ANALYSIS OF THE BUSINESS MODELS OF CROWDFUNDING PLATFORMS

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PREFACE

Als sluitstuk voor mijn opleiding Handelswetenschappen met afstudeerrichting Finance en Risicomanagement kreeg ik de unieke kans om een boeiend onderwerp te kunnen onderzoeken die mij een tal van leerrijke ervaringen heeft opgeleverd.

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1   INTRODUCTION

1.1   Objective of this study

This thesis analyzes the key components for the business models of crowdfunding platforms (CFPs) based on equity, debt and hybrid forms. The goal of this study is to understand how a CFP designs its business model in a way by choosing certain strategies and features in order to generate revenues to survive and to sustain in its competitive atmosphere.

The crowdfunding literature mainly theorizes about the economics of crowdfunding platforms and campaign success. However, few literature is found which analyzes how platforms operate within their business models: how they generate revenue and how they stay competitive in its sector. In short, it seems that the crowdfunding literature is lacking platform perspective. Rossi and Vismara (2017) further confirm this by stating that less attention has been devoted to platform activities but many papers have addressed the determinants of campaign success (e.g. Ahlers et al. 2015).

According to Dushnitsky, Piva and Rossi-Lamastra (2020) not a lot is known about the strategic use of pricing and non-pricing decisions of CFPs. Therefore, this analysis of business models of CFPs hopes to add value to the crowdfunding literature. As also concluded by the literature review of Moritz & Block (2016), studies based on empirical market data are still rare. Hence, this study also brings value to the empirical space of the crowdfunding literature. The results are of interest for crowdfunding platform operators seeking to make their platform more competitive. But also for scholars, policymakers, entrepreneurs and investors interested in the ins and outs of the investment-based business models of crowdfunding.

The structure of this thesis consists of the following components. First, an introduction to crowdfunding is given. Next, a literature review is made in which a theoretical analyses of the business models of investment-based CFPs is discussed. Afterwards, variables found in the literature and by screening CFP websites are empirically tested. Lastly, a conclusion is formed which discusses the findings, limitations and ideas for future research.

1.2   An introduction to crowdfunding

The crowdfunding phenomenon has become increasingly popular for investors, policy makers, academic scholars but most importantly entrepreneurs seeking seed capital. Collins and Pierrakis (2012) explain that crowdfunding mainly exists on the internet as web-based crowdfunding platforms (CFPs) in which it can amass users at a very low cost. Especially together with the growth of social media, these platforms have become more attractive. The entrepreneurs looking to raise funds are able to connect with potential investors from the crowd. This significantly alters the traditional process for founders to raise capital by utilizing the services of institutions and it has also been referred to as 'the democratization of entrepreneurial funding' (Harvilicz, 2015).

According to Gałkiewicz & Gałkiewicz (2018) who based their data on 2017, there are more than 2000 CFPs active worldwide. To emphasize on the emergence of crowdfunding, some statistics are selectively picked from the global benchmarking report from the Cambridge Centre for Alternative Finance (CCAF, 2020)[1]. Worldwide, based on 171 countries, the size of crowdfunding in USD consists of $304.53 billion. Growth of 108.6% in 2016 was observed, in 2017 44.5% and -27.3% in 2018. Making its all-time-high $419 billion. However, China has to be taken into consideration since it accounted for 85.5% of the worldwide market in 2017. Additionally, large scale frauds were happening at the time of decline and more stricter regulations from China were put in place. Therefore, a distinction is kept between China and the rest of the world in order to gain more insights. **Figure 1** shows a visual presentation of the overall worldwide crowdfunding volumes from 2015 until 2018, excluding China. A more substantial growth is observed from $44 billion (2015), $47 billion (2016), $60 billion (2017) to $89 billion (2018). With China included, the size of crowdfunding is projected to almost triple in 2025. Besides China being the top country of volume for crowdfunding with a 70.73% market share, the United States scores second with a market share of 20.07%, United Kingdom scores third with a market share of 3.40%. The Netherlands are in fourth place with a market share of 0.59% and Indonesia is on fifth place with a market share of 0.48%.

*Figure 1: Total Worldwide Crowdfunding Volumes Excluding China (2015-2018)*

SOURCE: CAMBRIDGE CENTRE FOR ALTERNATIVE FINANCE (2020)

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[1] The Cambridge Centre for Alternative Finance (CCAF) report is published in April 2020 but it is based on data from 2018.

Collins and Pierrakis (2012) have clarified four general steps within the process of crowdfunding. Briefly summarized, the fundraiser makes first an application to a platform, hence, the platform decides which project is allowed on the site. The second step is the fundraising phase, the fundraiser creates their pitch with relevant information to the fundraising and within a certain time frame. Third, when a set target has been reached (or not) by the end of the period, they receive the funds following further vetting by the platform. However, if the campaign fails to reach the target within the determined time frame, funds can be returned to the investors. This step depends on the type of payout model the platform uses or, if available, according to the fundraisers choice of payout. **Table 3** represents a description of the four payout models known in the literature. The final step is post-investment. Here, the investor can choose to stay in contact with the business or even receive voting rights (i.e. equity-based crowdfunding). According to Tomczak and Brem (2013) there are two different types of fundraising in crowdfunding known as direct and indirect. Direct crowdfunding means when fundraisers directly try to attract funding from a known audience via their own platform. With indirect crowdfunding, the fundraisers usually don't know the general public or 'crowd' and try to attract people for funding through an intermediary platform.

Many restricting rules and regulations on capital markets as a reaction to the financial crises, such as the dot.com crisis of 2000 and the banking crisis of 2008, have been mainly a threat to the small and medium-sized enterprises of the economy (The Economist, 2013). Perhaps of these difficulties, one of the reasons a new process for obtaining capital has emerged in response to the current ineffective institutionalized capital markets (Caldbeck, 2013). **Figure 2** also shows the stages of entrepreneurial firm development where crowdfunding can provide opportunity (Cumming and Johan, 2009). The 'Valley of Death' mentioned in this figure indicates a gap where small business or startups often fail to acquire enough capital to survive which can lead to bankruptcy. This dangerous gap can be filled by using innovative funding channels such as crowdfunding.

Figure 2: Stages of entrepreneurial firm development.
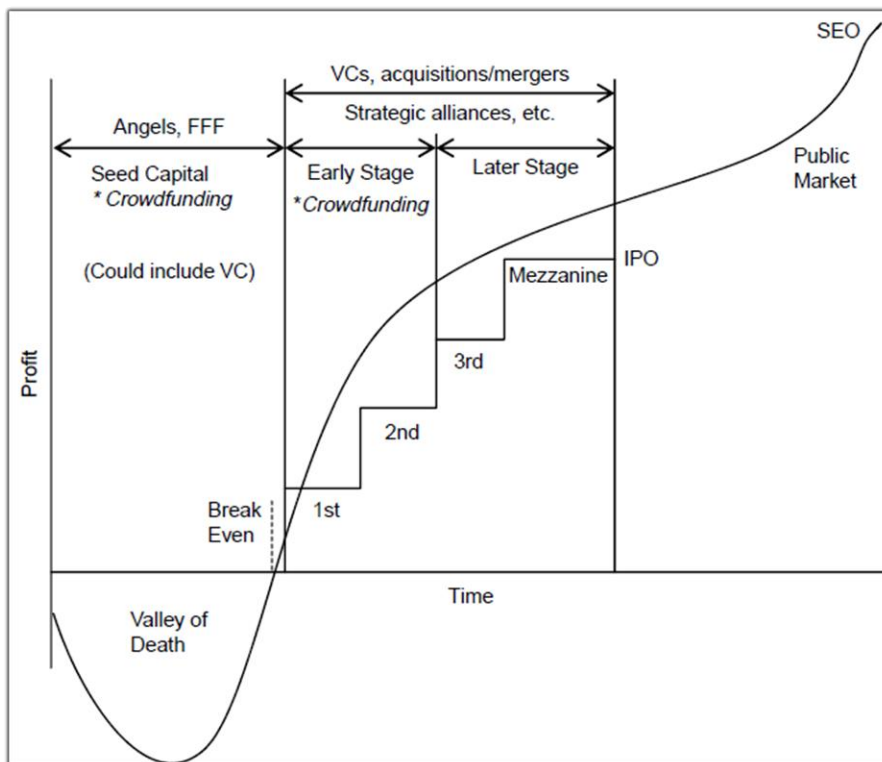
2 A THEORETICAL ANALYSIS OF CFP BUSINESS MODELS

In this theoretical analysis, the crowdfunding business models are examined. First a general overview of business modeling of the crowdfunding industry is discussed. Afterwards, a description for each model will be given and the characteristics of each investment-based CFP will be examined further. The goal of this theoretical analysis is understanding how a CFP designs its business model by choosing certain strategies and features in order to sustain in its competitive atmosphere and become more successful.

As discussed further in this study, investment-based CFPs are analyzed in this thesis. In this particular crowdfunding process, there are three main actors involved (Rossi and Vismara, 2017). These are the supply side (which include the investors of the platform), the demand side (which includes the entrepreneurs seeking capital) and the platform side (serving as intermediaries between supply and demand).

2.1 Business models and strategies of FinTech transaction platforms

Before a theoretical analysis on crowdfunding business models can be made, a clear foundation on what a business model actually means should be formed first. A literature study of Zott, Amit and Massa (2011) give a clear understanding on e-business models. The term 'e-business' essentially stands for 'doing business electronically' and encompasses e-commerce, e-markets and internet-based businesses. The latter is relevant to this study because it entails CFPs (Ferrarini, 2017). A definition of the e-business model can be described as the following: *"A business model articulates the logic, the data and other evidence that support a value proposition for the customer, and a viable structure of revenues and costs for the enterprise delivering that value"* (Teece, 2010, p. 179). Zott, Amit and Massa (2011) concluded that the business model is a combination of value proposition, a revenue model and a network of relationships. According to Assadi (2020) a clear differentiation has to be made with the business model and its strategic position. The author concludes that a strategy defines the foundations for effective value creation for both customers and firms while a business model outlines the specific way of creating value for them. They are tightly intertwined but not equal.

