-Kunt and Morduch, which gives a global picture on the trade-offs MFIs must make as far as profitability and outreach are concerned, seems to be still relevant. In particular, MFIs shall make deliberate choices based on factors such as the regulatory framework and the competitive environment they operate in if they want to survive (Cull, Demirgüc-Kunt, Morduch (2009))[xv].

While the role of MFIs in complementing banks in the context of financial intermediation is nowadays ascertained, the time may have come to ask the question on whether their model has reached its limits, in particular as public funding shall decline in the years to come because of budget restrictions and high deficits in all EU Member States. The question is of great relevance since crowdlending platforms targeting similar borrowers as existing MFIs are sprouting up thanks to the ongoing digital transformation of the economy (EMN (2014))[xxx]. Under this model, the lack of financial resources and collateral is again at stake, hence the hypothesis that it could compete with microfinance as it is a form of finance that allows entrepreneurs excluded from traditional banking to launch their project.

It turns out that microfinance and crowdlending were actually initiated to bridge the gap of traditional banking, which excludes the financing of projects that are too costly due to the higher degree of information asymmetry that characterises this type of projects. This is in particular due to the fact that fixed costs such as screening and transaction costs incurred by the lender are proportionally higher on such loans. As a consequence, MFIs and crowdlending platforms are not directly competing with banks but are actually complementing them as they target different segment of the financing market.

2.2 Motivation

In Europe, micro-enterprises[3] account for more than 90% of the economy (Eurostat (2015))[xxxii]. It is therefore crucial that micro-entrepreneurs get access to finance. However, SMEs have traditionally encountered difficulties in being financed by traditional banks (Macmillan Report (1931))[xli]. It is commonly argued that this is due to market imperfections, and more specifically to information asymmetry. In fact, the bank does not have the same level of information as the borrower with regard to the riskiness of the project to be financed, in particular when the borrower is a newly created SME or a start-up.

A first problem that may occur because of information asymmetry is adverse selection, which is the situation where banks adversely select riskier projects (bad credit risks) due to their inability to differentiate them from good projects (good credit risks). As a compensation for the risk arising out of this situation, they charge a higher interest rate. As a result, entrepreneurs with the least risky projects will not take out a loan as they consider it too expensive and banks end up in financing more projects that are riskier. In fact, according to Stiglitz and Weiss, any increase of the interest rate has actually the opposite effects of increasing the bank's margin and decreasing the quality of its loans portfolio[4], what may lead, from the perspective of the bank, to the following return function, where a concave shape is observed because of the probability of default that may rise when the interest rate is increased (Stiglitz and Weiss (1981))[xlix].

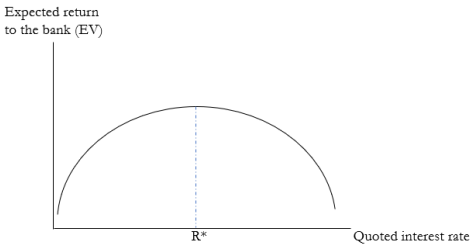

Figure No 2 – Interest rate that maximizes the EV to the bank
Source: Freixas and Rochet 1998

As a result, banks will not charge an interest rate above the point, where their expected return is maximized. Therefore, credit rationing exists when there is an excess demand for credit, whereas the market is although considered in equilibrium. This is shown in the below figure with the LD2 Demand curve, where the equilibrium is found at the interest rate R*.

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3 The EC defines micro-enterprises based on the following criteria: headcount < 10 as well as turnover and/or balance sheet total < € 2m, http://ec.europa.eu/growth/smes/business-friendly-environment/sme-definition_de

4 In the context of limited liability, entrepreneurs tend to take more risks.

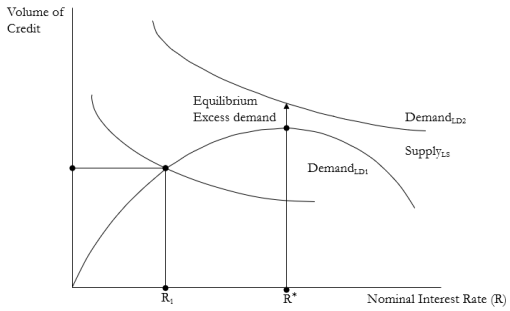

Figure No 3 – Equilibrium credit rationing
Source: Freixas and Rochet 1998

Accordingly, some borrowers will be granted a loan, while others will not, even if they were willing to pay a higher interest rate or provide more collateral than required as, by increasing the interest rate or asking for more collateral, the bank could increase the riskiness of its loan portfolio and therefore decrease its profit (see figure No 4 below).

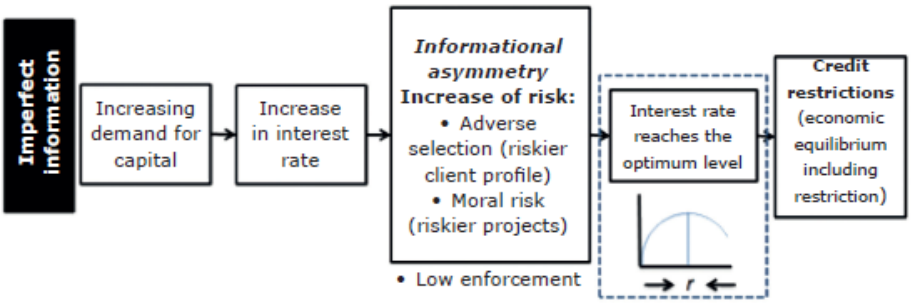

Figure No 4 – Mechanics of credit availability in case of information asymmetry based on Stiglitz and Weiss' paper of 1981
Source: DOI 10.1590/1984 9240835 D. A. Bittencourt Marconatto et al., 2017

A second problem that exists because of information asymmetry is moral hazard, which occurs when two parties enter into a relationship or into a contract, where the agent has more information than the principal, what is known as the agency problem (Bolton and Dewatripont (2005))[viii]. In fact, in lending activities, the borrower generally knows much more about its project than the lender does, in particular when the borrower is an SME. In this context, moral hazard may happen ex-ante, i.e. when the borrower, who is protected by limited liability, decides, after the loan was granted, to use the loan for a riskier project than what was agreed with the bank, what is commonly referred to as asset substitution, and/or ex-post, i.e. when the borrower declares itself in default or runs away once the project is realized, what is better known as strategic default.

In order to manage these risks, banks take appropriate measures in order to ensure that borrowers will repay their loans. In particular they will verify the credit history of the borrowers and require collateral to be pledged as a security. But this is costly. Therefore, whenever they lack collateral and/or credit history, SMEs are denied access to traditional banking. This is in particular the case of very small entrepreneurs and start-ups.

This is where alternative finance gets into the picture. To cope with this failure, financial market players had to adapt to the lack of information that characterises small projects and develop different business models, such as that of microfinance and crowdlending. While both models bridge the gap of traditional finance, the question that arises is whether microfinance will survive the new Fintech model, whether it will be replaced by crowdlending or whether they will co-exist in the future, what shall be assessed based on their own specificities and the types of borrowers they target.

The purpose of this thesis is to analyse the business models of microfinance and crowdlending in Europe and compare them between each other and vis-à-vis the traditional bank loan that shall be used as a benchmark, with the aim of verifying, in terms of financial self-sustainability, whether they will co-exist in the future or whether crowdlending will replace microfinance in the long term.

3. LITERATURE REVIEW[5]

There is a large academic literature on the intermediation role of financial institutions. While the various issues linked thereto are tackled from different perspectives, the key element is that information asymmetry between the lender and the borrower is central in understanding this role, which is to attenuate information related-problems under direct exchange on the market, in particular coordination and monitoring. In this context, financial intermediaries are meant to resolve the agency problem that exists between the borrowers and the investors by providing monitoring and/or screening services on behalf of the investors (Leland and Pyle (1977))[xxxviii]. However, as explained under section 2.2, financial intermediation is costly and financing demands are higher than supply. As a result, traditional banks do not finance projects that are considered riskier (cf.

and Weiss), hence the existence of alternative finance. The starting point of the thesis will concentrate on the definition of each model, where a short summary is included below:

a) Traditional bank lending

In the traditional banking system, business loans are usually secured. This means that banks require borrowers to provide some collateral in order to solve the problems of adverse selection and moral hazard and allow them to apply the interest rate that maximizes their profit. In fact, collateral allows borrowers to signal their high level of credit quality, hence it will be used by the banks as a screening tool to assess their riskiness ex-ante (cf. Bester (1985)). In addition, such security is also considered as an excellent incentive that prevents borrowers to use the money lent for riskier projects or to not reimburse the loan (cf. Boot, Thakor and Udell (1991)). In this context, it has been demonstrated that collateral (both internal and external) has a positive effect on interest rates (Calcagnini et al. (2008))[xi]. In Europe, this form of financing is therefore reserved to creditworthy borrowers such as matured large firms with easily available information and collateral, where screening, transaction and monitoring costs for the banks are well covered.

b) Microfinance

Microfinance[6] is an alternative to traditional lending addressing the financing needs of very small and/or new businesses as they are considered riskier, in the sense that they are unable to provide collateral or a track record of credit history. The existence of MFIs therefore relies on the failure from the traditional banking system to provide access to finance to such entrepreneurs as their small projects are costly to screen and monitor, what implies that higher interest rates are applied (cf Stiglitz and Weiss supra). Without microfinance, they would have no other choice than being financed through informal channels.

In Europe, microfinance has however the social objective of fighting unemployment. As such, it is aimed at targeting the vulnerable and marginalized stratum of the population, where the 'individual lending' concept is applied, as opposed to the group lending model of developing countries, hence no joint liability between group members exists. Because of this specificity, most MFIs benefit from EU and/or national public funding, under various forms, in order to maintain the interest rates at acceptable levels and compensate the absence of collateral and credit history of micro-borrowers. In this context, microcredit was clearly defined by the EC as loans of less than EUR 25,000 to the benefit of (i) micro-enterprises[7] employing less than 10 people and (ii) disadvantaged persons (e.g. unemployed people, young people, women and ethnic minorities) wishing to go into self-employment but facing difficulties in accessing traditional banking services.

c) Crowdlending

Crowdfunding is a recent concept initiated in the late 1990s and is generally described as a system of collaborative finance, where money is raised from a large number of lenders, each contributing a relatively small amount, with

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5 The scope of the related literature encompasses published and unpublished works, books, essays and publicly available information from reliable sources, including reports, analyses, articles and data from relevant institutions such as the World Bank, the European Investment Bank, the European Investment Fund, the European Microfinance Network, the Microfinance Center or Universities Research centers

6 In this thesis, the term microfinance has the meaning of microcredit, where other services such as micro-saving and micro insurance are not considered.

7 The EC defines micro-enterprises based on the following criteria: headcount <10 as well as turnover and/or balance sheet total < € 2m

the aim of financing a project or business, typically via the Internet. As this system is entirely electronic, there is no need of costly banking services.

Crowdlending is one of the four types of crowdfunding (see footnote No 2), where investors are lending their money to borrowers who are in majority SMEs, through an electronic platform, eventually against a remuneration in the form of fixed interest. It is to be highlighted that crowdlending providers are not financial institutions, meaning that they do not borrow, pool or lend money on their own account. The objective of crowdlenders is simply to act as an intermediary between borrowers and lenders, where their revenues come from the commission they earn if the project succeeds.

This paper will concentrate on crowdlending only.

4. METHODOLODY, DESCRIPTION OF DATA & WORK ENVIRONMENT

In this thesis work, the business models of both microfinance and crowdlending, once described in detail, will be compared with a traditional loan, using data from the financial literature. Both models will then be compared against one another to cross analyse their strengths and drawbacks as well as their differences and similarities, based on the academic literature referred to. In particular, the analysis will focus on the types of borrowers being targeted, the collateral requirements, the level of interest rates applied and the default rates and associated credit risk. A case study using the Principal Component Analysis (PCA) method and a logistic regression will then try to answer the research question. This thesis will therefore be carried out through desk research and statistical analysis.

5. TRADITIONAL LOANS IN EUROPE

Entrepreneurs, who decide to launch or expand a business, do not generally have sufficient capital to fund their project or do not wish to use their own funds to do so. The absence or low level of personal funding is a strong signal towards the investors and/or lenders (banks), to whom the entrepreneurs call on for the funds they need, either in the form of equity ('direct finance' route) or loans (also referred to as 'indirect finance'). Globally, equity is the least important source of external financing for firms, mainly because of their high cost. This is in line with the pecking order theory, which assumes that the cost of financing increases together with the increase of asymmetric information (Myers and Majluf (1984))[xlv]. Conversely, bank loans are the most important source of funds raised externally, just behind intercompany loans, in particular in Europe. This is due to historical reasons but also because interest payments are tax deductible (Modigliani and Miller (1963))[xliii], their term can be based on expected receivables, and they can be obtained in a very short period of time, though under certain conditions. As a representation, the below chart shows the source of external funds used to finance firms in Germany, Japan and the USA over the period 1970-2000.