To declare how organizations compose their business models and to achieve platform success following their model, a business model canvas (BMC) developed by Osterwalder and Pigneur (2010) can be used to define it in more details. The BMC is an effective visual framework for analyzing a business model and encompasses nine components. These are: Partnership and Collaboration, Processes and Activities, Resources and Systems, Product and Services, Customer Experience, the Channels (such as social media), the Market (including customers, competitors and regulators), Costs and Investments and Revenue Streams. Nicoletti (2017) used this BMC and applied it to crowdfunding platforms. A visual presentation can be seen in **figure 3**. For organizations of the financial technology (FinTech) industry such as CFPs to be successful, platform operators should take these nine important components into consideration when forming their business model.

Figure 3: The crowdfunding Business Model Canvas.

SOURCE: OSTERWALDER AND PIGNEUR (2010); NICOLETTI (2017)

Surprisingly, 'risk management' is not included in this BMC. However, it should be considered as an important component because according to Parmentier and Gandia (2017) platform success is also based on the capacity to keep credit risk low and the ability to have a low and slim cost structure with a stable source of recurring revenues. This includes due diligence and risk management on their fundraisers and follows the same reasoning. Cumming, Johan & Zhang (2019) proved that offering due diligence increases campaign success. Therefore, an additional 'point' about risk management could be added under the 'Costs and Investments' component.

An essential concept reviewed in this study are the attributes of the Financial Technology (FinTech) industry. The LASIC principles composed by Lee and Teo (2015, p. 5) describe them as "important attributes of business models that can successfully harness financial technology to achieve the objective of creating a sustainable social business for financial inclusion". These principles are briefly summarized and follow the reasoning of Lee and Teo (2015):

Low profit margin   These platforms are commonly dependent on a high network of users. High network effects are a common need in the FinTech industry and requires an initial phase of critical mass accumulation. The process of obtaining a high amount of users is costly and requires much marketing efforts before monetization is possible. According to Lee and Teo (2015), users tend to look for the lowest prices or are even unwilling to pay for some services or products. Therefore, profit margins will remain low at the user level. When a large mass of users are attained, platforms can then capitalize on high volumes.

Asset light   Businesses possessing this capability are able to innovate and scale without incurring large fixed costs and assets. In other words, they

possess low marginal costs which also aligns with the low profit margin principle.

Scalability In order to fully benefit from high network effects, the business has to be scalable. The ability to scale without drastically increasing costs and diminishing efficiency of the technology, is an essential factor.

Innovative This principle applies to products and operations. Lee and Teo (2015) emphasize on the use of mobile technologies and internet services.

Ease of compliance Businesses with high compliance regimes are disadvantaged with high capital requirements and restricted innovative progression. This is a trade-off of a tight regulatory environment. The main advantage of operating in a lightly regulated atmosphere is that less resources are spent on compliance activities.

In a literature review of Dushnitsky, Piva and Rossi-Lamastra (2020), the authors identified six pricing strategies and differentiated two groups. The authors focused their study on only CFPs in relation with platforms' performance. According to these authors, the following strategies are generally used by transaction platforms. According to Rochet & Tirole (2003), transaction platforms create value by facilitating the exchange of products and services between participants, and additionally its network effects. Therefore, the use of these strategies are of importance to CFPs as well. The grouping and terminologies of these strategies will be briefly explained.

The first group consists of the "pricing strategies". The premise of this group of strategies is to charge fees to its participants. There are generally known to be three pricing strategies: subscription fees, transaction fees and fee-allocation.

Subscription fees Subscriptions are used to participate on a platform (Caillaud & Jullien, 2003). But it also implies changes in performance (Dushnitsky, Piva and Rossi-Lamastra, 2020), as it can determine the growth in number of participants and the quality of offerings which can reduce the transactions on the platform. However, according to Belleflamme, Omrani and Peitz (2015), subscription-based business models are not used much by CFPs.

Transaction fees Transaction fees, also called "interchange fees" or "usage fees" are fees charged on participants who wish to transact through the platform (Evans & Schmalensee, 2008; Dushnitsky, Piva and Rossi-Lamastra, 2020). The fee can be interpreted as a percentage of transaction value or as a fixed amount. Dushnitsky, Piva and Rossi-Lamastra, (2020) observed an alternative form of transaction fee, called a "success fee" (used by e.g. Kickstarter, an appreciation-based platform), where transaction fees are only taken into account when a project is successfully funded.

Fee-allocation The platform has to determine which side of participants on the platform (the investors versus fundraisers) has to be charged fees and also to what extent. This is a common optimization problem for intermediary platforms. (Rochet & Tirole, 2006; Dushnitsky, Piva and

Rossi-Lamastra, 2020). As quoted from the study of Rochet & Tirole (2006, p. 648): "Managers devote considerable time and resources to figuring out which side should bear the pricing burden, and commonly they end up making little money on one side and recouping their costs on the other". It is therefore of importance to analyze the price-sensitivity of each group and apply fees accordingly. Additionally, the low profit margin principle discussed by Lee and Teo (2015) further clarifies the case of price-sensitivity. CFP operators must be cautious in monetizing a particular side of users with the intention of requiring wanted network effects.

The second group of strategies is non-pricing strategies. Unlike the use of fees, these strategies are more involved in the design of the platform. Three types of non-pricing strategies are identified by Dushnitsky, Piva and Rossi-Lamastra (2020): accessibility, inclusivity and bundling.

Accessibility   Accessibility regulates the access to the platform. It can be seen as a filter mechanism that tries to find suitable participants (Boudreau & Hagiu, 2009). Examples of accessibilities are: the languages the platform opts to use and the payment systems supported by the platform.

Inclusivity   Inclusivity refers to the scope of products and services the platform chooses to support across the sectors of the economy. CFPs can strategically choose to support only one or a few sectors (e.g. Crowdahouse which focuses only on real estate projects) or, in the contrary, a wide variety of sectors across the whole economy (e.g. Crowdfunder).

Bundling   Bundling is based on the functionality of the platform, in other words, the features the platform has to offer for its participants. According to Cennamo & Santalo (2013), bundling defines a platform's market identity. For the purpose of becoming more unique, doing the contrary (unbundling), can be seen as a strategic move as well. In the research of Dushnitsky, Piva and Rossi-Lamastra, (2020), the authors considered bundling as when the platform offered more than one crowdfunding type. Therefore, for this study, when bundling is mentioned, it will be considered as hybrid-based crowdfunding.

Another success factor for CFPs is having enough active participants on the platform. If there aren't enough participants, be it on the investor-side or on the fundraiser-side, the platform will struggle to survive. Hornuf and Schwienbacher (2014) found that platforms which provide a small minimum share price or a small pooled investment vehicle are able to attract a larger number of investor participation. This has the same effect for debt-based investment vehicles like profit-participating loans.

It is also worth noting the importance of partners. Especially for new crowdfunding platforms. A study of Au, Tan and Sun (2020) analyzed a Chinese crowdlending platform (Tuodao) which became one of the biggest P2P lending CFPs of China in 2019. One of the success factors were having the right partners to provide for each deficit the platform encountered. It utilized institutions for external funding and partners who provided data on fundraisers for evaluation

purposes. Eventually, the CFP grew enough to lessen the amount of partners needed, it accrued enough data to perform evaluations such as due diligence and pre-screening.

Rossi and Vismara (2017) documented the services offered by CFPs by analyzing 127 platforms, they make a differentiation between services offered pre-launch, ongoing and post-launch. They investigate for the first time in investment-based crowdfunding literature the determinants of platform success. They concluded that a high number of post-launch services increases the campaign success rate. Cumming, Johan & Zhang (2019) analyzed the due diligence of platforms based on 285 observations. This mainly comprises background checks, site visits, credit checks, crosschecks, account monitoring, and third party proof on funding projects. They found that due diligence is related to legislation requirements, platform size and the complexity of crowdfunding campaigns. The authors also concluded that performing a thorough due diligence will further enhance the success rate of campaigns and increase funding volumes as well.

2.2   The crowdfunding models

Beaulieu, Sarker & Sarker (2015) have identified almost 700 papers related to crowdfunding and derived six different types of crowdfunding models: private equity, royalty, microfinance, peer-to-peer lending, rewards and donation. However, they found the nomenclature to be inconsistent which leads to confusion for researchers and readers alike. Therefore, this study opts to use the terminology of the authors work. For further facilitation of the nomenclature and this study, the classification of the six crowdfunding models, done by the authors, will also be followed. The crowdfunding models are grouped in three categories and referred to as crowdfunding models based on equity, debt and appreciation. A brief description for each crowdfunding type is given in **table 1**. The CFPs studied in this thesis are based on equity, debt and hybrid forms. This particular category of crowdfunding types are also called 'investment-based' CFPs, because the investor of a fundraising campaign can expect a monetary benefit unlike the appreciation-based platforms (Belleflamme, Omrani & Peitz, 2015). Appreciation-based CFPs will also be briefly explained in **table 1** but a theoretical analysis won't be formed.

Table 1: a description of the six types of crowdfunding models.

Equity	Private equity model	The offering of securities by a privately held business to the general public. The model permits anyone to acquire a share in privately held businesses. (Collins & Pierrakis, 2012)
	Royalty model	Founders with a project that has the ability to generate income over time (Beaulieu, Sarker & Sarker, 2015). For example, sharing the revenues in sales of a particular project.
Debt	Peer-to-Peer (P2P) lending model	Supports personal loans and small business loans. Backers receive their principal back with interest in exchange for their contribution. (Beaulieu, Sarker & Sarker, 2015)
	Microfinance model	Founders pay loan interest to the intermediaries. However, no interest is paid to the backer who simply receives their principal back, which can then be withdrawn from the platform or lent to someone else in need. (Beaulieu, Sarker & Sarker, 2015)
Appreciation	Rewards model	Founders offer "rewards" in return for a backer's donation. The crowdfunding website allows the founder to specify different rewards for different levels of donation. (Beaulieu, Sarker & Sarker, 2015)
	Donation model	Donation models of crowdfunding share aspects of other models yet are unique in that the backer does not receive anything in return for their donation other than gratitude from the founder. (Beaulieu, Sarker & Sarker, 2015)

According to the statistics of CCAF (2020), when excluding China, over 90% ($27,9 billion) of investment-based crowdfunding is considered debt-based. The United States of America (USA) consists of 56%, the United Kingdom (UK) consists of 18%, the Asia-Pacific region (excluding China) consists of 11% and Europe consists of 8%. These are the top geographies driving debt-focused business financing.

The equity-based model volumes account for $2.5 billion globally, excluding China. Interestingly, Chinese volumes in this category accounted for less than 1% of the global activity. The biggest volumes of equity-based funding are mainly dominated by the U.K. ($852 million) and the U.S. ($842 million) for small businesses. However, the USA focuses more on Real Estate Crowdfunding.

The appreciation-based or also called non-investment models have only a 1% ($1.52 billion) market share globally. With reward-based platforms having more volumes (58%) than donation-based platforms (42%). This is also with China excluded.

A visualization of these statistics can be seen in **Figure 4.**

Figure 4: Breakdown of business funding by category, excluding china.
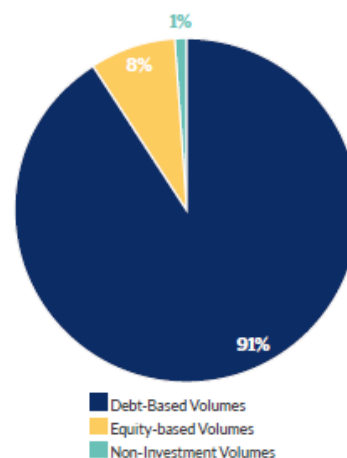
SOURCE: CAMBRIDGE CENTRE FOR ALTERNATIVE FINANCE (2020)

Figure 5 shows the global volumes of the known crowdfunding types acknowledged by the CCAF (2020) report, this indicates how many crowdfunding models generally exist. The main investment-based crowdfunding models, based on this figure researched in this study are:

Debt-based platforms:
− P2P businesses lending models, this includes balance sheet business lending. This study differentiates four general business models for P2P lending and will be discussed further. Debt-based securities are also included.

Equity-based platforms:
− Equity-based Crowdfunding, including the revenue-sharing model

Hybrid-based platforms:
− A combination of the aforementioned debt-based models and equity-based crowdfunding models.

Figure 5: Global Volume by of alternative financing models in 2018, USD.
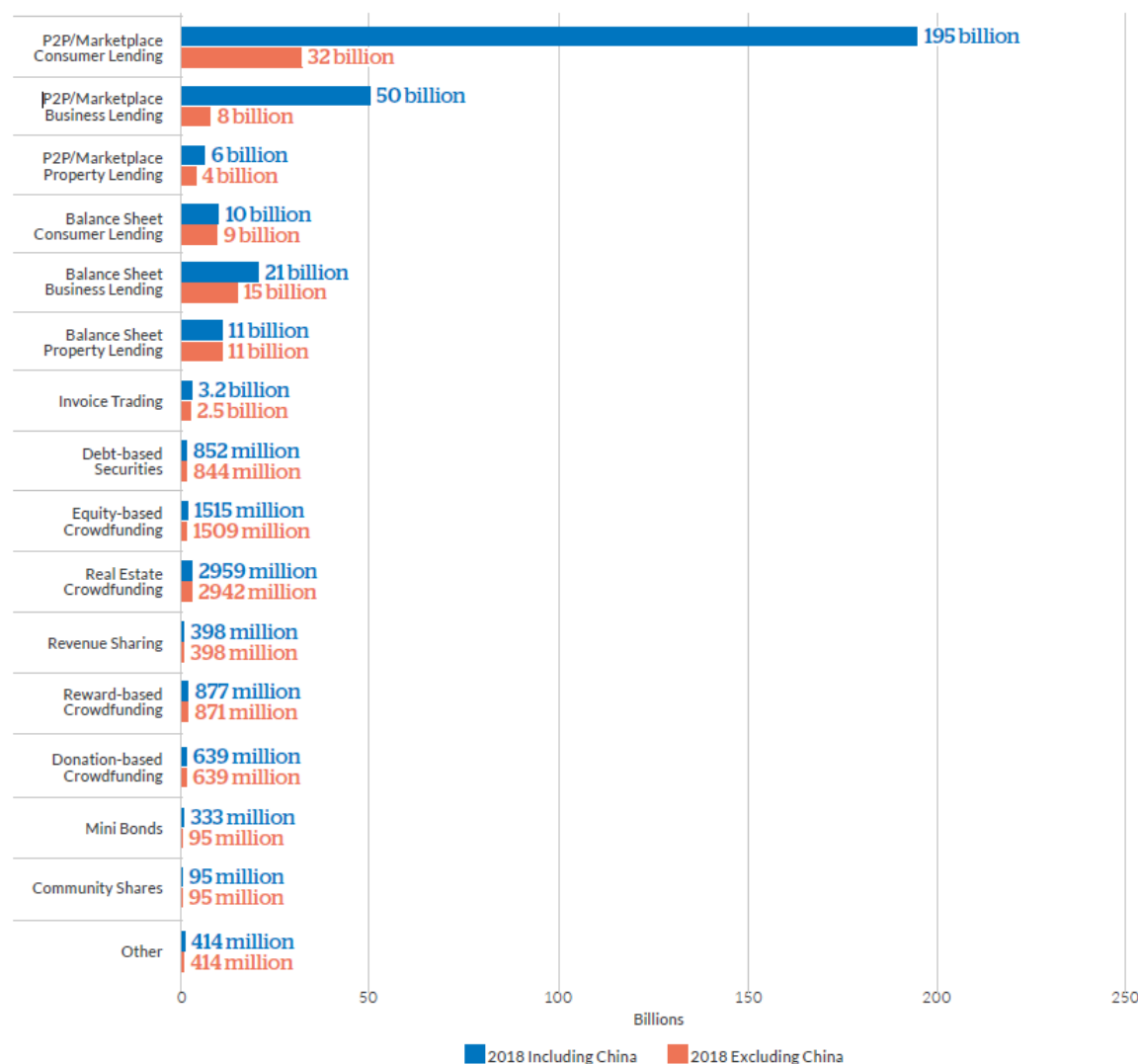
2.2.1 CFP characteristics of the debt-based business model

Debt-based CFPs facilitate loans by playing an intermediary role between individual lenders and borrowers (Bachmann et al., 2011). This study focuses on investment-based CFPs, therefore only P2P lending related to businesses will be examined further. According to CCAF (2020) the market share of the alternative finance lending globally encompasses 17% ($50,33 billion) for P2P business lending and 7% ($21.08 billion) for balance sheet business lending. When China is excluded, this same business lending category changes to a 9% ($7,59 billion) for 'P2P business lending' and 7% ($14.95 billion) market share for 'balance sheet business lending'. According to CCAF (2020), the P2P business lending model and the balance sheet model are closely linked. Most firms operating under these type of models appear in mixed forms.

The graph of **figure 5** offers more insight on the discussed statistics. However, P2P lending studied in this thesis does not only exist out of traditional P2P lending and balance sheet lending, this will be discussed more in detail below. A report from the Committee on the Global Financial System (CGFS) and the Financial Stability Board (FSB) (2017), describes four P2P business models. These four models will be briefly summarized in the following paragraphs, and are based on this report. An emphasis on platform perspective is taken into account.

2.2.1.1 Traditional P2P lending model

In this business model, individual loan contracts are established between borrowers and creditors directly, rather than with the platform. For this reason, funds of lenders and loan repayments of borrowers are excluded from the platform's account. In addition, the platform operator earns its revenue from fees charged on the transacting parties. These fees consist of account setup, loan origination and ongoing loan repayments. More details regarding the operation of a traditional P2P lending business model is summarized in **figure 6.**

Figure 6: Stylized traditional P2P lending model.
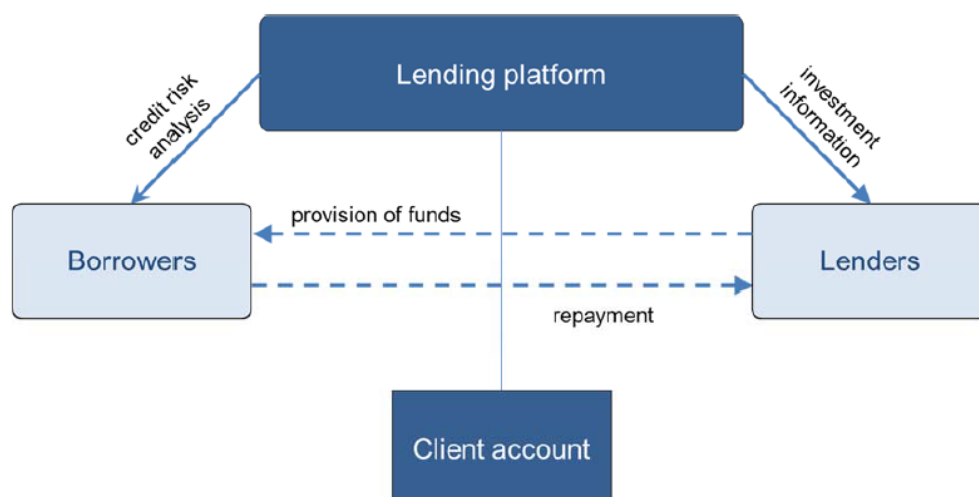
SOURCE: COMMITTEE ON THE GLOBAL FINANCIAL SYSTEM & FINANCIAL STABILITY BOARD (2017)

For traditional P2P lending, the risk of the lender is placed on the borrower, therefore, if a loan defaults, the investor loses capital. For P2P business models in general, platforms can provide an additional service by offering credit risk assessment. Credit risk assessment is usually condensed into a single credit rating and sourced from external providers or generated by the platform's own grading system. An example for platforms to reduce lenders' risk is to

encourage diversification. By investing in multiple loan applications lenders are able to spread their risk more effectively. This can be automatically facilitated by providing exposure to multiple loans through an auto-select tool. This automatic process is based on the lenders risk-appetite and the investment duration. According to CCAF (2020), an average of 57% of platform users of business P2P lending platforms worldwide use auto-selection or auto bidding.