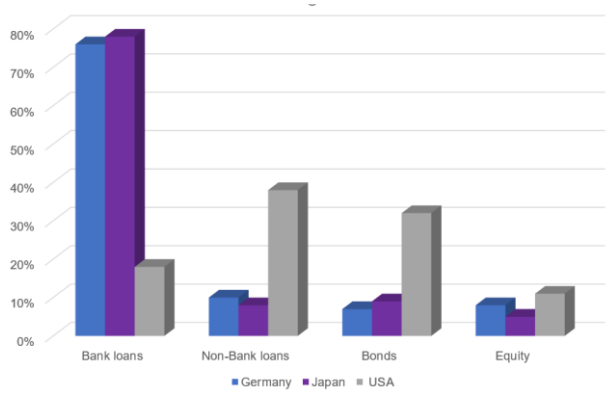

Figure No 5 – Source of external funds created using data from Hackethal A. & Schmidt R.H
Source: 'Financing Patterns: Measurement Concepts and Empirical Results', 2004

In Europe, the banking landscape is very much diversified but most banks play the same role of intermediation between the depositors and the borrowers. As such, banks are financial intermediaries, who earn their profit by lending money at short to longer terms in using the money received from depositors. In so doing, they transform short-term resources into medium to long-term loans. The banking sector is therefore crucial in every economy as it provides liquidity services and solves or reduces market imperfections. In fact, their intermediation role allows savers to invest their funds and firms to

borrow these funds, making the borrowing-lending process work smoothly. As a consequence, banks play a key role in enhancing economic efficiency by channelling funds to people, who have productive investment opportunities.

With regard to their legal form, there are mainly commercial banks, credit unions, cooperative and mutual saving banks and savings and loans associations (we ignore retail banks and investment banks in this thesis as they are out of its scope). The reasons are historical and find their origin in the bottom line objectives of the investors and the extent to which profit maximisation is at stake. Different business models were therefore developed but the main distinction is to be made between shareholder value banks, also referred to as capitalist banks, and stakeholder value banks, whose main driver is their social and corporate responsibility. While capitalist banks such as commercial banks are for-profit organizations focusing on their shareholders' profit, stakeholder value banks, which include the other types of credit institutions listed above, are non-for-profit organizations that developed community banking services for the benefit of their members, who actually own the institution. Therefore, customers of commercial banks are not necessarily concerned about the profit earned by the institution unless they are shareholders while every member of a cooperative or mutual bank has a vote in the organization's governance. This implies that, although the business lines to create earnings may be the same under both models (e.g. loans), the way to do it will vary considerably. In terms of product and service offering, commercial banks target businesses only (as opposed to retail banks) while credit unions and mutual banks offer services to both retail and business members and cooperative banks' focus is on rural entrepreneurs (e.g. farmers). The core activity of savings and loans associations used to be dedicated to home ownership although their range of products and services has enlarged over time to satisfy their members' needs.

As an example, the banking system in the UK comprises mainly commercial banks and building societies[8] while in France and in Germany, there are commercial banks, cooperative banks and saving banks.

The below sub-sections elaborate on banks' lending activities towards entrepreneurs for their business needs.

5.1 The lending model of a traditional bank

Under the traditional loan model, a bank is acting as an intermediary between savers and borrowers. In particular, the bank pays interest to the savers as remuneration for the money received in deposit, which is a liability owed by the bank to the depositors. In so doing, the depositors do indeed transfer the legal title of the cash to the bank, who has the right to use it. The bank therefore lends it to the borrowers, who are charged an interest to offset the transaction costs and the risks incurred by the bank. These costs are mainly related to the resources employed to collect and assess the information needed on the borrowers, to provide advice on the best-fitted loan type, to write down the loan contracts and to manage the transactions over their life time.

Hence, banks earn a profit on the spread between the interest charged on loans and that paid on savings, which is commonly referred to as the net interest margin. This margin may be improved in particular by capturing economies of scale and by reducing the transaction costs to the lowest possible. With regard to the interest rate borrowers pay on their loans, it slightly varies from one bank to the other but it is determined in all cases by the market rates, the term of the loan and the costs incurred by the bank, which include those related to the riskiness of the transaction as described under section 5.3. In particular, as the bank loan does not profit from the marginal gains that could result from a riskier project, the credit agreement looks like selling a put option so that the gains are capped for the bank. Thus, bank profit decreases as risk increases.

The figure below depicts the lending model of a bank:

Figure No 6 – Lending model of a traditional bank
Source: the Author

[8] Type of savings and loans associations originally devoted to providing mortgages but, who expanded their activities into traditional banking following the deregulation.

5.2 The European regulatory framework

In Europe, the fundamentals of EU banking and capital markets law are driven by the integration of financial markets to the single market, whose purpose was to waive the limitations of borders and allow individual countries to exploit their comparative advantage. When it comes to financial services, the main drivers towards the integrated market was the reduction of costs and an increased competition between financial institutions throughout the EU with the aim of fostering economic gains for consumers (Vlaams Rechtsgenootschap (VRG), Universiteit Gent)[liii].

As the Treaty of Rome (1957) did not contain any provision on banking, a Banking Directive needed to be issued. This happened in December 1977, with the ratification of Directive 77/780/EEC on the coordination of laws, regulations and administrative provisions related to the taking up and pursuit of the business of credit institutions[9], whose main focus was to harmonize the rules related to the supervision of banks and to impose licensing conditions in order to better allow the free movement of capital within the single market.

Since then, the Banking Directive has been amended several times[10] with the aim of fostering uniformity throughout the single market in terms of prudential supervision (e.g. minimum capital requirements) and the implementation of a 'multilevel system' of regulation, the so-called Lamfalussy-approach, was adopted with the aim of introducing a peer pressure between the supervisors. The 2007-2009 financial crisis however highlighted the weaknesses of the system as each Member State remained in control of its own legal framework once the directive was transposed into national laws. In addition, the 2010-2012 sovereign debt crisis that followed in some EU Member States heavily impacted the banking sector with a direct impact on banks' performance and their ability to lend. As a remedy, Basel III was initiated and the Single Supervisory Mechanism (SSM) was created and its management was assigned to the European Central Bank with the aim of fostering the financial integration and stability within the EU and ensure the safety and soundness of the European banking system and its consistent supervision within the European Union. In parallel, the Directive on Markets in Financial Instruments of 2004, the Directive on Deposit Guarantee Schemes of 1994 and a newly Mortgage Credit Directive[11] were amended, respectively adopted with the aim of increasing the level of protection of the final beneficiaries, i.e. the investors, the depositors, respectively the housing borrowers. Specific regulations were also adopted in order to ensure a proper and harmonized implementation throughout the EU.

However, while the principal purpose of this legal framework is (i) to coordinate national laws concerning the access of credit institutions to the activity, the modalities for their governance and their supervisory framework, (ii) to ensure the financial stability within the EU and (iii) to improve the protection of investors, depositors and housing borrowers, it does not include a specific directive and/or regulation regarding credit activities towards businesses. There is the Consumer Credit Directive[12] but it is limited to retail lending activities. To be noted though that, although the primary aim of this directive is the protection of credit consumers, who shall receive minimum information on the loan they are being granted such as the annual percentage rate of charge, there is no provision regarding interest rate restrictions. This is left to the decision of national Authorities, hence there is a considerable variation between Member States towards the regulation of consumer credit prices, where in general small loans are seen as a problem (Reifner et al. (2009))[xlviii].

Therefore, as far as credit to enterprises is concerned, it is up to the banks to adapt their lending behaviour so that they conform to the requirements of the various EU or national regulations they are subject to. The more stringent regulations are the ones related to their liquidity and capital requirements. In particular, there is evidence that capital regulations that are too strict have a lending contraction effect, more specifically when they relate to credit risk only as they directly increase the costs of loan funding, which the banks can't roll over to the borrowers. As a consequence, the banks simply decide to invest in assets such as government bonds instead of granting loans. Besides these regulations, there are also some other aspects that impact their lending capacity and willingness to lend, such as their size, the costs incurred and the diversification of their activities (Sum (2016))[l].

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[9] Whereas Directive 73/183/EEC of 28 June 1973 on the abolition of restrictions on freedom of establishment and freedom to provide services in respect of self-employed activities of banks and other financial institutions shall be taken into consideration

[10] Directive 2013/36/EU (CRD IV) amending Directive 2002/87/EC and repealing Directives 2006/48/EC and 2006/49/EC

[11] Directive 2014/65/EU (MiFiD II) repealing Directive 2004/39/EC, Directive 2014/49/EU (DGS) repealing Directive 94/19/EC and Directive 2014/17/EU (MCD) amending Directive 2008/48/EC and 2013/36/EU

[12] Directive 2008/48/EC, which defines a consumer as follows: natural person who, in transactions covered by this Directive, is acting for purposes which are outside his trade, business or profession. This Directive is complemented by Directive 2011/90/EU on the calculation of the Annual Percentage Rate of charge (APR).

In addition to these regulatory improvements, it was also recognised that banks shall report additional information in order to improve the monitoring of the quality of the loans they grant. In particular, the European Banking Association (EBA), which is the EU regulatory body responsible for developing technical standards and rules to be applied by EU financial institutions, introduced end of 2014 implementing technical standards on forbearance and non-performing exposures[13], which banks were asked to apply with immediate effect with the obligation to report the related data to their supervisory authority in the frame of the financial reporting framework.

5.3 Types of borrowers

In their lending activities, banks must first assess whether the borrower is a good credit risk, meaning that they must determine whether it will be able and will be willing to repay its loan. To do so, banks collect the information they need on the borrower and its investment project and monitor its profitability over the life of the loan in order to assess its likelihood of defaulting on the loan. Such information generally includes:

- the character or credit reputation of the borrower, which is about its trustworthiness: based on the credit history and integrity of the borrower, the bank assesses its willingness and ability to repay the loan;
- the capacity of the borrower: based on its ability to generate cash flow from normal business activities, the bank assesses its capacity to repay the loan in accordance with the schedule;
- the capital owned by the borrower: based on its wealth, the bank takes a measure of assurance with regard to its repayment capacity, especially if a period of adversity arises; and
- the conditions of the market that might have an impact on the capacity of the borrower to generate cash flow.

However, because of information asymmetry, banks are confronted to the risk of taking a wrong decision, where they may decide to reject a good lending project or accept a poor one, as shown in the figure below, which uses the statistical concept of the null hypothesis and related type I / type II error developed by Neyman and Pearson (Neyman & Pearson (1928))[xlvi]:

		BANK THINKS	
		Good project	Bad project
BORROWER KNOWS	Good project	True positive Correct acceptance	False negative Type II Error
	Bad project	False positive Type I Error	True negative Correct rejection

In accordance with this method, the decision the bank takes is quite straightforward for the true positive and true negative categories. However, it is not so simple in case of false positive (type I error) or false negative (type II error), where the bank shall take specific measures to contain the risks of these categories, for example by including additional screening activities at the outset of the loan and additional monitoring during its life. As this will incur additional costs, the bank may decide to apply a higher interest rate or in the extreme case, reject the loan request. The type II error category is of particular concern for SMEs as a good project might be incorrectly rejected by the bank. In case all banks decide to systematically reject such types of projects, a finance gap is created.

Nowadays, when they assess a borrower's probability of default, banks typically use automated systems that will eventually assign a risk score, based on the data obtained from the financial statements of the borrower. The first credit risk model that was developed in this respect is the Z-Score E. Altman invented in 1968, which is a multivariate scoring system consisting of five financial indicators that predicts the risk of bankruptcy using discriminant analysis and which demonstrates outstanding original and holdout sample accuracies of Type I (predicting bankruptcy) and Type II (predicting non-bankruptcy) error, as described above, based on a derived cutoff-score approach (E. Altman (2017))[i]. Despite its old age, the Altman Z-Score is still the standard against which most other bankruptcy or default prediction models are measured and is clearly the one used by most financial market practitioners for a variety of purposes.

In addition and in order to further address the problem of information asymmetry and the resulting adverse selection and moral hazard problems, banks in the EU generally grant secured loans only. This means that borrowers will be required

[13] In application of Article 99(4) of Regulation EU 575/2013

to pledge an asset as collateral in order to secure the repayment of the principal plus interest in case they are unable to make debt payments. In case the borrower defaults, the bank has the right to seize the asset pledged as a security and sell it in order to recover its loss. Collateral therefore plays a key role, in particular as it helps mitigate the problems related to information asymmetry: adverse selection is contained as collateral gives a clear signal of the level of creditworthiness of the borrower and moral hazard is controlled as collateral prevents the borrower to invest in riskier projects or run away.

The collateral required depends on the loan type, its purpose and its amount. The most common types of asset that banks require in the frame of a business loan are commercial real estate, inventory, equipment and accounts receivables. This type of collateral is commonly referred to as internal collateral (or real securities in law), the object of which is to increase the positions in the order of repayment in case of realization of the asset. Without such collateral, the bank will not lend any money as it will not have the opportunity to recover part of or the total value of the loan in case the borrower defaults. In case internal collateral is considered insufficient by the bank, the borrower may also be required to pledge some outside collateral (or personal securities in law), which does not affect the priority but allows the bank to have access to a personal patrimony. According to Biswanger, McIntire and Udry (Biswanger et al. (1989))[vii], the effects of collateral, at a given interest rate, are fourfold: the bank's expected return increases and the related variance decreases, the risk of loss is partially transferred to the borrower, the borrower has an incentive to repay its loan and it gives grounds to the bank for rejecting loan applicants with no suitable or little collateral, although they are creditworthy.

This implies that the borrower is not a new company as the bank makes its assessment based on past revenues, balance sheets and credit history and will require some collateral to be pledged. Start-ups and entrepreneurs, who have no credit history and who lacks collateral are therefore not eligible for such loans.

5.4 Risks inherent to lending activities

Every loan carries a certain level of risk as it is subject to hazard (borrower unable to repay, etc) and internal vulnerability (failed processes, lack of strategies, fraud, etc). Therefore, it is of the utmost importance that this risk be properly assessed and monitored in order to reduce it to a level that is in line with the institution's risk appetite. While there are various types of risks that banks shall manage, the most important ones that are related to their lending activities are credit risk, liquidity risk and operational risk.

In order to generate a profit, banks must make successful loans. This means that the amount of money lent shall be paid back in full. Banks are therefore subject to credit risk, which is the risk arising from the possibility that the borrower defaults. In order to mitigate this risk, banks perform a due diligence on the borrowers in order to assess their probability of default and require an asset to be pledged as collateral. While banks use models such as the one described under section 5.3. prior to signing the loan contract, they also need to conduct a thorough monitoring of the transaction during its life time. This is the role of the risk management function, which has been given greater importance since the financial crisis due to the continuing increase in the scale and complexity of financial products. Their difficult task is to assess the credit riskiness of the loans and to accept or reject them in a context where maximization of the risk-adjusted rate of return on capital is essential.

However, zero risk does not exist and banks do encounter non-performing loans (NPLs), which are described by the EBA as "material exposures which are more than 90 days past-due and/or where the debtor is assessed as unlikely to pay its credit obligations in full without realisation of collateral, regardless of the existence of any past-due amount or of the number of days past due" (EBA (2014)[xix].

In Europe, this phenomenon has grown drastically since the financial crisis, from around 1.5 percent of total loans in 2006/2007 to more than 5 percent since 2013, although with an uneven distribution across Member States, totalling EUR 1.2 trillion overhang. Some countries do still suffer from high levels of NPLs, in particular Cyprus, Greece, Ireland, Italy, Portugal, Slovenia and Spain (see Figure 7 below).

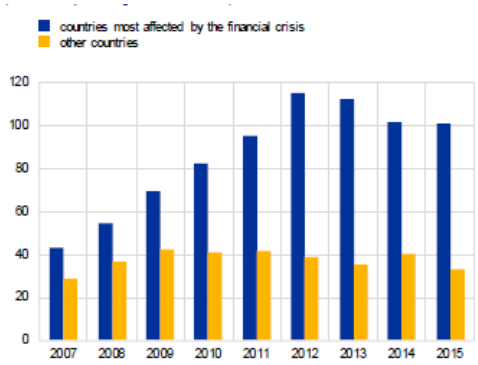


Figure No 7 – NPLs in the EU from 2007 to 2015 (percentages; median values)
Source: EBA Guidance to banks on non-performing loans, March 2017

In its recent Guidance report (EBA (2017))[xxi], the EBA actually recognises that NPLs consume capital, increase the running cost of banks and decrease their profitability. The existence of NPLs seems to be mainly due to structural impediments in some Member States, such as inappropriate insolvency regimes that over-protect some borrowers (cf. section 5.3. on collateral), and to a lack of banks' preparedness in properly managing these loans. As a consequence, the EBA suggests that the problem should not be solved on a case-by-case basis but that solutions should be facilitated by regulators. In particular, the value of collateral should be assessed frequently and adequately, more specifically for real estate, banks with a high level of NPLs should establish plans that are realistic in order to reduce them, banks should have a governance structure and take appropriate operational measures in order to sale or securitize their NPLs, forbearance should not be used to misrepresent asset quality or delay the actions necessary to address this issue, banks should also use the EBA definition of NPLs for their internal risk management and public disclosures and banks should have adequate and consistent procedures on provisions.

In addition, banks must have a clear idea of their daily exposure in order to be able to face their liquidity obligations. Hence, another important risk that banks are facing in their lending activities is liquidity risk, which is the risk that the bank may be unable to meet its short term financial demands. As a matter of fact, in an environment of asymmetric information, two types of liquidity shocks threaten banks: an idiosyncratic shock that may affect each bank individually in case of bank runs (Diamond and Dybvig (1983)) or in case of adverse information about the financial health of the bank, and a systemic shock, more dangerous, which would paralyze the entire banking system. These two types of shocks are not independent as the first one can cause the second, in particular by contagion from one bank to another. Liquidity risk shall therefore remain under high scrutiny, in particular in an environment where there is a continued increase in credit demand and a decline in deposit collection, which is a phenomenon that tends to develop more and more since the recent banking crisis that generated a lack of trust from the public.

Besides these financial risks, banks are also subject to operational risk, which is usually defined as "the risk of loss resulting from inadequate or failed internal processes, people, and systems or from external events". As this risk is inherent to the type of activities run by the bank, it is essential to develop and implement rigorous internal processes and operational controls in order to ensure financial security and proper allocation of resources. The bank must therefore include in its strategic priorities the control of the risks to which it is confronted by adopting a risk management policy.

5.5 Profitability of European banks

In the old good times before the crisis, when the overall economy was strong, the return on equity (RoE) of many European banks reached levels in excess of 15 percent. Nowadays, the average RoE is in the range of 3 to 5 percent, much lower than the cost of capital estimated to be between 10 to12 percent. This low level of profitability is the consequence of the financial crisis, but not only.

The very low level of interest rates applied nowadays tend to contract even further the net interest margins, which have traditionally been quite tight in Europe, in the order of 1.2 percent. This is particularly impactful on banks having a business model relying mainly on interest income. In addition, the rise in the number of Fintech lending institutions increases competition, what puts even more pressure on these margins. The high number of non-performing loans across the EU, which is due to the general trend of deteriorating asset quality and the need for banks to upgrade their systems to better compete with Fintech have a downward impact on their profit. And last but not least, the recent regulatory reform imposing higher capital requirements has had negative consequences on banks' funding costs.

For all these reasons, European banks are facing low profitability. Unless they find ways to restore an upward tendency, their financial sustainability might be triggered in the longer term.

6. MICROFINANCE IN EUROPE

Microfinance is an alternative to bank loans that was initiated because of the unwillingness of traditional banks to finance small and/or new businesses due to the higher risks and costs of their projects (commonly referred to as the 'finance gap'). It finds it origin in Bengladesh, where a man, M. Yunus, realized in the 1970s that impoverished people had skills that were unutilized or underutilized and that charity would not help but make poverty and social exclusion go on. To the contrary, short-term loans of very low value (microcredit) could actually help people working in the informal economy engage in business and grow their way out of poverty. Microfinance therefore targets the 'non-bankable' borrowers, i.e. that part of the population, which is denied access to the traditional financial instruments mainly because of their inability to provide sufficient collateral and their lack of credit history.

In Europe, microfinance made its first steps in the early 2000s when the European Council, in the pursuit of fighting unemployment and social exclusion throughout Europe, acknowledged in 2003 the need to issue specific microfinance policies aimed at supporting entrepreneurship, competitiveness and growth, focusing more specifically on disadvantaged groups such as unemployed people, young people, women, ethnic minorities and immigrants wishing to go into self-employment. At the time, figures indeed confirmed that 28m of people were living below the poverty line in Europe (see Figure 8 below[xxiii]).

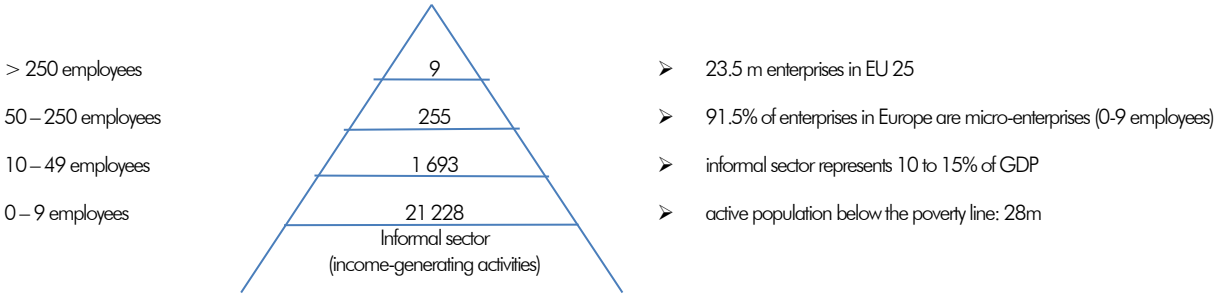


Figure No 8 - Breakdown of the distribution of the European market in 2006
Source: Eurostat 2006 data

Following this statement, the European Commission (EC) issued among other documents the following recommendation and communication papers that set the pace and the agenda for implementing microfinance in the EU:

- Recommendation concerning the definition of micro, small and medium-sized enterprises, (EC (2003))[xxii]
- Implementing the Community Lisbon Programme: financing SME growth – adding European value, (EC (2006))[xxiv]

The main objective of these papers was to provide a regulatory framework to Member States and financial institutions in order to promote a more favourable environment for microcredit provision throughout the EU, with the final goal of job creation and social inclusion. Despite the measures proposed by the EC, microfinance did not develop in Europe as fast as expected due to several obstacles (i.e. lack of intermediaries, capital and appropriate regulatory environment), what led the EC to issue another Communication paper in 2007 (EC (2007))[xxv], which provides various answers on how these obstacles could be lifted, as there was clear evidence that additional actions needed to be done, especially in view of the potential demand (the Eurobarometer steadily reported that 45% of the European labour force would better be working for themselves rather than as employees). On that basis, EU Member States were invited to develop national legislation allowing the provision of microfinance, with the aim of fighting financial exclusion and, as a consequence, social exclusion.

6.1 The Microfinance Paradigm in Europe

From a historical perspective, while microfinance markets in South Asia, South America and Africa developed about 50 years ago and relate to poor people trying to escape out of poverty, the European market is a young, highly heterogeneous but growing segment, which targets the vulnerable and marginalized stratum of the population. In addition, while the final objective of microfinance globally is to promote social inclusion, microfinance in Europe is rather

aimed at creating new jobs by providing access to finance to micro-entrepreneurs, who are being disregarded by traditional banks because of their incapacity to provide collateral or credit history while the goal of microfinance in developing countries is actually to help the poorest people raise their living standard to an acceptable level and get out of the poverty spiral. In this respect, microfinance in Europe targets micro-entrepreneurs on an individual basis while, in developing countries, it is usually organised in group lending, where all members of the group are liable in case one of them is unable to repay its loan. Hence, the European model is not based on joint liability in case of financial distress but rather follows the 'individual lending' concept. Because of this specificity, the theoretical works, which use the principal/agent theory to demonstrate that small loans to jointly liable groups solve the problems of asymmetric information, are therefore not relevant.

On the other hand, it is to be recalled that microfinance in Europe has the social objective of fighting unemployment. Hence, most MFIs in Europe benefit from EU and/or national public funding, under various forms, in order to maintain the interest rates at acceptable levels and compensate the absence of collateral and credit history of micro-borrowers. The drawback of this reliance on public funds is that the acceptance of the loan applicants and the monitoring of their projects by the MFIs might be inefficient, resulting in an increase of non-performing loans (Carboni et al. (2010))[xii]. In order to solve this problem, specific support in the form of technical assistance was implemented since the beginning of the EU programmes, with the aim of providing MFIs with specific tools and training, the final objective being to raise the knowledge and accountabilities of their staff to a level that should allow them to efficiently screen the loan applicants and to provide mentoring and financial education services to the micro-borrowers, especially in their start-up phase. In accordance with the analysis performed by Armendariz and Morduch, these measures should solve the problems of adverse selection and moral hazard and ensure high repayment rates although no collateral is required and no group lending contracts are applied (Armendariz et al. (2000))[ii].