In a literature study of Omarini (2018), the author describes two models in which the financial requests of borrowers and lenders are matched:

<u>Diffused model</u>	If a debt-based platform opts for a diffused model, it actively selects loans and matches them with borrowers and lenders. In addition, the platform has to follow guidelines set by the lender. These guidelines contain conditions such as risk appetite, the expected return and management of the lend amount. According to the author this type of model provides a high probability that borrowers acquire funding and in a short time.
<u>Direct model</u>	Each investor chooses a loan available on the platform. The investors also choose the amount to be lend to each borrower. The author states that this model is more time-consuming for investors and also does not ensure sufficient diversification, which a diffused model does offer.

Determining the interest rate on each loan is one of the essential components of P2P lending and, as quoted from CGFS and the FSB (2017, p. 12): "is central to the efficient functioning of an online market".

The process of determining interest rate can be done in three different approaches:

<u>Reverse auction</u>	A minimum interest rate is set by a lender and a maximum interest rate is set by a borrower. When the two interest rates correspond, there is a match. (Milne and Parboteeah, 2016)
<u>Automatic matching</u>	The platform sets the interest rates and then combines the loans according to the risk-appetite and return required by the lender. (Milne and Parboteeah, 2016)
<u>Reverse auction on all loans</u>	Similar to the reverse auction model; borrowers set a maximum interest rate, lenders set a minimum interest rate and the platform matches compatible bids and offers. However, this does not account for the same loan, but on all loans offered by the platform. This mechanism is also similar to the stock market order book. (Davis and Murph, 2016).

According to CGFS and the FSB (2017), other common services most debt-based CFPs provide include:
- free early loan repayment,
- debt collection,
- credit loss insurance, provision fund and
- a secondary market option where loans can be traded.

2.2.1.2 The notary model

Similar to the standard P2P lending model but with originators who take care of the borrower-side of the platform by providing loans. This way, platforms are able to focus more on attracting lenders (by i.e. marketing). According to CGFS and the FSB (2017), this model is the most widespread. One of the reasons is because of the regulatory restrictions on non-authorized institutions issuing loans. By using this business model, lending platforms do not directly engage in lending and therefore avoid possible violations of financial law. More details concerning the operation of a traditional P2P lending business model is summarized in **figure 7.**

Figure 7: The notary model
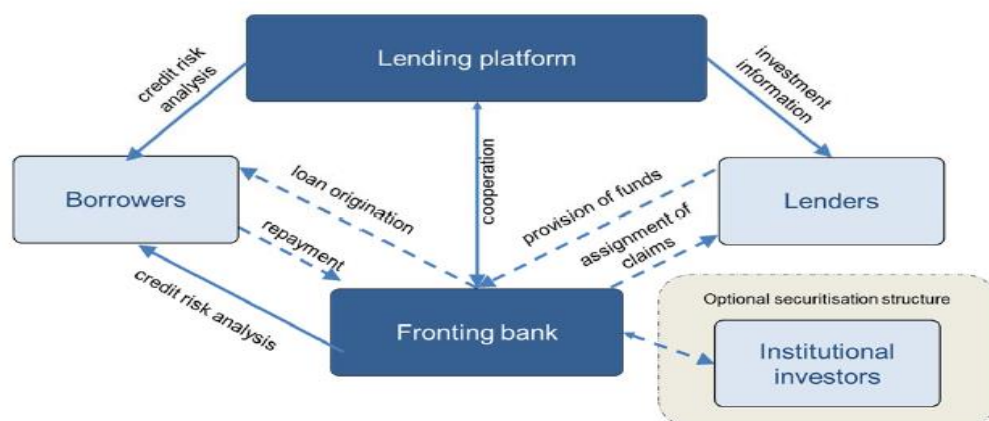
Bank-funded P2P Lending:	A similar case could be made for P2P platform partnering with banks. According to a website article written by Schmidt (2020); in this case, instead of a standard P2P lending procedure, a bank issues a loan to the borrower who also signs a promissory note with the loan terms of the bank. Afterwards, the bank sells the loan to the P2P lending platform which buys it with the raised capital from the platform's lenders. This way, P2P lending platforms are able to circumvent regularizations concerning loan origination. The platform owns the loan, therefore loan repayments of the borrower are send to the platform and not the investor. In this case, the bank and the P2P platform are both intermediaries without credit risk. This credit risk is still applied to the investors. However, investors are still expected to earn a return from the platform.

2.2.1.3 Guaranteed return model

In this business model, the platform guarantees the lenders invested capital and its return. See **figure 8**. A Spanish CFP 'MyTripleA' makes use of this model by additionally offering loans which are insured by a guarantee institution. This way, lenders are guaranteed to earn principle and interest greater than the inflation rate.
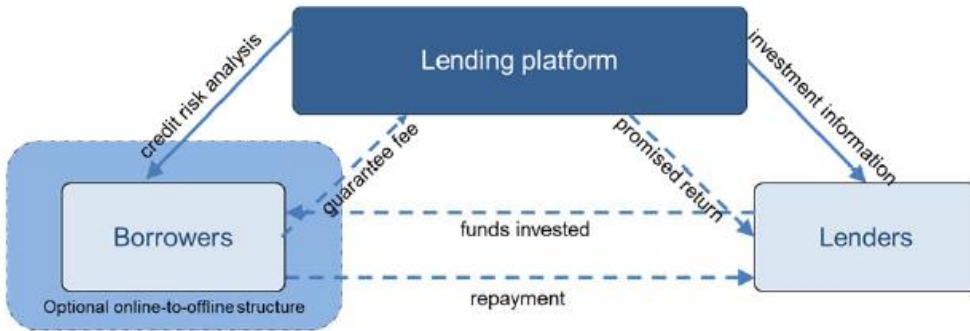
SOURCE: COMMITTEE ON THE GLOBAL FINANCIAL SYSTEM & FINANCIAL STABILITY BOARD (2017)

2.2.1.4 Balance Sheet Lending

According to Schmidt (2020), this form of business model resembles traditional bank lending the most. When a loan is issued through the platform, it will be listed on the platform's balance sheet as a liability. Therefore, the platform will gain credit risk. On the other hand, the platform earns profits from both fees and interest payments accruing on the loan, see **figure 9**.

Figure 9: The balance sheet FinTech lending model
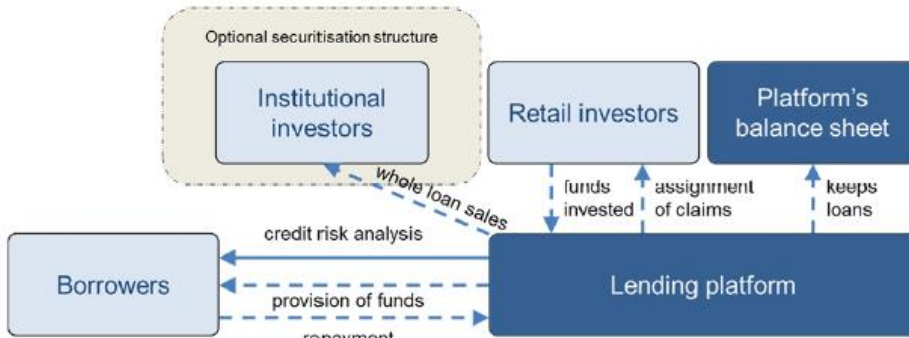
SOURCE: COMMITTEE ON THE GLOBAL FINANCIAL SYSTEM & FINANCIAL STABILITY BOARD (2017)

2.2.2 CFP characteristics of the equity-based business model

As stated in the report of CCAF (2020), equity CFPs relate to activities where individuals or institutions invest in unlisted shares or securities issued by a business, these businesses are typically Small and Medium Enterprises (SMEs). This gives investors the opportunity to invest in companies which are not listed on the stock market.

The crowdfunding literature has theorized about the concepts of equity-based crowdfunding. Briefly summarized by the authors Ahlers et al., (2015); it is a method of financing by which the fundraiser sells an amount of equity such as shares in a company to a group of investors on an internet-based platform. However, literature is scarce about the design and structure of their equity-based business models. A literature study from the authors Mochkabadi and Volkmann (2020) brought some more attention to these aspects with a platform perspective. The following topics are briefly summarized in the following paragraphs.

In order for an equity-based CFP to become successful, the campaigns running on the platform must be successful as well. In the perspective of a platform, in order for a campaign to be successful, the platform must also find the right participants. A study from Löher (2016)

shows that the process of finding the right participants is not a simple task. According to the author, the assessment process from German equity-based CFPs are based on four stages:

1. sourcing deals,
2. screening and evaluation,
3. structuring the deal and
4. preparing the campaign.

In each stage, the platform takes an active role and relies on their networks consisting of business analysts, lawyers, financial service providers, and external accountants. The evaluation process ranges from criteria based on products and economics to human capital. Additionally, Löher (2016) observed that, besides the assessment process, desk research or due diligence that validates the received information from fundraisers is also an essential factor. Furthermore, the author encourages platforms to also support entrepreneurs by communicating with the investors. This helps reducing information asymmetries and therefore increasing transparency. This aspect of transparency cannot be ignored, it has proven to make campaigns become more successful (Mäschle, 2012) and therefore making the platforms earn more revenues. In addition, Braun (2015) addresses the high potential of CFPs' ability to reduce information asymmetries by managing information flow between both sides of the platform and preselecting suitable campaign projects by performing a thorough investigation.

Agrawal, Catalini and Goldfarb (2016) investigate the role of investor syndicates in equity crowdfunding. It is a structure composed of professional 'lead' investors and the 'crowd' investors. According to the authors, this will effectively reduce information asymmetries due to the professional role of the lead investors who perform their own thorough evaluation as well. The CFP 'AngelList' makes use of this method.

The authors Walthoff-Borm, Vanacker and Collewaert (2018) analyzed the shareholder structures of firms financed through equity crowdfunding. CFPs can propose direct or nominee shareholder structures to firms in which the equity crowdfunding process will be proceeded. The authors described the nominee structure as a method in which the nominee has voting rights and direction power over the crowds' shares, hence their shares are held by the nominee which is often the CFP. Regarding the direct ownership model, the authors described this model as when investors are able to hold direct equity of the firm. This means that the investor is able to have voting rights and direction power. However, the CFP has no obligation to protect the investor, hence the shares are not represented by the platform. According to Cumming, Meoli and Vismara (2019), it also depends on the possible investment threshold. When an investor reaches above a certain threshold, A-shares with voting and preemptive rights can be received or B-shares without voting and preemptive rights when they invest below the threshold. Choosing the shareholder structure also impacts the cost and revenue structure of CFPs. A website article written by Mäkelä (2018) describes the nominee structure as rather costly, the holding company must be serviced, which leads to higher accounting and operative costs. Walthoff-Borm, Vanacker and Collewaert (2018) also examined a nominee-structured CFP 'Seedrs'. This CFP utilizes a two-layered fee structure in which the platform implements a 'excess' fee, similar to 'carried interest' (Gompers, Kovner & Lerner, 2009) to stay aligned as nominee with the crowd. Kumar & Zattoni, (2017) proved that the ownership type and structure may substantially affect firm performance.

Grundy and Ohmer (2016) provide more information on the restrictions and costs charged by equity-based CFPs. They are briefly summarized in **table 2**.

Table 2: A summary of commonly used costs and restrictions on equity-based CFPs.

Restrictions	Minimum and maximum investment amount per investor allowed.
	Minimum and maximum project sum allowed.
Costs (fees) for platform usage	Cost paid by fundraiser. Platform charges a percentage on the project sum.
	Cost paid by investor as a percentage 1. Determined by the entrepreneur 2. Determined by risk profile of the company 3. Determined by underlying profit-sharing scheme of the platform
	Payback period, cost paid by fundraiser: 1. Cost based on interest rates of the investment. 2. Cost charged as exit payment. 3. Profit participation can also be used as a cost method. This makes for a highly variable payback period. 4. Combinations are possible.

SOURCE: GRUNDY AND OHMER (2016)

2.2.3 CFP characteristics of the hybrid-based business model

Hybrid-based CFPs, or also referred to as 'bundling' by Dushnitsky, Piva and Rossi-Lamastra (2020), provide a combination of different investment-based crowdfunding types but can include non-investment crowdfunding types as well. However, the literature around this subject is limited. There are also few CFPs which adopted multiple crowdfunding types.

The utility of CFPs opting to bundle crowdfunding types cannot be disregarded. Dushnitsky, Piva and Rossi-Lamastra (2020) proved that diversification is significant for platform performance. The same authors stated that re-bundling towards a multi-product company could offer a potential upgrade to a better value proposition. Furthermore, adopting hybrid models is encouraged by scholars such as De Buysere et al. (2012), they claim that hybrid models could lead to more market validation and segmentation. According to Murray (2015) the most likely development for equity platforms appears to be to add P2P lending. Interestingly, an inverse development, where P2P lending platforms adopt equity should be considered as well. This however requires more future research.

As the theoretical literature is very scarce, there are no acknowledged definitions of the terminology. Therefore in this study, a difference is made between investment-based hybrid CFPs (which offer debt-based and equity-based financing) and platforms which offer a 'main' type of financing but also possess hybrid financing features or offer non-investment financing. This is further clarified in the following groups:

- Investment-based CFPs which offer non-investment funding, and vice versa. I.e., a combination of P2P lending and pre-sales; a percentage of the funding will be put into a loan (including interest) and the other part of the pre-sales will be used to prefinance the production. (De Buysere et al., 2012)

- Investment-based CFPs which offer hybrid investments. I.e., debt-based CFPs who offer convertible loans. Convertible loans are perceived as debt but the holder, in this case the investor, has the option to 'convert' the loan into shares. Therefore, CFPs who offer this instrument could be interpreted as hybrid. However, a report of the FSMA (2018) which analyzed Belgian CFPs, considered convertible loans to be a part of debt-based crowdfunding.

For the purpose of this study, CFPs offering non-investment crowdfunding types will be excluded from the empirical analysis. The reason of this exclusion is for alignment purposes of this study, only investment-based platforms are analyzed. Only hybrid CFPs which offer debt and equity will be considered. However, an exception will be made for CFPs which offer hybrid investment features (i.e. debt-based CFPs offering convertible loans). These CFPs offering such hybrid features will not be considered as hybrid but will be categorized as its main financing type adopted by the platform.

2.3   The payout models

Besides the type of crowdfunding models, there are also the payout models. Tomczak & Brem (2013) found in the literature two general forms of funding at the core of crowdfunding named 'ex post facto' funding and 'ex ante' funding. Belleflamme, Lambert & Schwienbacher (2010) describes 'ex post facto' crowdfunding as when a product is offered after financing is provided. Kappel (2009) describes 'ex ante' crowdfunding as when financial support is given on the front end to assist in achieving a mutually desired result. According to Burkett (2011), most crowdfunding appears to be 'ex ante'.

These payout models are of critical importance. These models are the rules regulating how and when crowdfunding platforms release funds pooled from investors to the fundraisers (Tomzack & Brem, 2013). Hence, this is a stage where the entire funding process can stop. Four different payout models are generally found in the literature. A brief explanation of each model is given:

Table 3: Description of the four payout models in crowdfunding.

All-or-nothing (AON) model	Also referred to as the threshold pledge model: funds are only released to the fundraiser when the specified goal is reached. (Belleflamme, Lambert & Schwienbacker, 2010).
Keep-it-all (KIA) model	Fundraisers can keep the money they raise even though their funding goals are not achieved. (Gerber, Hui & Kuo, 2012)
Club model	According to Hemer, (2011), this model offers 'pseudo-securities' to avoid securities regulations. This can be done by recruiting potential funders from the crowd as members of a closed circle, which acts like an investment club. Essentially, the term 'shareholder' is renamed to 'club member' to avoid legalities.
Holding model	The platform operators create a subsidiary company as an individual holding for each of the crowdfunding ventures that are to be funded. (Hemer, 2011)

According to Cumming, Leboeuf and Schwienbacker (2019) the payout models AON and KIA are commonly used for non-investment crowdfunding. However, investment-based platforms are able to use these models as well.

The club model and holding model are often adopted by equity-based CFPs. According to Gabison (2015), in the club model, platforms recruit wealthy individuals who are willing to invest in projects listed by the expert committee. An example of such a club model is the CFP 'Angels Den'. Launched since 2013, the platform has established a network of over 7.000 angel investors. It essentially means that CFPs operating under the club model exist of mainly professional investors.

The holding model, or also called the 'vehicle model' (Gabison, 2015), offers a different perspective. It seems similar to the nominee shareholder structure described by Walthoff-Borm, Vanacker and Collewaert (2018). A website article written by Mäkelä (2018) explains

that equity CFPs adopting the holding model, pool all equity investments of its investors and carry out one single investment to the fundraising company. This way, the entrepreneur raising the capital does not have to deal with the complexity of having many shareholders with different terms. Hence, only aggregated investors are listed as the fundraisers shareholders. This model also avoids the risk of investors who invest 'too much' capital which could impact the management of the company. Alternatively, a 'maximum' investment amount can be put in place by the platform to combat this issue. However, this option hinders to potential of acquiring more funding.

Interestingly, in the case of debt-based crowdfunding, the holding model could be interpreted in a different way. The notary model of P2P lending shows similar features, in which the crowd-investors have no direct relation with the borrower. E.g.: bank-funded P2P lending, where the bank originates the loan for the borrower. Afterwards, the CFP buys that loan from the bank with the pooled funds from its lenders interested in the project of the borrower.

3 EMPIRICAL STUDY

First, the variables which are empirically studied in this thesis are defined. Afterwards the sample and methodology used in this study are explained. Lastly, the findings are addressed.

3.1 Explanation of the variables

The following variables defined in **table 4** are inspired by a combination of literature and the screening of different CFP websites. The variables found by screening CFP websites are essentially the frequently recurring services or properties which were noticed.

Table 4: Explanation of the variables

Dependent Variable	Definition
1. Return on assets (ROA) before tax	To measure the profitability of CFPs, ROA is used before tax. One of the Key Performance Indicators (KPIs) composed by the European Association of Crowdfunding platforms (ECN) is 'financial performance'. This study tries to measure this KPI by using ROA as a dependent variable. According to Davidsson, Steffens and Fitzsimmons (2009), profitability in firms is important for enabling future growth. However, this variable does not measure the evolution of financial performance and is based only on the year 2019. The variable is defined as 'ROA2019' in this study.
Independent Variables	**Definition**
1. Fee structure	The main fee used on the platform. This means the fees with the highest rate charged on the platform. Additionally, management fees are not considered because every platform in the dataset charges this fee in some way. 1. Dummy 'Fee_MgmtCarry': the platform charges a fee when the stockholder makes a profit by making an exit. (Yes = 1; No = 0) 2. Dummy 'Fee_OnAmount': the platform charges a fee on the capital raised by the campaign. The success of the campaign is not considered. (Yes = 1; No = 0) 3. Dummy 'Fee_listed': the platform charges a fee on the origination of loans or an entry fee is charged. If the platform mainly uses management fees, then this will be considered as a listing fee as well. (Yes = 1; No = 0) No main fees which are subscription-based were found during the screening process of CFPs, therefore this variable will be dropped.
2. Second market	Does the platform provide a second market?