In this context, as the European economy tends to be moving to a distribution counting a large number of small enterprises operating in various business lines, the business models had to be flexible enough so to reach those in need. This is however largely dependent on the legal framework, which widely varies in each Member State, as described in the below section.

6.2 The European regulatory framework for microfinance

The EU Banking Directive regulates banks and financial institutions in terms of prudential requirements with the aim of protecting the depositors amongst other objectives. No specific reference however is made to the provision of microcredit as it is considered as a common lending activity, which falls in the scope of the applicable rules on financing and providing loans. Therefore, there is no impact on microcredit (EC (2007))[xxvi]. As a consequence, there are two types of MFIs in Europe based on their institutional model: Micro-banks, which are regulated and supervised financial institutions subject to authorisation (banking licence) as they fall under the scope of the Banking Directive, what gives them the right to take deposits, and Non-Banking Financial Institutions (NBFIs), which are unregulated institutions that can provide microcredit only without taking deposits. Under this framework, Micro-banks are institutions that act under the status of commercial banks, saving banks, cooperative banks and microfinance banks while NBFIs are not-for-profit associations or companies such as NGOs, charities, trusts, foundations and credit unions.

Besides these MFIs, some EU Member States also have public promotional or state-owned banks providing microcredit activities, which are regulated by a special national law (hence, they are acting under special banking supervision) and/or have enacted a dedicated act in their regulatory system or have included specific provisions on micro-lending in their acts regulating the banking or NGO sector. In particular, Italy, Ireland and France have specific legislation: Italy enacted the Legislative Decree nr 141 in 2010, Ireland adopted the Microenterprise Loan Fund Act in 2012 and in France, microfinance associations are regulated since 2014 by Art. R518-57 to R518-62 of the French Monetary and Financial Code. In the other EU Member States, no specific legislation is yet in place.

The legal framework for microcredit provision in Europe is therefore not consistent throughout Member States. This leads to situations where, for example, MFIs are not allowed to make microloans on their own, what creates a bank monopoly for lending activities (e.g. in Germany) or where, when they are allowed to do so, they are generally not authorised to receive savings from their customers and, when there is no bank monopoly, very high minimum capital requirements are required for credit activities (e.g. Greece).In addition, there are also other national legislations that have a decisive impact on microcredit, in particular usury laws, where there is an interest rate cap that MFIs can't exceed, and tax incentives

which vary widely from one Member State to the other. Accordingly, the geographic reach of European MFIs is limited to their region or within the country they are established in, where no cross-border outreach is possible.

This environment drastically limits the development of the microfinance sector in Europe and forces MFIs to collaborate with traditional banks. In particular, MFIs either borrow from banks in order to finance their microcredit or operating activities and/or share infrastructure with mainstream banks in order to decrease their operating costs and/or have bank representatives in their Board of Directors in order to take advantage of their experience. In addition and depending on the situation, downscaling and upscaling partnership strategies are also commonly put in place, where banks grant microcredits directly or create a subsidiary to channel their microcredit activity, respectively where NBFIs transform into commercial banks or grant loans of a value higher than EUR 25,000. In the frame of a case study performed in 2015, the European Microfinance Network (hereinafter "EMN") highlighted that these partnership strategies are actually beneficial to the MFIs, but also to the banks and the micro-borrowers: amongst other benefits, MFIs will improve their financial performance and be able to grow further, banks will improve their corporate image by advocating their social responsibility concerns and will take almost no investment risk if no risk at all as microcredits are generally backed by public guarantee schemes and micro-borrowers are given the opportunity to build a credit history, which they can use later on for obtaining a classical loan of a higher value, while benefiting from training and mentoring provided by MFIs (Cozenco (2015))[xiii].

However, while cooperation with banks improves the lending capacity of MFIs, the risk of mission drift remains high, especially when the objectives of the bank and the MFI are not harmonized (Armendariz and Szafarz (2011))[iii]. The social mission of MFIs should indeed remain at the centre of the strategy implemented, what triggers to some extent their self-sustainability as such partnerships allow them to use the profits gained on richer clients able to access finance under the partnership to cover the losses generated from the poorer clients reached beyond cooperation.

From the above, it seems obvious that additional work from the regulators, funders and MFIs is required in order to improve transparency as far as the MFIs' performance is concerned. In this context, the EC published in 2013 an EU Code of Good Conduct for Microcredit Provision (EC (2013))[xxvii] setting out common standards to be used by MFIs, and more specifically by NBFIs, in terms of operation, risk management and reporting. On the latter point, MFIs should disclose on an annual basis their financial and social performance indicators as defined in the Code, which largely replicate those defined by the Microfinance Information Exchange (MIX[14]). In addition, MFIs should also publish their financial self-sustainability ratio, the percentage of the cost per loan subsidised and the adjustments to sustainability ratios taking into account subsidies.

However, while this Code is a move forward towards greater transparency, it still lacks formalisation and completeness as it foresees that members of the public shall access these data through an online database, but no such database exists yet at the EU level, and it does not include a social performance indicator related to the number of jobs created, nor does it include an outreach index.

6.3 Types of borrowers

In Europe, microfinance is aimed at fighting unemployment by providing access to finance to micro-enterprises and disadvantaged persons (e.g. unemployed people, young people, women and ethnic minorities) wishing to go into self-employment, with the final goal of promoting financial and social inclusion. In this context and because of the clear definition of microcredit, micro-loan beneficiaries must comply with specific criteria with regard to the eligibility of their project and the loan size. Target groups vary widely throughout Member States mostly because of the economic and regulatory landscape and microloans are granted for all sorts of economic activities. The below figure taken from the latest survey issued by EMN-EFC provides the situation over the years 2014-2015, where it can be seen that registered businesses with less than 5 employees are the most targeted type of business, closely followed by start-ups (Botti (2016))[x], what is not surprising as these categories of borrowers are those, who are the most disregarded by traditional banks due to the high transaction costs that they generate, respectively to the absence of historical financial data and collateral.

[14] MIX is a non-profit organisation founded in 2002, which provides online financial, operational and social performance data collected from more than 1,800 MFIs all over the world except the EU (Bulgaria, Poland and Romania are covered though), with the aim of bringing a greater transparency to the microfinance sector. The data is standardized based on internationally accepted accounting standards. The MIX online platforms are MIX Market and FINclusion Lab.

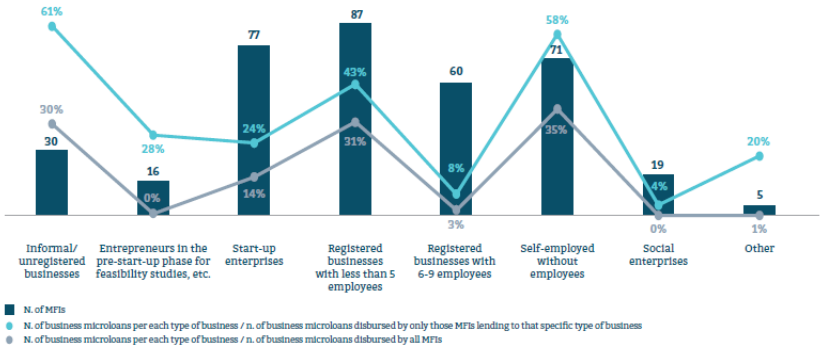


Figure No 9 – Type of business
Source: EMN-EFC 2014-2015 Survey – 100 responding MFIs of 124 business micro-lenders

Thanks to the regulatory measures taken at EU and national level, thousands of micro-enterprises in Europe were actually financed over the last ten years (see Figure No 10 below).

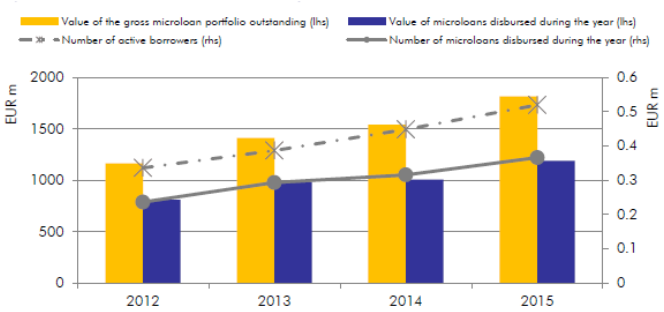


Figure No 10 - Evolution of Microfinance in Europe
Source: EIF European Small Business Finance Outlook report 2016 using data from EMN-MFC 2016 Survey

However, as acknowledged in another report issued by EMN in 2014 (Bendig et al. (2014))[v], data on MFIs' outreach is scarce and it lacks transparency. Hence, the survey could not answer the question related to the impact of microcredit on the micro-borrower's activities.

With regard to the impact on employment, it is also reported that measurement is difficult as most MFIs do not or cannot regularly track the number of jobs created thanks to the microloans they provide. Based on assumptions made, EMN calculated that at least 250,000 jobs were created over the years 2012 and 2013 but they also warn that this number shall be interpreted cautiously. The outcome of the survey also indicates that women continue to be underrepresented as a target group.

6.4 Risks inherent to micro-lending activities

Regardless of their institutional form, MFIs are faced with the same types of risks as banks. The difference relies in the way these risks are managed. As far as credit risk is concerned, public funding generally replaces the collateral requirement. In particular, in case micro-borrowers default, MFIs will call upon the guarantee scheme they are covered by. However, there is generally a limit up to which they are entitled for financial coverage. Therefore, MFIs have developed alternative procedures consisting of a relationship-based credit scoring methodology rather than a credit history/collateral data basis, which allow the MFIs to access soft information on their micro-borrowers. It is to be noted however that the level of non-performing loans remains quite high in Europe, with a PaR30[15] of 13.1% in 2013 on average (cf. Bendig et al. (2014)).

On the other hand, MFIs are exposed to a higher level of liquidity risk as microloans are usually short term. Appropriate cash balance levels and deposit mobilisation shall therefore be ensured. With regard to this type of risk, a distinction between micro-banks and NBFIs needs however to be made because of the capital requirements micro-banks are subject to. As such, they shall manage liquidity risk in the same way as traditional banks do.

[15] Portfolio at risk greater than 30 days, representing loans overdue by 30 days or more

The operational risk shall also be closely monitored, more specifically in NFBIs as the risk of fraud or the risk of loss might be increased due to inadequate or failed internal processes and systems.

6.5 Profitability of European MFIs

While traditional banks are more and more concerned about their corporate social responsibility by implementing best practices and complying with international standards, the concern of MFIs is rather about their financial self-sustainability, which is the situation where they profitably provide finance to micro-enterprises on an acceptable scale without making the use of subsidies, grants or other concession resources (Pissarides et al. (2004))[xvii]. This means that MFIs shall balance their social objective of financing non-bankable entrepreneurs with the requirement of generating a return, what requires them to have the capacity to cover all their costs, i.e. costs of capital, risk and operating expenses. This dual mission is considered as being achieved when (i) on the social agenda, total cost does not exceed the net benefits to the community, and (ii) on the MFI's perspective, positive profits are generated, meaning their costs of capital, risk and operating expenses are adequately covered.

It is however to be recalled that, in Europe, microfinance is used as a means to tackle unemployment and foster social and financial inclusion. In this context, MFIs mainly provide unsecured loans. Because of this specificity and the high costs linked to this type of activity, many European MFIs rely on public funding, mostly through EU or national guarantee schemes aimed at securing their portfolios of loans or through grants, in the form of technical assistance (cf. EC (2007))[Error! Bookmark not defined.]. In particular, the following programmes were launched by the EC over the last 20 years, which allow MFIs to reduce the interest rate they apply and waive the collateral requirement:

EU Programme	Purpose	Target beneficiaries	Investment Period
G&E[16] SMEG Micro-credit window	Promotion of innovative and job creating SMEs	SMEs of less than 100 employees, incl. micro-enterprises	1998-2000
MAP SMEG Micro-credit window[17]	Promotion of entrepreneurship & enhancement of growth & competitive businesses through innovation and job creation within Central & Eastern Europe, the EFTA/EEA countries, Cyprus, Malta & Turkey	Micro-enterprises lacking sufficient collateral ,unemployed people	2001-2005
CIP SMEG 2nd window[18]	Promotion of competitive and Innovative SMEs within the EU, EFTA/EEA, accession, candidate & Western Balkans countries	Micro-enterprises focusing on research & technological developments, incubators, business angels (early & expansion stage) with insufficient collateral	2007-2013
JEREMIE[19]	Access to finance and technical assistance to SMEs within EU 27	New micro-enterprises or those willing to expand, with a focus on start-ups, new technologies, innovation & technology transfer	2007-2013
JASMINE[20]	Technical assistance to EU MFIs for improving the quality of their operations & allow them to expand so to become sustainable (evaluation and/or rating to be followed by counselling and training)	MFIs at various stages of development	2008-2011, extended til end 2013
PROGRESS Microfinance[21]	Employment and social inclusion in the EU zone	Unemployed people and people at risk of losing their job, of being socially excluded or not able to securing a traditional loan	2010-2013 initially then extended til end 2016
ESIF[22]	JEREMIE's successor funds for job creation and EU sustainable economy	New micro-enterprises or those willing to expand, with a focus on innovation activities, ICT, SME competitiveness and low carbon economy	2014-2020
EaSI[23]	PROGRESS Microfinance successor programme	New entrepreneurs in the EU with a special focus on youth	2014-2020

Figure No 11 - Source: the Author

[16] Growth and Employment Initiative – SMEG Guarantee Facility, Annex III
[17] Multiannual Programme for Enterprise and Entrepreneurship – SME Guarantee Facility, Annex I
[18] Competitiveness and Innovation Framework Programme - SME Guarantee Facility (SMEG) 2nd window, Annex I
[19] Joint European Resources for Micro and Medium Enterprises, http://www.eif.org/news_centre/publications/Jeremie_leaflet_files/jeremie_leaflet_en.pdf
[20] Joint Action to Support Microfinance Institutions in Europe
[21] European Progress Microfinance Facility
[22] European Structural and Investment Funds
[23] Employment and Social Innovation programme

In Europe, the most common measures used to assess the profitability of MFIs are the Return on Equity (RoE), the Return on Assets (RoA) and the operational self-sufficiency (OSS) (EMN (2016)). In accordance with the same report, about 45% of the MFIs participating to the survey were operationally self-sufficient in 2015 (43 out of 94), most of them being located in Eastern European countries (only 7 are from Western European countries), as indicated in the chart below[24]:

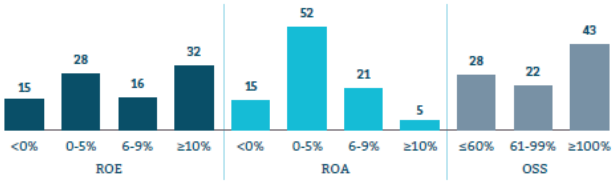


Figure No 12 - Number of MFIs by profitability and sustainability (2015)
Note: 91 responding MFIs for RoE, 93 for RoA and for OSS.

The report also provides that, while commercial banks do achieve self-sufficiency, NBFIs, NGOs and cooperatives/credit unions do not, with the latter even reporting a negative RoE and a RoA just above 0% (see Figure 13 below).

	ROE		ROA		OSS	
	2015	2014	2015	2014	2015	2014
Commercial bank	10.4%	9.3%	2.2%	1.9%	141.4%	126.8%
Cooperative/Credit union	-14.9%	-4.7%	0.2%	-1.3%	55.0%	52.8%
NGO	3.5%	-5.2%	1.4%	0.6%	82.0%	82.1%
NBFI	7.9%	6.4%	3.9%	4.3%	94.6%	96.0%
Other	-1.2%	-1.2%	-1.2%	-1.1%	43.0%	46.0%
TOTAL	5.7%	2.8%	3.0%	2.9%	90.6%	91.0%

Figure No 13 - Profitability and sustainability by institutional type
Note: 91 responding MFIs for RoE, 93 for RoA (91 in 2014) and for OSS (92 in 2014). No data available for government body.

However, relying only on traditional financial ratios such as the RoE or the RoA for assessing the performance of MFIs or their self-sustainability is ineffective as it does not take into consideration the hidden costs of grants, subsidies and technical assistance they received. This could lead to meaningless or even misleading data, unless these subsidies are considered for adjusting the costs and income (Yaron et al. (2007))[lvi]. As such, there is some sort of bias when the benefits of microfinance are assessed. While specific measures such as the subsidy dependence index (SDI) and the financial self-sufficiency (FSS) are commonly used by MFIs in developing countries for evaluating their self-sufficiency, such measures do not seem to be used in Europe.

According to a research working paper issued by Cull et al. (Cull et al. (2016))[lvi], 18% of MFIs only at global level are self-sufficient, where subsidies are taken into consideration based on the local prime rate and using the FSS measure (see Figure No 14 below). This is largely below the numbers announced by EMN in its report.

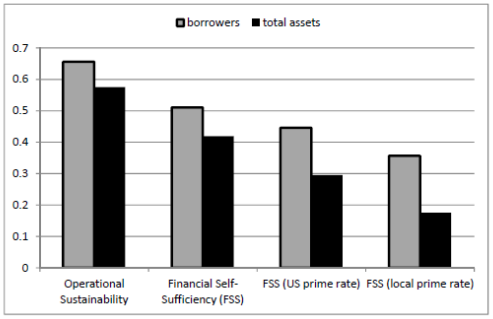


Figure No 14 - Percent of institutions that are profitable (FSS>1) under different opportunity costs of capital
Source: Original, underlying provided by Microfinance Information eXchange, Inc. (MIX)

[24] It is to be noted however that the response rate for Eastern European MFIs was much higher than the one for Western European MFIs (70 out 84, respectively 20 out of 65).

This shows that the demonstration of the MFIs' self-sustainability is still a complex issue, more specifically in Europe because of their heavy reliance on public funding and the fragmented regulatory frameworks. In the absence of harmonised statistical data such as the RoE or RoA for all types of European MFIs that would allow a proper comparison, it might be worth exploring other avenues for assessing their profitability such as the level of non-performing loans.

7. CROWDLENDING IN EUROPE

Crowdfunding is a concept launched in the late 1990s, where Fintech is used to collect financial resources with the aim of financing projects through an open call and where the investors, i.e. the 'crowd', receive either social rewards, tangible or intangible goods, or a payback for the money originally invested depending on the underlying crowdfunding model. The origin of the concept is that of crowdsourcing, whose idea is to use the crowd for collecting ideas, feedback and solutions aiming at developing corporate activities (Howe (2008))[xxxv]. In the case of crowdfunding, money is collected over the Internet for investment purpose, where the crowd, that is a large number of small funders, replaces sophisticated investors, who are usually small in number. The most frequently used classification is crowd-sponsoring and crowd-investing, which mainly differ in their funders' motivation: whereas reward-based and donation-based funding as part of crowd sponsoring are to a large extent based on emotional motivations, equity-based and lending-based crowdfunding (or crowdlending[25]) are primarily driven by financial returns (Delivorias (2017))[xviii].

The types of projects that were initially financed were charity-related or in relation to cultural, artistic and creative initiatives. As an example, Justgiving, an English donation-based platform, raised more than USD 4.5 billion to finance humanitarian operations since its launch in 2001. In France, the singer-songwriter Grégoire was the first to be financed by the crowd in just a few weeks. He was revealed thanks to the fundraising campaign launched on the reward-based website My Major Company end of 2007, where he successfully raised the money required to finance the production of his album, Toi + Moi, which was sold thereafter over 1.2 million copies.

These examples and many more show the industry's ability to challenge traditional banking services. This is why equity-based crowdfunding and crowdlending platforms appeared quickly thereafter. Equity-based crowdfunding, where crowdfunders actually receive a share of ownership or a share of future earnings, is generally used as a complement or substitute to seed financing for innovative entrepreneurial ventures and start-ups as the projects are generally considered too complex or too risky by traditional sources, incl. banks, venture capitalist, business angels and public programmes (Hemer (2011))[xxxiv]. With crowdlending, crowdfunders receive a debt instrument that specifies the terms of future repayments. On the perspective of the project owners, crowdlending is actually an alternative to a bank loan, where they are financed by many individuals over the Internet instead of a single lender, the bank, without any collateral requirement.

One of the best examples of a crowdlending initiative is Funding Circle, a UK-based platform launched in August 2010, which targets SMEs and micro-enterprises. As at mid-November 2017, 32,000 small businesses across the world, from accountants and jewellers to bakers and film makers, were successfully financed, through unsecured loans varying from GBP 5,000 to GBP 500,000 at rates starting from 4.5% a year, totalling GBP 3 billion of borrowing from thousands of crowdfunders, with an annual bad debt rate of 2.1% after recoveries. Another example is Lendix, a French platform launched end of 2014, which also targets SMEs. As at July 2017, that is after a bit more than only two years of existence, Lendix has already lent EUR 96 million to SMEs of all sorts mostly located in France (95%) through unsecured loans at an average rate of 6.53 %, with an annual default rate of 1.06%.

While the estimations concerning the size of crowdfunding and more specifically of crowdlending vary substantially, it is agreed that crowdlending doubles every year, e.g. from USD 6.4 bn globally as at September 2013 (Kirby et al. 2014))[xxxvii] to USD 11bn as at end of 2014 (Belleflamme et al. (2015))[iv], where the USA accounts for more than 50%, followed by Asia and Europe. In 2015, Morgan Stanley estimated that this category would be worth USD 290 bn in 2020 because of the increased institutional activity in the space. Actually, crowdlending is nowadays the most important crowdfunding source in terms of raised funds. However, given that global bank assets are of about USD 127 trillion as of 2013 (IMF 2015), crowdlending represents far less than 1% of the global bank sector's size, what is negligible.

[25] In the Oxford dictionary, crowdlending is defined as the practice of funding a project by raising money from a large number of people who each contribute a relatively small amount, typically via the Internet.

7.1 The Crowdlending Paradigm in Europe

In Europe, crowdlending services are provided using various business models. However, the basic concept remains the same: a platform is used as an intermediation tool through which fund seekers (borrowers) advertise their projects and the return, if any, that will be paid to the crowdfunders (lenders) for their investment, where the platform-operating firm (the crowdlending platform) provides a framework for the contractual terms and conditions, organises the signature of the loan agreement and processes the (re)payments. The fundamental principles thereto are that lenders obtain information about the borrowers' project on the platform, including a credit grade, and that the service of a paying agent is required. The variants in the model are sponsored by the crowdlending provider, where lenders are given the option to either invest in a single project or in a pool of projects that are in line with their values and interests or for which they may feel empathy. In addition and depending on whether the activity is already regulated, there are also differences in terms of the information to be disclosed on the crowdlending platform, in particular with regard to the grade assigned to the borrower's project and the platform pricing structure. Hence, unlike banks, crowlending platforms act as a service provider aiming at 'connecting' borrowers and lenders, where their revenues come from the commission they earn if the project succeeds. They do not borrow or collect deposits and do not lend their own funds, hence they do not earn a profit through net interest margins. Their mission is however crucial as the success of the project, regardless of its intrinsic qualities, is fundamentally linked to the skills of the platform's managers in providing the information lenders need. The below figure depicts the workflow of a crowdlending transaction.

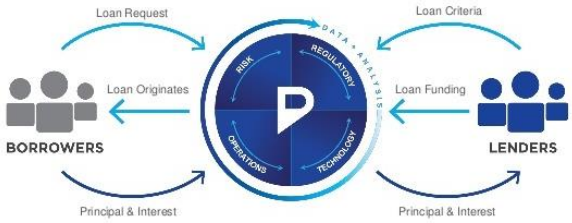


Figure No 15 – Simplified graphic of how a loan is processed through a crowdlending platform
Source: Daily Fintech

The advantages of these platforms is that lenders obtain higher financial returns as compared to deposits or bonds and borrowers can bypass prolonged and uncertain bank lending acceptance processes and obtain growth or working capital to fill their funding gaps at a lower interest rate in a very short period of time without any collateral to be pledged. Thanks to Fintech, algorithms are indeed used to compute the creditworthiness of borrowers, which is provided in the form of a grade, based on the information entered into the system, what drastically reduces the screening costs. This grade captures the risk of default, hence the better the grade, the lower the default risk and, consequently, the lower the interest rate will be. Once the project is accepted, it is advertised online, where the funding goal and timeframe are provided, usually together with a short video praising the virtues of the project and its profitability. Based on that information, lenders can make their choice. If the funding goal is not reached within the timeframe set, the crowdlending provider reimburses the lenders, otherwise the borrower get its loan. On this basis, crowdlending is more and more considered as a potential tool of financial disintermediation because of its reliance on social networks. According to Lin et al., social networks are indeed a new source of soft information[26] that can mitigate the problem of adverse selection as they lead to better results, including a higher probability that a loan is funded, a lower risk of default and lower interest rates (Lin et al. (2009))[xl].