	4. Dummy 'Second_market': automatic and manual second markets are taken into consideration. A manual second market means when the platform actively informs investors when there are buyers available interested in buying the shares of the investors. (Yes = 1; No = 0)
3. Investor protection	Does the platform provide protection for its investors besides secured loans and a loan recovery process? Secured loans and loan recovery are no taken into account because almost every platform screened in the data set provides these services in some way. The following variables are measured: 5. Dummy: Passive_Invest (1 = Yes; No = 0) This includes: − Automatic investing and − Diversified portfolios 6. Dummy: Safety_Mechanisms (1 = Yes; No = 0) This include: − Provision fund or insurance, − Securities to prevent incorrect company valuations and stock dilution, − Securities which guarantees the investor a return
Control Variables	**Definition**
1. Year of launch	7. Year of launch of the platform.
2. Average Investors per year	It is calculated by scaling the total number of investors of the platform by the amount of years the platform has been active since its launch. If the data found on the website of the platform is not up-to-date with the year 2021, the respective year of the data will be taken into account. Afterwards, it is transformed into an ordinal variable. 8. 'InvYear': 1 (= 0 to 2500); 2 (= 2501 to 5000); 3 (= 5001 to 7500); 4 (= 7501 or more)
3. Average funded volume per year	It is calculated by scaling the total volume invested on the the platform by the amount of years the platform has been active since its launch. If the data found on the website of the platform is not up-to-date with the year 2021, the respective year of the data will be taken into account. Afterwards, it is transformed into an ordinal variable. This variable will only be used in the dataset of CFPs based on debt. The variable is measured in millions.

	9. 'FundingVolumeYear': 1 (= 0 to 10); 2 (= 11 to 20); 3 (= 21 to 40); 4 (= 41 or more)

3.2   Methodology and study sample

This study will not analyze the services and due diligence already studied by Rossi and Vismara (2017) and Cumming, Johan & Zhang (2019) but instead will add to their study by analyzing other interesting variables explained **in table 4**. A linear regression analysis is composed using the Ordinary Least Squares (OLS) model. This study measures a total of 27 investment-based CFPs of which 10 are debt-based, 10 are equity-based and 7 are hybrid-based. However, there were no hybrid CFPs found which offered pure equity crowdfunding and pure P2P business lending and vice versa. Instead, these platforms combine pure-equity crowdfunding with bonds. A key difference noticed in composing the dataset is that platforms offering P2P lending are mostly focused on startups while platforms offering bonds focus on SMEs. This will be further explained in detail in the findings-section of this study. The sample is split up into two group: 10 platforms of P2P lending and 17 platforms existing of equity and hybrids.

The databases and other sources used to track down CFPs can be consulted in **table 5**. When possible, the ranking of funding volume was taken into consideration for gathering the sample. The website 'www.P2Pmarketdata' was mainly used for that reason. However, this was not sufficient to reach the sample size of the dataset. Therefore, other databases which didn't consider funding volume were also used. Afterwards, the platforms' websites were screened to identify the variables needed for this dataset. The data found on each platform vary between 2019 and 2021 because not all platforms update their information often. Any variables in the dataset which possess a continuous value (e.g. total funding volume of a platform) will take this problem into consideration.

As discussed above, multiple databases and other sources were used in order to make the two datasets. Additionally, all CFPs analyzed for each dataset in this study can be consulted in the **appendix (table 12 & table 13).**

Table 5: Sources used to create the sample for the datasets

Source	Countries	Crowdfunding type
www.p2pmarketdata.com	Europe	Equity and debt
https://p2p.holdings/	Europe	Debt
https://www.crowdfundingbuzz.it/	Italy	Equity
https://www.thecrowdspace.com	Europe	All
https://thecrowdspace.com/	Europe	All
Massolutions (2015) report	Worldwide	All

The screening process of all websites found through these sources, follow the imposed criteria summed up below. The following criteria hopes improve the accuracy and correctness of the data captured by the dataset.

General criteria on all datasets:

1. The observed platform has to have the profitability ratio 'return on assets' (ROA) listed on the financial database Orbis Europe and the ratio has to be from 2019 (which is currently, at the moment of writing this thesis, the latest year available).

2. CFPs offering non-investment based services are excluded from the datasets. This means no crowdfunding types based on donations or rewards.

3. The club model discussed in the theoretical analysis will be excluded from the dataset. This essentially means CFPs existing of accredited investors. The reason being that all datasets are based on non-accredited investors. This could potentially lead to inaccurate results. No differentiation is made for platforms operating under the 'investor-led' model or in other words: platforms which makes use of syndicates.

4. CFPs which offer crowdfunding related to only real estate are not included in the datasets.

5. No difference is made for CFPs offering crowdfunding to only a certain group of industries or only one industry. E.g. Capital Cell specializes in equity crowdfunding for the biomedical industry.

6. The launch of the platform must be before the year 2019. Otherwise ROA cannot be measured.

Critieria on the dataset of equity-based CFPs:

1. The revenue-sharing model or also called the 'royalty model' is considered as equity crowdfunding by the databases consulted for this research. A website article written by Belleflamme (2014) describes the revenue sharing as a model in which contributors receive a share in the profits of the business or royalties of the fundraiser. The author categorizes this type of crowdfunding as equity crowdfunding as well, as it implies investments into securities such as shares or bonds. However, a differentiation is made in the CCAF (2020) report and by the authors Beaulieu, Sarker & Sarker (2015). In this study, the reasoning of Belleflamme (2014) will be followed. No differentiation between 'pure' equity crowdfunding and the royalty-sharing model is made. This also facilitates the data gathering process of platforms.

Criteria on the dataset of debt-based CFPs:

1. Only P2P lending related to business investments are preferred. However, if certain CFPs provide additional services which include personal or property lending, they are still included in this data set.

2. The CCAF (2020) report differentiates debt-based crowdfunding (or the different types of P2P lending) from debt-based securities such as bonds. This study will not make this differentiation and considers this all debt-based securities as debt-based

crowdfunding. Beaulieu, Sarker & Sarker (2015) do not make any differentiations on this particular subject as well, therefore following the same reasoning.

3. Platforms offering convertible securities are not considered as a debt or equity based activity in this study. However, in this study, convertible securities will be considered as a safety mechanism for investors because it avoids risks such as incorrect company valuations and stock dilution (Eqvista, 2020). Convertible loans and convertible bonds are categorized as debt-based crowdfunding by a report of the FSMA (2018). The same reasoning will be followed for CFPs offering convertible notes. This is a form of short-term debt which can be converted to equity on a future date. Instead of gaining a return in the form of principal plus interest, investors are able to receive equity of the company.

Criteria on the dataset of hybrid-based CFPs:

1. The criteria discussed in the aforementioned points also count for hybrid-based CFPs.

3.3 Findings

The reason for splitting the dataset into two special groups is because initially no variables which were statistical significant were found, and therefore delivering inaccurate results. For this reason, the different groups of crowdfunding CFPs were analyzed and matched with each other. It seems that an analysis of the dataset based on only debt CFPs and a dataset consisting of only equity and hybrid CFPs offered more insightful results. This will be explained further. A dataset of debt-based CFPs including hybrid-based CFPs did not offer insightful results.

3.3.1 Results of CFPs based on equity and hybrid

First a description of the statistics is given in **table 6**. Afterwards, some interesting correlations found in the correlation matrix of **table 7** are briefly discussed. Lastly, the findings of the OLS models proposed for this dataset will also be discussed in **table 8**. The variable 'FundingVolume' is not used for this analysis as it did not deliver any statistical significance and made the OLS models discussed in this section less accurate.

Table 6: Summary statistics for CFPs based on equity and hybrid

	Mean	Median	Std. Dev.	Minimum	Maximum
ROA2019	-0.2056	-0.1670	0.4136	-0.9717	0.7480
Passive_Invest	0.2941	0	0.4697	0	1
Safety_ mechanism	0.3529	0	0.4926	0	1
Second_market	0.2941	0	0.4697	0	1
Fee_ MgmtCarry	0.3529	0	0.4926	0	1
Fee_OnAmount	0.8235	1	0.3930	0	1
Fee_ Listing	0.1765	0	0.3930	0	1
InvYear	2	2	1.9212	1	4
Launch_date	2012.2000	2013	1.0690	2008	2015

It seems that most platforms were averaging a loss of 20.56% in 2019. One platform was even reaching negative profitability of 97.17%, which is concerning. Conversely, one platform reached a positive profitability of 74.80%. This could be a potential outlier as the average profitability is negative for most CFPs. It is also worth mentioning that these platforms in the dataset launched between 2008 and 2015. Averaging around the year 2012, it is surprising that many of these platforms were still making a loss most years (as observed on the financial database Orbis), even after 7 years of being active.

Interestingly, it seems that most platforms (82.35%) analyzed in the dataset mainly used fees charged on the amount of capital raised. Carry fees or listing fees were less popular. Also, the variable 'safety mechanism' should be nuanced in this dataset because it seems that more hybrid platforms adopted convertible securities than equity platforms. This is however not mentioned in the statistics description.

ROA2019	Passive_ Invest	Safety_ mechanism	Second_ market	Fee_ MgmtCarry	
1	-0.1399	-0.4127	-0.2287	-0.2807	**ROA2019**
	1	0.0636	-0.1333	0.3337	**Passive_Invest**
		1	0.0636	-0.0303	**Safety_mechanism**
			1	0.6039	**Second_market**
				1	**Fee_MgmtCarry**

Fee_ OnAmount	Fee_Listing	InvYear	Launch_date	
0.1167	-0.0005	-0.3112	0.1796	**ROA2019**
-0.3785	0.0398	-0.146	-0.6356	**Passive_ Invest**
0.019	-0.019	0.4108	-0.0272	**Safety_ mechanism**
-0.3785	0.0398	-0.4841	0.057	**Second_market**
-0.3039	-0.019	-0.5477	0.0388	**Fee_MgmtCarry**
1	-0.5952	0.2588	0.224	**Fee_OnAmount**
	1	0.1899	0.0243	**Fee_Listing**
		1	-0.1447	**InvYear**
			1	**Launch_date**

This table shows the correlations among variables of interest. The rate of significance is not measured. Strangely, all 'passive investment', 'safety mechanism' and 'second market' in this are negatively correlated with profitability. It could be that the investments made to offer these services were likely to have a heavy impact on the profitability of most platforms. Another remarkable correlation is found between launch date and the service offering passive investments to investors. The older platform gets, the greater the chance of platforms offering passive investment services to investors.