While there are evidences of benefits for the lenders and the borrowers, the main drawback is that the lenders, who suffer the problem of information asymmetry, bear the credit risk directly. This is why crowdlending providers assign a credit grade and publish it online together with the interest rate they've assigned to the project and other soft information. In addition, most platforms in the EU provide statistics on the past performance of the loans they facilitated. All these measures allow the lenders to benefit from an increased transparency in obtaining the information on the borrowers. On that basis, lenders solve the problem of adverse selection themselves, which is usually translated by the speed at which they react in investing in the project. Actually, a protection measure is somehow embedded in the model in the sense that the system relies on the wisdom of the crowd as the project is financed on the 'all-or-nothing' principle, meaning that a

[26] Soft information is fuzzy, hard to quantify information about borrowers beyond the data such as credit scores or the financials of borrowers (Lin et al. (2009))**Error! Bookmark not defined.**

sufficiently large number of funders must consider the project worthwhile and safe. An indirect assurance is also provided to the individual lenders by the financial contributions made by some institutional and public investors, which more and more platforms obtain. For instance, the Government-owned British Business Bank pledged to lend an extra GBP 40m to UK businesses through Funding Circle in January 2017 after the EIB committed to lend GBP 100m a few months before and the EIB Group, through the EIF, has taken an agreement with Lendix in July 2017 in order to lend up to EUR 18.5m mainly to French SMEs, what is a strong signal with regard to the reliability of the platforms.

With regard to the problem of moral hazard, many crowdlending providers boast of having efficient monitoring processes in place, where contacts and actions are immediately taken in case borrowers do not repay on time, which seems to be quite efficient due to the low default rates that most EU crowdlending platforms report. It is in fact argued that borrowers feel more accountable towards individuals than towards institutions such as banks. In order to take advantage of this type of feelings, some platforms even provide an online chat functionality, which allows lenders and borrowers to get better acquainted. It is however to be noted that more and more platforms establish reserve funds in order to protect the lenders in case the borrowers default.

In this context and using the argument of the wisdom of crowd, H. Yum demonstrated that crowdlending platforms could also be considered as a means to give loans to financially excluded people (Yum et al. (2012))[xvi]. In fact, there are also solidarity crowdlending platforms. The OECD indeed confirmed in a report issued in 2015 that crowdlending (referred to as P2P lending) could also be attractive for non-bankable small businesses and self-entrepreneurs lacking collateral or credit history as loans offered are typically unsecured (Cusmano (2015))[xvii]. By taking the whole loan application process online, the cost of underwriting can indeed be reduced and very small loans are made viable from a risk-return perspective, hence micro-enterprises are also targeted. The best-known initiative to date in Europe is Babyloan.org, which follows the model applied by the American platform Kiva.org, which provides microloans to micro-entrepreneurs across the globe.

In the case of Babyloan.org, a French platform launched in 2008, the focus is to fund low-income entrepreneurs in France, in Belgium and in some developing countries. Its business model differs from that of a direct crowdlending platform in the sense that lenders usually do not receive any interest on their lending and that a partnership with a local MFI such as ADIE for France or MicroStart for Belgium is embedded, where such MFIs keep the responsibility of screening the projects and fulfil the loan agreement, including any monitoring activities. In such indirect models, the platform is consequently used as a tool to put the lenders in contact with the MFI partner, usually referred to as a field partner, and transfer the money lent to the MFI's bank account and the repayments back to the lenders, through a paying agent. Babyloan gets a fee for covering the transaction costs incurred and the MFI is allowed to charge an interest rate on the loan to the borrower in order to cover its operating costs. Until November 2017, Babyloan raised more than EUR 17m that were lent to micro-entrepreneurs located in 17 countries allowing more than 34,500 projects to be financially supported, with a default rate of 0%.

MFIs have actually understood how Fintech can help them drastically reduce their fixed costs, offer more affordable services in a more secured way and reach out a larger public, both on the lending and borrowing sides, including micro-borrowers living in remote regions, hence accelerating financial inclusion. With such indirect crowdlending solutions, adverse selection is actually better contained as the partnering MFIs sponsoring the loans are rated by the platform, what provides the lender with an additional assurance on their trustworthiness, while the screening, credit scoring and monitoring of the borrowers remain the responsibility of the MFIs. In such a scheme, crowdlending providers solve the coordination problems between lenders and borrowers.

7.2 The Regulatory Framework of crowdlending in Europe

Nowadays, there are a certain number of crowdlending providers established in most of the EU Member States. Their regulation however varies widely from one country to the other depending on the specific market conditions of the respective jurisdictions. In this context, in the frame of its obligation to monitor any new and existing financial activity, the EBA made some specific recommendations to the EU Member States in 2015 for making sure that the safety and soundness of markets and the convergence in regulatory practices are ensured (EBA (2015))[xx]. In particular, it concluded that the Payment Service Directive[27] should be applied as crowdlending activities include payments-related aspects whereas the Directive on Deposit Guarantee Scheme was not applicable as the funds provided by the crowdfunders are

[27] Directive 2007/64/EC on

not deposits that qualify for protection under this Directive. This means that no regulatory safeguards protect the lenders should the borrowers they invested in default or the platform become insolvent. As a consequence, Member States were requested to take measures in order to ensure that credit risk management and money handling are properly managed in such types of financial activity. In particular, crowdlending providers must now obtain a general trade license or be licensed in the same way as financial intermediaries depending on their business model.

Some Member States decided to go one step further in enacting specific laws, mainly to increase the protection of the lenders. The first was France, where an entrepreneur can't lend to another entrepreneur and where the measures impose a maximum amount of EUR 2000 per lender on a project and a minimum of 20 lenders per project. The status of IFP (Intermédiaire en Financement Participatif) was also created, which imposes crowdlending providers to be supervised by the ACPR (Autorité de Contrôle Prudentiel et de Résolution) and to be registered with ORIAS (Registre Unique des Intermédiaires en Assurance, Banque et Finance). This institutionalization is also reflected in the development of two associations launched in 2012 and 2013 that bring together the main crowdfunding platforms: Financement Participatif France (FPF), which provides a directory of its members and their scope and the Association Française de l'Investissement Participatif (AFIP), which is dedicated to business financing. These associations have several missions: (i) a role of information display and communication, (ii) a pedagogical role on funding practices, and (iii) a role of lobbying, making proposals to adjust the French and European regulatory framework of crowdfunding. Along these lines, BPI France has also now a website, TousNosProjets, which gathers all the projects being advertised on platforms considered trustworthy, where a breakdown is provided by category (donation, equity and crowdlending) with the aim of increasing transparency. In some other countries, the legislation includes provisions aimed at preventing irresponsible borrowing.

All these measures show how crowdlending and more generally crowdfunding is growing rapidly also in Europe, although at a various pace throughout the Member States. In this context, the EC published in May 2016 a Staff working document on the crowdfunding practices in the EU (EC (2016))[xxix] in the frame of the Capital Markets Union (CMU) Action Plan (EC (2016))[xxviii], where it is stated that "the EC's top priority is to stimulate investment to create jobs and increase Europe's competitiveness". In this paper, the EC indeed recognises that the access to finance for young, innovative firms remains a problem and that the role of alternative finance, including crowdfunding, shall be increased in order to complement bank financing. However, the EC also notes that, "while the share of crowdfunding in the total funding of European business is growing fast, it remains a national phenomenon, with cross-border funding still limited". As such, the EC concludes that there is no current need for EU specific policy intervention as it is considered that there is no risk of systemic shock.

7.3 Types of borrowers

Crowdlending is aimed at reaching all types of SMEs operating in any types of business lines, except when it relates to innovative projects and start-ups, where equity-crowdfunding is used. While no collateral is usually required, past turnovers is a key element as it is used by the crowdlending providers to establish the credit grade; in general, it must cover at least two years of existence. Hence, crowdlending platforms are mainly used for growth or working capital needs. Based on their scope and nature, which can be either generalist, thematic or geographically oriented, they offer loans of various sizes, from microloans to much larger loans. Therefore, the choice of the platform by the fund seeker is a signal with regard to the funding strategy of the project. In fact, there is a trend towards a strong segmentation of the platforms depending on the development stage of the enterprise, its sector of activity and the geographic origin of the projects (Mollick (2014))[xliv]. While the final objective of the system is to provide funding to a business project, their owners might also use such an alternative financing means to benefit from other resources, in particular the contributions in terms of communication and notoriety and a feedback on the proposed project (or cognitive input) in order to better understand its perception by the public and possibly improve its technology or its marketing positioning.

Under the business model of solidarity crowdlending platforms, such as that of Babyloan.org, the outreach is definitely microfinance beneficiaries, where the average loan size is of EUR 500 reimbursed over 9 months, on average.

7.4 Risks inherent to crowdlending activities

It is to be recalled that crowdlending platforms are service providers, whose objective is to put lenders and borrowers in contact, whereby they ensure screening and monitoring services when the loans generate a return for the lenders. As such, the risks in a crowdlending transaction are twofold: on the one hand, the risks related to the funded projects and, on the other hand, the risks specific to the operation of the platforms.

In the first instance, there are the typical risks associated with any financing operation, in particular credit risk. In the case of crowdlending, this risk is spread between a large number of lenders, who can provide smaller amounts of funds to several projects in order to diversify it. In Europe, this risk is contained thanks to the minimum requirements imposed on crowdlending platforms by EU regulations, or by even stricter laws such as in France, e.g. with regard to screening, monitoring and disclosure obligations. In addition, the risk of liquidity remains limited as, in crowdlending transactions, there is in principle no maturity transformation as the liability of the borrower has the same maturity as the asset of the lender.

Besides these risks, there are some specific risks linked to the nature of this type of activity and more specifically to the means used thereto. In particular, the activity of crowdlending generates the risks of cyberattack given the Internet-dependent functioning of the platform, the risk of fraud by the crowdlending provider, who might be tempted to misappropriate all or part of the funds collected from the lenders and the risk of closure of the platform, in particular in an increasing competitive environment. This last risk is actually not negligible given the difficulties of the platforms to achieve the turnover required to reach their break-even point, which is mainly due to their large fixed costs related to the operation of the platform, what raises the question of the consequences on the lending activity on a discontinued platform.

Due to current small size of the market, systemic risk is however not yet considered by the European supervisors, in particular as no money creation takes place since the amount given out by the platform is limited by the amount brought in.

7.5 Profitability of European crowdlending platforms

Zopa is the first crowdlending platform that was ever launched in the world in March 2005, with the aim of providing financing to individuals and small sole-proprietor businesses in the UK. This means that the industry is still in its infancy. Since then, crowdlending has spread far beyond its birthplace, reaching all parts of the world. In Europe, the activity drastically increased over the last years and starts attracting institutional investors. As such, crowdlending is not considered a niche market anymore. According to the first pan-European study issued in 2015 under the sponsorship of the University of Cambridge together with EY, which provides a benchmarking study using data directly collected from 255 platforms across Europe, crowdlending grew by 272 % between 2012 and 2014 and is now the largest market segment in Europe (Wardrop et al. (2015))[liv].

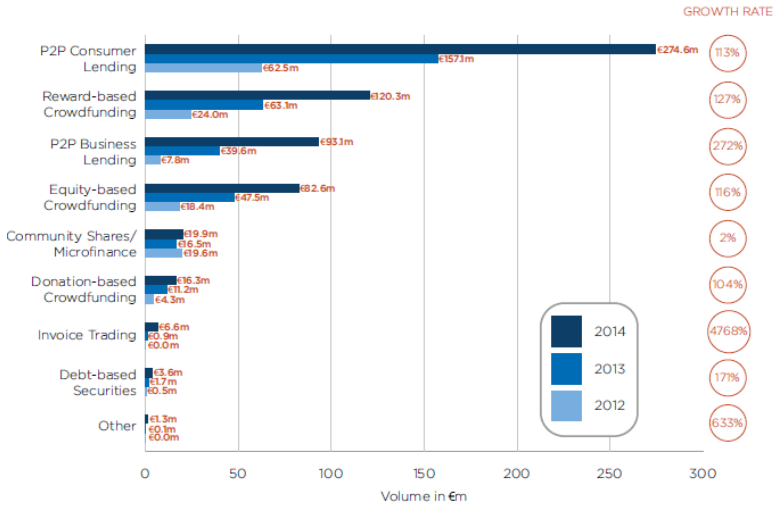


Figure No 16 – Alternative finance models in Europe (excl. UK) in EURm & average growth rate 2012-2014
Source: University of Cambridge_EY report 2015

However, because of their recent history, little information is available on the profitability of most of the platforms. While the CEO of Zopa recently reported that the platform was on track towards profitability in the course of 2017, losses of GBP 1.4m, 1.8m, 2.6m and respectively 5.6m were reported for the years 2011 to 2014, which are quite large in comparison to the amount of lending communicated on the platform (Milne et al. (2016))[lxiii]. Such a situation is though quite normal as it is to be reminded that these platforms have not yet reached maturity, hence most of these losses can certainly be attributed to the costs incurred for developing the system and for marketing their services. At this stage, profits

are therefore not key for many of these fast growing start-ups and other ways should be used to measure their stability and strength and their potential of success in the future. For instance, it would be worth verifying, whether they are backed and if so, by whom. As seen before, Funding Circle and Lendix are partially funded by a government-owned bank and/or by the EIB Group while Babyloan is partnering with a few well-established banks, incl. BRED-Banque Populaire, Cortal Consors-BNP Paribas, Crédit Agricole as well as with the Agence Française de Développement (AFC) and the Association pour le Droit à l'Initiative Economique (ADIE).

Hence, it is clear that the viability of the platforms will not only depend on the ability of their founders to achieve sufficient scale to cover their fixed costs of operation or improve their model in order to reduce these costs. While the acquisition of Finsquare by Lendix in April 2016 shows that the sector will certainly experience a consolidation phase in the coming years, sustainability strategies will be of utmost importance. Some platforms have already started diversifying their activities in terms of types of funding, where they also offer equity-crowdfunding and donation based-crowdfunding, or in terms of geographical reach and/or outreach, where they include also loans to households, incl. for real estate purpose.

For now, in the absence of sufficient financial data that would allow a proper comparision of their RoE or RoA, it might be worth, as for microfinance, exploring other avenues for assessing their profitability by focusing for example on their loan portfolio's default rates. The case study provided under section 9 is aimed at giving some answers in this respect.

8. COMPARISON OF BUSINESS MODELS

Traditional banks struggle to serve the SME market because, in a context of imperfect information, the interest rate they charge to compensate for the risks of adverse selection and moral hazard can be increased only up to the point, where their expected return is maximized. The consequence is that they ration credit towards the riskier projects such as small projects, which are highly informationally opaque (cf. Stiglitz and Weiss supra). The phenomenon is further exacerbated because of the new regulatory requirements imposed on banks in the wake of the 2008 financial crisis. By widely bypassing the traditional financial system, alternative finance models and instruments make it possible to fill this funding gap and provide the liquidity for lower business volumes.

In this context, it appears that banks mainly provide secured loans to large companies able to demonstrate their past profitability and capable of pledging sufficient collateral. As such, the banks fully play their role of financial intermediation by attenuating the information related-problems and can therefore apply interest rates that fit into their model towards economic equilibrium.

As a consequence, MFIs' customers are micro-entrepreneurs or individuals ill-served by traditional banks because they lack collateral and credit history. Because the financing of their small projects entails high costs required to solve the information asymmetry and the absence of collateral, the interest rates applied are significantly higher. In this context and because of the social objective of microfinance in the EU, most European MFIs benefit from public funding in order to compensate for these failures, what allow them to reduce their interest rate and enhance their screening, monitoring and enforcement activities.

Crowdlending on the other hand is a service that is delivered by a service provider that put lenders and borrowers in contact thanks to Fintech. The main difference compared to the traditional financial and microfinance industries is thereby the technology-enabled disintermediation of services that can lower costs and increase efficiency in the longer term. As a consequence, borrowers avoid lengthy acceptance processes and benefit from low interest rates which, from the lenders' perspective, are a better alternative to deposits or bonds. On the borrowing side, while many platforms target entrepreneurs with a minimum of credit history, this is not systematically the case, in particular with the solidarity platforms, whose focus is to reach out micro-entrepreneurs. In addition, as no collateral is required and in the light of the technological innovations, crowdlending platforms have definitely the potential of supporting small firms that are traditionally financed by MFIs, as can be seen with Babyloan.org. as, amongst other things, they allow solving the problems of coordination between multi-lenders.

From the analysis provided in the previous sections, it can be ascertained that, in Europe, MFIs are not directly competing with banks but are actually complementing them as they target different segments of the financing market. However, when microfinance is compared to crowdlending, it can be seen that the latter has the potential to transform the market, with possible effects on the role and operation of MFIs. There is indeed considerable scope for streamlining and automating screening, risk profiling, asset allocation and fund distribution in order to keep costs down and produce predictable returns for lenders. SaaS (Software as a Service) models already offer such technology. Actually, by

combining efficiency offered by new channels and partnering with crowdlending providers, MFIs could expand their client base in developing a better understanding of their needs. This will much depend though on the context of the country and its regulatory framework.

As compared to the banks, there is also a greater inherent competitive advantage in crowdlending platforms because of lower costs, which enable them to offer competitive rates to both borrowers and lenders. In this respect, many banks have already set up a partnership with a crowdlending provider or they have developed their own platform. In fact, such type of models is beneficial to the lenders as they provide them with an increased protection in terms of credit risk and an increased return on their investment.

9. CASE STUDY

As explained under section 6.5 and 7.5, there are no harmonised statistical data available that would allow a large-scale comparison of the RoE and/or RoA of European MFIs with those of European crowdlending platforms. On the other hand, various elements have an impact on their profitability, in particular the likelihood of default on the loans they grant, where it has been established that there is a positive relationship between the default rate on loans and the profitability of financial institutions (Li et al.(2014))[xxxix].

In this context, the purpose of this case study is to attempt answering the research question by performing an analysis of the loan portfolio made available on the Lendix platform, where such elements are used as variables. It is acknowledged that it would have been more appropriate to use several loan portfolios over several years, and more specifically the data from platforms such as Babyloan.org but, as explained under section 7.5, the activity is so recent that very few providers make their data publicly available.

In particular, the analysis was performed more specifically on the aspect of the size of the loans, their term and reimbursement method, the interest rates applied, the grades granted, the types of borrowers targeted and the default rate, where the intention is to assess the correlation between these factors in order to understand the impact on the profitability of the platform. In this context, the Principal Component Analysis (PCA) projection method together with a logistic regression are used as they allow visualizing and analysing correlations between variables, through a multivariate analysis, respectively modelling the effect of a series of variables on a binary response variable, in this case the risk that a loan will default.

As shown in the summary table below, which provides basic statistical results following an univariate analysis, 322 observations were used, where none miss data, and where the following information on the variables has to be understood: (i) regarding the type of amortization, the value of '1' refers to the loans that are amortized, hence the value of '0' was allocated to the bullet loans, (ii) regarding the grade granted by Lendix for the credit risk of the borrower (Lendix Rating), grades B and C were taken into consideration separately as together they represent most of the portfolio (89%), where the value of '1' refers to the borrowers granted either a B or a C, hence the value of '0' was allocated to the other grades (A and C, respectively A and B) and, (iii) with regard to the size of the company, the value of '1' refers to businesses counting up to 10 staff, hence the value of '0' was allocated to bigger companies in terms of staff. For the three last variables (Late payment, Default payment and Repaid), the value of '1' means yes. It is also worth noting the large heterogeneity of the variables used. In particular, an interesting variable is the Number of lenders per loan in view of the means used to solve the problem of information asymmetry as presented in section 7.1. By dividing the Loan amount by this number, another variable is also made available, i.e. the average Amount lent per lender.

Variable	Observations	Minimum	Maximum	Mean	Std. deviation
Loan amount (EUR)	322	20,000	3,100,000	362,952	448,289
Annual rate	322	0.0400	0.0950	0.0669	0.0131
Number of lenders	322	1	2477	530	444
Amount lent per lender	322	113	1500000	35649	151309
Term	322	6	84	49	16
Lendix Rating = B	322	0	1	0.6	0.5
Lendix Rating = C	322	0	1	0.3	0.4
Size ≤ 10 staff	322	0	1	0.4	0.5
Amortized (vs bullet)	322	0	1	1.0	0.1
Late payment	322	0	1	0.0	0.2
Default payment	322	0	1	0.0	0.2
Repaid	322	0	1	0.0	0.2

According to these statistics, it can already by understood that the amount of the loans and their maturity varies substantially, that they are mostly amortized, that the interest rate applied varies between 4% and 9.5%, that the number of lenders per loan is 530 on average and that their average contribution is of EUR 35,649, that most of the borrowers are not A graded and that the level of default payment is very low, below 3% on average. On the latter, it is however to be noted that Lendix started its activity beginning of 2015 only, hence most of the loans are not yet repaid, what is also confirmed in the table above. In this context, it is to be recalled that, in Europe, the level of non-performing loans in the banking sector increased from around 1.5% of total loans in 2006/2007 to more than 5% since 2013 and that, for European MFIs, it is much higher, with a PaR30 of 13.1% in 2013 on average (see sections 5.4 and 6.4).

In the context of the PCA, the next step is the issuance of the correlation matrix Pearson (n), which provides the linear correlation coefficients of the variables taken two by two. This series of bivariate analysis constitutes a first step towards the multivariate analysis.

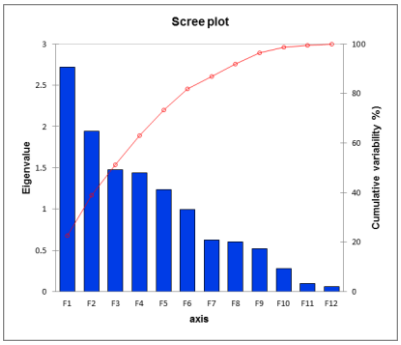
Variables	Loan amount	Annual rate	Number of lenders	Amount lent per lender	Term	Lendix Rating = B	Lendix Rating = C	Size ≤ 10 staff	Amortized (vs bullet)	Late payment	Default payment	Repaid
Loan amount	**1**	-0.253	0.466	0.171	0.010	0.141	-0.253	-0.339	-0.108	-0.101	-0.088	0.055
Annual rate	-0.253	**1**	0.028	-0.122	0.382	-0.435	0.759	0.218	0.140	0.077	0.062	-0.145
Number of lenders	0.466	0.028	**1**	-0.276	-0.021	0.093	-0.030	-0.158	-0.034	-0.103	-0.097	-0.064
Amount lent per lender	0.171	-0.122	-0.276	**1**	-0.025	0.115	-0.080	-0.170	0.018	-0.044	-0.039	-0.031
Term	0.010	0.382	-0.021	-0.025	**1**	-0.054	0.012	0.230	0.209	0.079	0.061	-0.156
Lendix Rating = B	0.141	-0.435	0.093	0.115	-0.054	**1**	-0.781	-0.055	-0.063	0.008	0.018	0.065
Lendix Rating = C	-0.253	0.759	-0.030	-0.080	0.012	-0.781	**1**	0.122	0.049	0.037	0.022	-0.127
Size ≤ 10 staff	-0.339	0.218	-0.158	-0.170	0.230	-0.055	0.122	**1**	0.070	0.074	0.077	0.008
Amortized (vs bullet)	-0.108	0.140	-0.034	0.018	0.209	-0.063	0.049	0.070	**1**	0.015	0.013	-0.385
Late payment	-0.101	0.077	-0.103	-0.044	0.079	0.008	0.037	0.074	0.015	**1**	0.902	-0.039
Default payment	-0.088	0.062	-0.097	-0.039	0.061	0.018	0.022	0.077	0.013	0.902	**1**	-0.035
Repaid	0.055	-0.145	-0.064	-0.031	-0.156	0.065	-0.127	0.008	-0.385	-0.039	-0.035	**1**

As can be seen, not all correlations are positive, what means that all variables do not move in the same direction, except the Late payment that is highly positively correlated with the Default payment, as is the case for the Annual rate vis-à-vis the C grade, though to a lesser extent. This makes sense as the defaulting loans include those suffering a late payment, respectively a higher interest rate is charged for riskier loans. It can also be seen that the Loan amount has some lower positive correlation with the Number of lenders per loan, what shows that, to some extent, the higher the value of the loan, the bigger the number of lenders is. On the other hand, there is a high negative correlation between grade B and grade C, what is normal as a loan graded B can't be graded C and inversely. The other variables seem to have meaningless correlation between each other, either positive or negative.

In the next table, for each eigenvalue corresponds a factor, which is a linear combination of the initial variables. Actually, each eigenvalue represents the variance of the corresponding factor, where the sum of the eigenvalue for each factor equals the sum of the variance of each initial variable. The second line provides the percentage of variability of each factor. In this case, it can be seen that the first eigenvalue represents 22.7 % of the total variability while the second eigenvalue does represent 16.2%, and so on.