It seems that the carry fee is negatively correlated with profitability, the listing fee shows almost no correlation with profitability and the fee which charges on the capital raised shows a positive correlation. This might declare why more than 80% of the platform in this dataset are mainly charging this fee. Interestingly, according to the correlation matrix, platforms offering a second market are more likely to charge carry fees. This seems logical as offering second markets improves liquidity on the platform and therefore giving more chances to participants to make an exit and in turn gives the platform the opportunity to apply carry fees. However, carry fees are negatively correlated with the average yearly investors on the platform. As these fees are often applied to investors selling their stock with profits, it seems that the investor-side is quite price-sensitive to such fees. Additionally, it seems that offering a second market also decrease the average yearly investors on the market. This might be strange because it could be easy to assume that offering more liquidity attracts more investors. However, as discussed before, carry fees must be considered. Additionally, some countries such as Italy and Spain have put

tax incentives in place, driving investors to keep their stocks for a longer period of time instead of selling immediately after the campaign is finished.

Table 8: OLS models for CFPs based on equity and hybrid

	MODEL 1		MODEL 2	
	Coefficient	Std. Error	Coefficient	Std. Error
const	−226.0700 (−1.729)	130.7580	−214.796 * (−2.056)	104.4720
Investor protection				
Passive_Invest	0.5154 (1.745)	0.2953	0.4924 * (2.13)	0.2311
Safety_mechanism	−0.5932 ** (−3.102)	0.1912	−0.5839 *** (−3.501)	0.1668
Second_market	0.9493 ** (2.905)	0.3268	0.9776 ** (3.064)	0.3190
Fee structure				
Fee_MgmtCarry	−1.3984 *** (−7.082)	0.1974	−1.4157 *** (−6.663)	0.2125
Fee_OnAmount	0.1438 (0.3867)	0.3717	-	-
Fee_Listing	0.7648 ** (3.079)	0.2484	0.7021 *** (6.313)	0.1112
InvYear	−0.1812 * (−1.967)	0.0921	−0.1719 ** (−2.449)	0.0702
Launch_date	0.1125 (1.734)	0.0649	0.1069 * (2.06)	0.0519
R-squared	0.8427		0.8410	
Adjusted R-squared	0.6329		0.6819	

*OLS, using observations 1-17 (n = 15, 2 observations dropped). Heteroskedasticity-robust standard errors. With * = p-value < 0,10; ** = p-value < 0,05 and *** = p-value < 0,01.*

Two models are discussed for this regression analysis: a model including the main fee charged on capital raised and a model excluding this fee. In general, the fee on capital raised was

found to be insignificant and showing less accuracy among all variables. Therefore, this variable is excluded in the second model. It seems that this exclusion helped to increase the accuracy of the model. As model 2 shows more accurate results and while also showing the same interpretations, only model 2 will be discussed further.

Investor protection seems to have an interesting interpretation. Offering passive investment tools to investors positively impacted the profitability of equity and hybrid CFPs but this is slightly statistical significant ($p < 0.1$). Interestingly, providing safety mechanism seems to impact profitability negatively and is significantly strong ($p < 0.01$). However, this variables has to be nuanced. This study interprets safety mechanisms for equity and hybrid CFPs mainly as providing convertible securities to its investors.

Providing a second market shows to have a positive impact on the profitability of the platform, this is also statistically significant ($p < 0.05$). Besides improving liquidity on the platform, it also gives the platform new ways to charge fees on participants.

Concerning the fee structure, it seems that carry fee and listing fee are both statistically significant ($p < 0.01$). The carry fee shows to have the strongest negative impact on profitability compared to other variables measured ($\beta = -1.4157$). On the other hand, platforms charging listing fees (which means mainly entry fees and management fees for CFPs based on equity or hybrid) seem to positively impact profitability.

Interestingly, it seems that the variable 'InvYear' negatively impacts the profitability of CFPs based on equity and hybrid. This might indicate that CFPs in this dataset tend to prioritize network effect over profitability as discussed by the authors Lee and Teo (2015).

The R-squared of OLS model 2 also shows that it is capable of explaining 84.10% of the observed variation by the model's independent variables. The adjusted R-squared of model 2 is also higher than model 1, which indicates that model 2 has a better explanatory power than model 1.

A visual representation of model 2 can be seen in the graph of **figure 10.**

*Figure 10: Graph of OLS **model 2** of CFPs based on equity and hybrid*
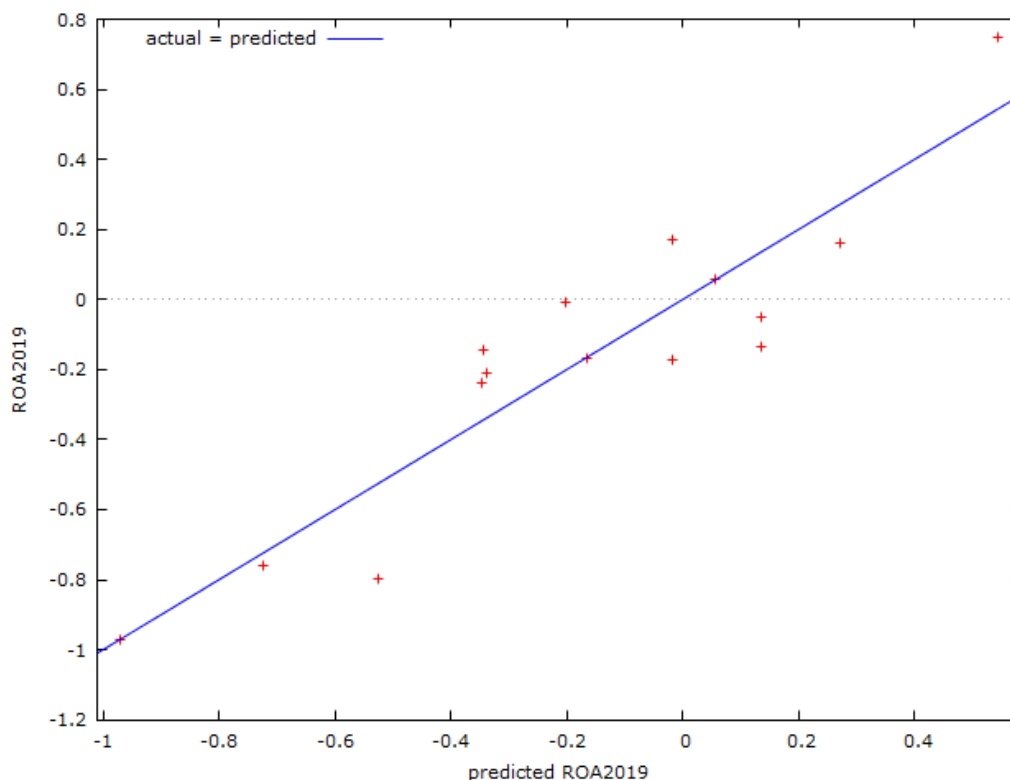
3.3.2 Results of CFPs based on debt

As seen in **table 9**, a summary of the statistics is given. It should be noted that not all variables used in this analysis are equal to both datasets. The reason being that most variables did not deliver significant results or additional insight. Therefore, the following variables in **table 9** are chosen.

Table 9: Summary statistics of CFPs based on debt

	Mean	Median	Std. Dev.	Minimum	Maximum
ROA2019	-0.0245	-0.0463	0.4000	-0.6940	0.9190
Passive_Invest	0.80	1.00	0.4220	0	1
Safety_mechanism	0.50	0.50	0.5270	0	1
Second_market	0.500	0.50	0.5270	0	1
Fee_OnAmount	0.60	1.00	0.5160	0	1
Fee_Listing	0.50	0.50	0.5270	0	1
FundingVolume	2.60	2.50	0.9660	1	4

Interestingly, most CFPs were making a small loss of 2.45% in 2019. This is a noticeable difference when compared to CFPs based on equity and hybrid which averaged a loss of 20.56%. Interestingly, this dataset also shows a noticeable difference between minimum and maximum profitability observed in the dataset. It seems that 80% of the platforms analyzed possessed passive-investment services such as auto-investment technology or portfolios. A half of the platforms provided protection tools for its investors such as borrower insurance, a provision fund or loans with a guaranteed return. A half of the dataset also provided a second market for its users to buy or sell its loans.

Next, a correlation matrix is shown in **table 10**. The correlations are not measured for statistical significance.

ROA2019	Passive_ Invest	Safety_ mechanism	Second_ market	Fee_ OnAmount	
1	-0.6028	0.5378	0.4693	0.2507	**ROA2019**
	1	0	0	-0.4082	**Passive_Invest**
		1	0.2000	0	**Safety_mechanism**
			1	0	**Second_market**
				1	**Fee_OnAmount**

Fee_Listing		FundingVolume		
-0.26060		0.21990		**ROA2019**
0.00000		0.05460		**Passive_Invest**
-0.20000		0.43640		**Safety_mechanism**
-0.20000		0.65470		**Second_market**
-0.81650		-0.35630		**Fee_OnAmount**
1		0.2182		**Fee_Listing**
		1		**FundingVolume**

It seems that passive investments such as automatic lending or the use of portfolios are negatively correlated with the profitability of CFPs offering these services. As for safety mechanisms such as provision funds or insurance and offering a secondary market, these are positively correlated with the platforms profitability. Interestingly, there is a low correlation between second market and safety mechanisms. This might indicate that platforms offering safety mechanisms sometimes offer a secondary market as well.

Lastly, the OLS model is shown in **table 11** with 'ROA2019' being the dependent variable.