	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12
Eigenvalue	2.722	1.941	1.476	1.436	1.237	0.996	0.628	0.602	0.523	0.280	0.098	0.061
Variability (%)	22.681	16.173	12.304	11.963	10.307	8.299	5.237	5.015	4.361	2.331	0.818	0.512
Cumulative %	22.681	38.853	51.158	63.120	73.428	81.727	86.964	91.979	96.340	98.671	99.488	100.000

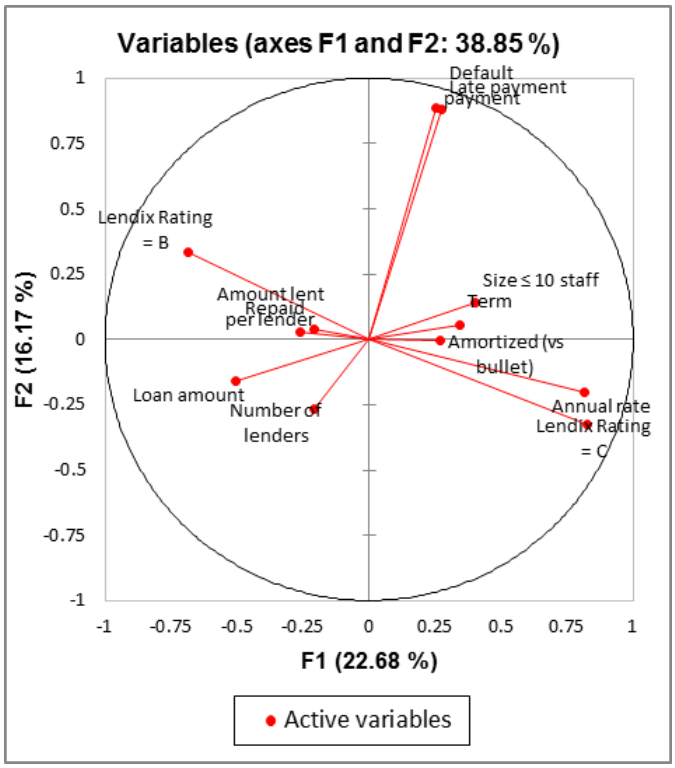
In the below corresponding chart, the eigenvalue for each factor is provided, together with their cumulative variability. As the cumulative percentage of the first two factors is quite low (they represent less than 40% of the variability of the data), any interpretation shall be counter-checked with the information provided in the correlation matrix (Pearson (n)).



On that basis, a table providing the correlation coefficients between the initial variables and the factors is produced. This is the essential outcome of the PCA method based on which the corresponding graph allowing interpretation will be generated.

	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12
Loan amount	-0.506	-0.159	0.513	-0.353	0.161	0.331	0.058	0.253	-0.208	-0.290	0.005	0.004
Annual rate	0.815	-0.205	0.139	-0.106	-0.034	0.245	0.029	-0.152	0.356	-0.189	-0.012	-0.122
Number of lenders	-0.210	-0.268	0.623	-0.476	-0.311	-0.077	0.181	0.085	0.212	0.285	-0.001	-0.006
Amount lent per lender	-0.209	0.038	-0.091	0.290	0.731	0.426	0.269	0.123	0.172	0.171	-0.001	-0.015
Term	0.343	0.057	0.411	0.334	-0.250	0.623	-0.240	-0.202	-0.174	0.128	0.000	0.054
Lendix Rating = B	-0.686	0.333	0.108	0.308	-0.256	0.043	0.126	-0.191	0.392	-0.167	0.010	0.099
Lendix Rating = C	0.826	-0.324	-0.082	-0.320	0.227	-0.023	0.095	0.042	0.078	-0.044	0.016	0.182
Size ≤ 10 staff	0.403	0.142	-0.209	0.317	-0.558	0.146	0.441	0.370	-0.100	-0.024	0.003	-0.005
Amortized (vs bullet)	0.269	-0.003	0.464	0.545	0.126	-0.295	-0.319	0.425	0.171	-0.022	0.002	0.009
Late payment	0.273	0.881	0.137	-0.267	0.095	-0.010	-0.004	0.022	0.002	0.017	0.221	-0.013
Default payment	0.255	0.885	0.137	-0.269	0.095	-0.017	0.009	0.041	0.001	0.008	-0.221	0.011
Repaid	-0.261	0.030	-0.560	-0.372	-0.234	0.373	-0.375	0.307	0.222	0.042	0.001	0.010

Hence, for visualisation and interpretation purposes, the below graph is produced, where the first two factors F1 and F2 are used as axes. In this context, only the variables having their representation point far from the centre should be considered for interpretation as, for those close to the centre, some information may be carried by other factors, hence it might be hazardous to interpret them unless the information is confirmed by looking at the correlation matrix (Pearson (n)).



Accordingly, while it can be seen that the variables can be clustered in three main groups of variables that behave similarly, it is also confirmed that Late payment is highly positively correlated with Default payment, as is the case for the Annual rate with grade C, though to a lesser extent, and that the latter is highly uncorrelated with grade B. For the other variables, interpretation should be cautiously made as their points are relatively close to the centre. In addition, it clearly shows that the factor F1 is driven by the Annual rate (0.815) and that the factor F2 is driven by defaults in general (0.881 for Late payment and 0.885 for Default payment) while the other variables are not correlated thereto. Through this PCA, it is therefore established that the variables having the highest representation are Late payment and Default payment.

On that basis, a logistic regression was launched, where these two variables joined together were used as being the dependent binary variable, with a confidence interval of 95%. As can be seen in the second table below which provides the model parameters, the regression predicts that there are two variables ($Pr>Chi^2$ less than 10%) that significantly impact the probability of default, namely the Number of lenders per loan and the Term of the loan.

Variable	Categories	Frequencies	%
Default or Late	0	311	96.584
	1	11	3.416

Source	Value	Std error	Wald Chi²	Pr > Chi²
Intercept	**-29.428**	10620.345	0.000	**0.998**
Loan amount	**0.000**	0.000	0.026	**0.873**
Annual rate	**-21.263**	53.709	0.157	**0.692**
Number of lenders	**-0.006**	0.003	3.362	**0.067**
Amount lent per lender	**-0.001**	0.002	0.669	**0.413**
Term	**0.064**	0.033	3.653	**0.056**
Lendix Rating = B	**16.301**	2194.676	0.000	**0.994**
Lendix Rating = C	**16.622**	2194.677	0.000	**0.994**
Size ≤ 10 staff	**-0.224**	0.690	0.106	**0.745**
Amortized (vs bullet)	**11.104**	10391.108	0.000	**0.999**

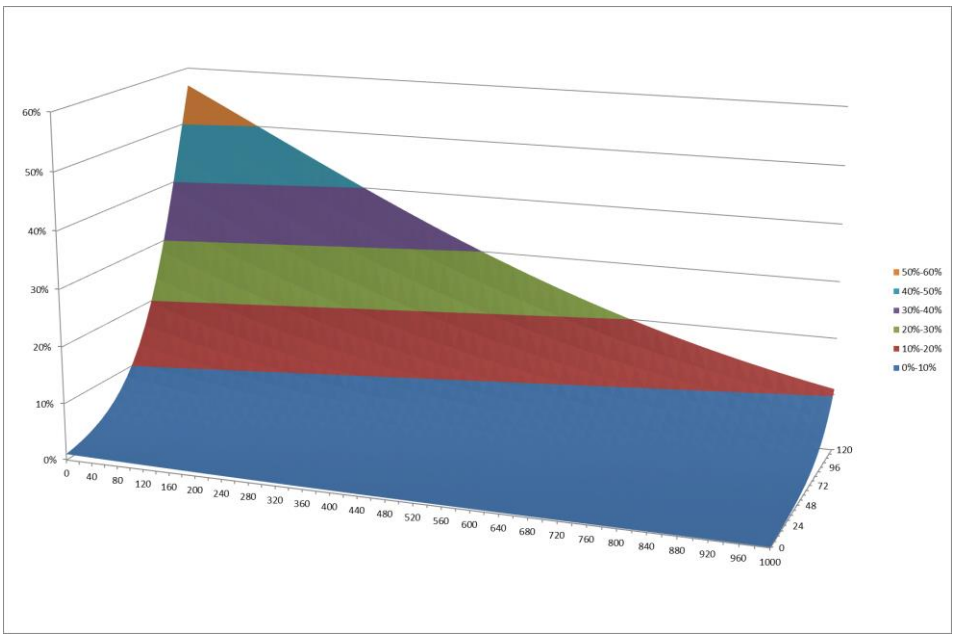
While it has already been demonstrated that the maturity of the loan affects the probability of default, and more specifically that the longer it is, the higher the risk is that the borrower will encounter problems in paying back (Jackson et al. (1999)) [xxxvii], the idea that the number of lenders per loan has an impact on the probability of default is quite new.

On that basis, a second logistic regression was processed on these two variables only, where the same binary variable is used, which generated the following model parameters and final model:

Source	Value	Std error	Wald Chi²	Pr > Chi²
Intercept	**-4.54E+00**	1.290	12.378	**0.000**
Number of lenders	**-2.37E-03**	0.001	4.073	**0.044**
Term	**4.01E-02**	0.024	2.815	**0.093**

Pred(Default or Late) = 1 / (1 + exp(-(-4.54-2.37E-03*Number of lenders+4.01E-02*Term)))

This model clearly establishes that **the greater the number of lenders, the lower the probability of default is**, as graphically represented below, where a construction of the space of all possibilities (maillage) is included:



In this context, it would be worth re-performing such an analysis in a few years time, when a sufficient number of loans have matured, in order to verify whether this finding proves true.

10. CONCLUSIONS AND RECOMMENDATIONS

The purpose of this thesis was to compare the business model of microfinance with that of crowdlending, using the traditional loan as a benchmark, in order to answer the question of its self-sustainability in a context, where Fintech is playing an increasing role. In the introduction, the rationale for the existence of MFIs was provided, i.e. the exclusion by traditional banks of micro-entrepreneurs because of the riskiness of their small projects, which are so informationally opaque that lending would be too costly for the banks.

In the next sections, a complete description of each business model was provided, where the advantages and drawbacks were highlighted and the legal framework outlined. In particular, it was shown that one of the main challenges of the microfinance sector in Europe is the dependency on public funding and the need to develop appropriate measures related to the relative outreach. The culprit is that the current practice of microcredit lending in Europe vary considerably depending on the type of institution providing microloans, its legal setup and the environment in which it operates, resulting in a limited outreach nationwide. In addition, it was also explained that transparency should be further improved, with the development of a dedicated database, where the financial and social performance of all existing MFIs shall be published.

In this context, the factors indicating the self-sustainability of the MFIs in Europe were also analysed and the findings presented. In particular, it was concluded that (i) it is still difficult to assess the true profitability of the European MFIs because public aid is embedded in the interest rate they apply and (ii) there is a lack of harmonised statistical data such as the RoE or RoA for all types of European MFIs that would allow a proper comparison, where the failure to streamline the legal framework at an EU level in the short term is triggering the future of the activity in its current form, notably because of the introduction of alternative financing models using Fintech, such as crowdlending, which jeopardize the development and sustainability of MFIs.

In the following section, it was actually demonstrated that crowdfunding is a phenomenon that is exponentially growing and that crowdlending is the most important crowdfunding source in terms of raised funds with further perspectives because of the increased institutional activity in the space. The reason behind is the drastic reduction of fixed costs permitted thanks to Fintech and the increasing lack of trust in the banking sector from the public. In this context, it was demonstrated that Fintech could indeed be beneficial to the microfinance sector through the implementation of partnership strategies between the MFIs and crowdlending platforms, as is the case of Babyloan.org, which was described in more details in this respect.

A case study analysing the loan portfolio of such a crowdlending platform was thereafter provided with the aim of testing its profitability. While it was not possible to answer the question because of too recent data (most of the loans are still ongoing), it was found out that the number of lenders per loan has an impact on the probability of default, i.e. the greater the number of lenders, the lower the probability of default is. This interesting finding seems to be an idea that was not yet demonstrated until now.

In conclusion, the profitability of European MFIs is seriously triggered by their dependency on public funds and the regulatory framework they operate in, which prevents them to increase their outreach cross-border. On the other hand, while crowdlending still represents a negligible portion of the total size of the global banking sector, it is to be acknowledged that Fintech makes it possible to finance micro-enterprises, in particular through partnerships between MFIs and crowdlending platforms, as it allows a drastic reduction of fixed costs. Thus, SMEs and more specifically micro-enterprises can now access new funding opportunities, without relying on microfinance only. In the long run, it is expected that the industries converge since incumbents will have to adapt to and take technological changes into consideration. The recent consultation process launched by the EC acknowledges this trend, where the following is stated in the consultation document they issued in this respect when it comes to the funding from the crowd through social media and automated matching platforms[lx]:

"The combination of crowd-based activities, social media and automated matching platforms that apply innovative technology (e.g. cryptocurrencies, big data analytics) may significantly change the way consumer/SME credit is contracted and the way equity investment flows into start-ups, scale-ups and SMEs more generally. Non-bank financing, including peer-to-peer/marketplace lending, reward and investment (or equity) crowdfunding, as well as e-commerce finance, invoice and supply chain finance platforms, is offering new channels of access to finance for individuals and small companies facing difficulties to tap the traditional banking channels, especially due to the lack of appropriate collateral or provide historical credit information (e.g. low income borrowers or start-ups)."

This finding should lead the MFIs to foster the Governments adopt specific laws and to invest in Fintech in order to reduce their operating costs and increase their outreach.

In this respect, it is recommended to re-perform such an analysis in a couple of years, when more data from crowdlending platforms are available and when a sufficient number of loans matured, in order to verify whether more MFIs have taken Fintech on board and whether this trend continues.

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