Table 11: OLS models for CFPs based on debt

	MODEL 3		MODEL 4	
	Coefficient	**Std. Error**	**Coefficient**	**Std. Error**
const	1.0999 * (3.1200)	0.3525	0.4012 (1.9410)	0.2067
Investor protection				
Passive_Invest	−0.7703 *** (−6.214)	0.1240	−0.5504 *** (−4.2740)	0.1288
Safety_mechanism	0.4193 (2.0100)	0.2086	0.4513 ** (3.2970)	0.1369
Second_market	0.4557 (1.7820)	0.2558	0.4723 ** (3.0440)	0.1552
Fee structure				
Fee_MgmtCarry	−0.4476 (−2.268)	0.1973	-	-
Fee_Listing	−0.2998 (−0.9601)	0.3122	-	-
FundingVolume	−0.2028 (-1.5850)	0.1279	−0.1720 (−1.8290)	0.0940
R-squared	0.9188		0.8702	
Adjusted R-squared	0.7563		0.7664	

*OLS, using observations 1-10. Heteroskedasticity-robust standard errors. With * = p-value < 0,10; ** = p-value < 0,05 and *** = p-value < 0,01.*

In model 3, an attempt was made to measure the fee structure of debt-based platforms. It seems that no debt-based CFPs made use of a carry fee, therefore, this variable was not added to both models. However, no significance was found when adding the other fee variables. One reason could be that the sample of the dataset which only included 10 CFPs, was too small. It seems that the exclusion of the fee structure, done in model 4, helped to increase the accuracy. As model 4 shows more accurate results and also shows the same interpretations, only model 4 will be discussed further.

Also, no significance was found with the variable 'InvYear' which measures the average yearly investors of a CFP. Therefore, a new variable 'FundingVolume' was chosen which hopes to provide more accurate results.

Interestingly, offering a secondary market on the platform has a positive impact on the profitability of debt-based CFPs just like CFPs based on equity and hybrid. This result is also significant ($p < 0.05$). Rossi and Vismara (2017) also found a significant impact but for campaign success and in which the statistical significance was high. The variable has also a positive impact in their study. For investor protection it seems that its impact is sufficiently significant ($p < 0.05$) for both variables. Passive investment services such as auto lending and giving the ability to invest in portfolios show a negative impact on the profitability of the platforms. This might indicate that offering these services might be a heavy investment for these debt-based CFPs. Surprisingly, this effect is opposite to the results found for CFPs based on equity and hybrid.

Having safety mechanisms put in place such as a provision fund or insurance to protect its investor shows to have a positive impact on the profitability of these debt-based platforms.

The R-squared of OLS model 4 also shows that it is capable of explaining 87.02% of the observed variation by the model's independent variables. The adjusted R-squared of model 4 is also higher than model 3, which indicates that model 4 has a better explanatory power than model 3.

Figure 11 shows a visual presentation of the this regression model:

*Figure 11: Graph of OLS **model 4** of CFPs based on debt*
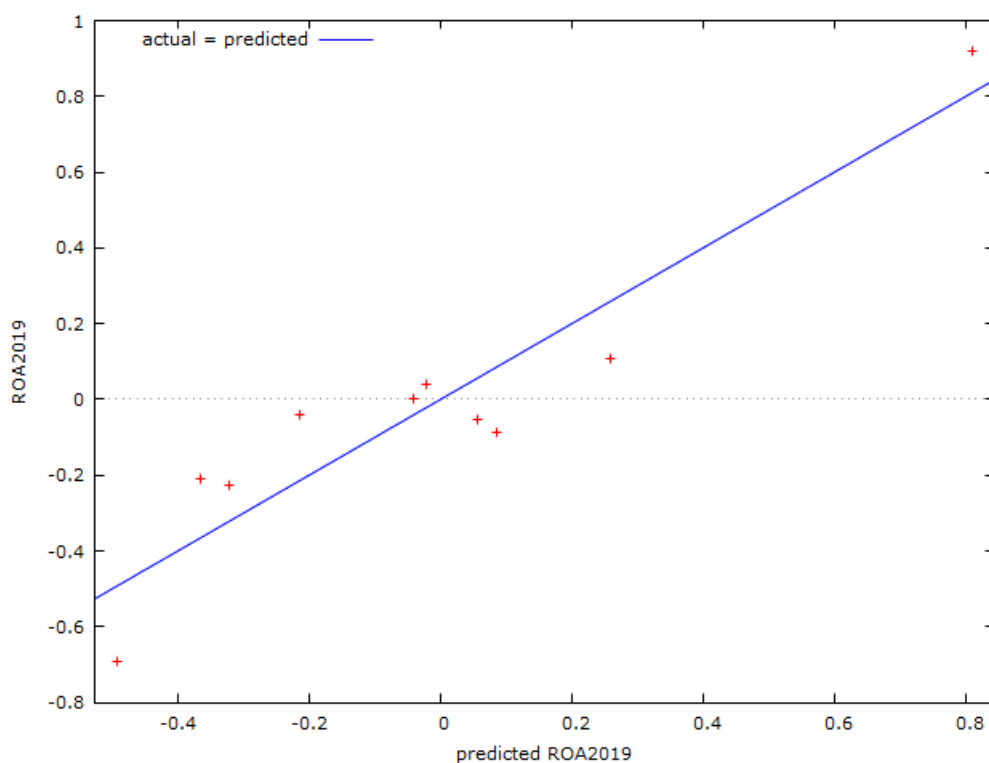
4 CONLUSION & DISCUSSION

4.1 Conclusion

By adding to the work of Rossi & Vismara (2018) and Cumming, Johan & Zhang (2019), this thesis hopes to have added additional insight by analyzing additional key services consistently recurring on CFP websites. The sample used to analyze these services consists of two datasets: one dataset consisting of 10 debt-based CFPs and one dataset consisting of 10 equity-based CFPs and 7 hybrid-based CFPs. These datasets can be consulted in the **appendix (table 12, and table 13).** As the sample analyzed in this study is relatively small, interpreting these results should be done with caution.

Investor protection, which consists of passive investments and safety mechanisms provided by the platform, seems to show opposing results for both datasets. Passive investments (such as diversified portfolios and automatic investing) negatively impacts profitability for debt-based CFPs while showing positive effects for CFPs based on equity and hybrid. A reason could be that the investments needed for the technology of automatic investing (mainly offered by debt-based CFPs) weigh heavier than offering diversified portfolios (mainly offered by CFPs based on equity and hybrids) but this requires further research. Equity and hybrid platforms analyzed in this study did not provide any automatic investing possibilities but tend to offer diversified portfolios instead. An exception could be made for the CFP 'Seedrs' which is the only platform analyzed in this study to provide 'cohort-campaigns' which allows the investor to invest in multiple businesses with one click of a button. Safety mechanisms which negate risks for the investors (such as a provision fund, insurance, convertible securities or securities with guaranteed return) showed to have a positive impact on the profitability of debt-based CFPs while negatively impacting the profitability of CFPs based on equity and hybrid. However, these safety mechanisms provided by debt-based CFPs cannot be compared to the mechanisms provided by CFPs based on equity and hybrid. The platforms which focused on equity and hybrid did not provide any provision funds or insurance to investors but instead offered convertible securities. This study interpreted these securities as a safety mechanism for investors. This way, the investor is able to avoid incorrect company valuation or stock dilutions. A reason for this negative impact on profitability might be that these securities are issued to finance companies with unusually higher failure rates. Therefore, this failure rate could potentially be translated into the impact on the profitability seen in this study. (Lee & Loughran, 1998) documented poor stock performance of companies after convertible securities were issued. This might indicate the negative impact observed in this study as well, this is however based on an assumption.

Offering a second market seems to be profitable for both debt-based CFPs and CFPs based on equity and hybrid. This is also confirmed by the research done by Rossi and Vismara (2017).

Regarding the fee structure of CFPs, only carry fees and listing fees charged by CFPs based on equity and hybrid seem to provide significant results. Interestingly, carry fees have a negative impact on profitability while listing fees have a positive impact. In addition, it seems that an increase of yearly influx of investors negatively impacts the profitability of CFPs based on equity and hybrid. This could mean that the platform is sacrificing profitability in order to gain more network effects. This aligns with the low profit margin principle imposed by Lee and Teo (2015) in which FinTech platforms are forced to keep their profit margins low, in this case

the revenue streams of fees, in order to increase the network of the platform. This might indicate that CFPs in this dataset tend to prioritize network effect over profitability.

4.2   Limitations and ideas for future research

It should be noted that the creation of the datasets was a complex procedure. A lot of inconsistencies were found throughout the process of composing the datasets (see also table **12 & 13** in the **appendix** for the sample used in this research) and screening platform websites. Additionally, not all websites of CFPs were equally transparent and there may be cases in which some services are not captured because they are not reported or overlooked. The amount of CFPs available which followed the imposed criteria of this study are limited and not all platforms are transparent enough to provide the data required for this dataset. In addition to the complex procedure of data gathering, the sample was relatively small and it was also required to split up the sample into two group in order to gain any significant results.

This study failed to exclude hybrid platforms from datasets because it did not deliver any significant results and the sample was also too small. It seems that the hybrid platforms analyzed in this study tend to follow an equity-based CFP structure. During the screening process of hybrid platform websites, mainly characteristics of the equity platforms were noticed. E.g. these hybrid platforms did not possess the same safety mechanisms and passive investment tools equal to P2P lending platforms but rather followed the same structure of equity platforms. The dataset found in the **appendix (Table 12)** show that only one the seven hybrid platforms in the datasets offers lending besides equity (a Belgian hybrid-based CFP 'Spreds'), the other hybrid platforms only offered bonds besides equity.

Regarding ideas and future research, it would be interesting to further analyze 'cohort campaigns'. It would be interesting to see how profitable this type of service could be for all parties involved. Also, more literature is needed on hybrid platforms, as it is currently scarcely available. It would be interesting to see what the effects are for equity platforms adopting P2P lending and vice versa. As mentioned earlier, adopting hybrid models is encouraged by scholars such as De Buysere et al. (2012). The authors claim that hybrid models could lead to more market validation and segmentation. According to Murray (2015) the most likely development for equity platforms appears to be to add debt. An inverse development (debt-based CFPs adding equity crowdfunding) would be an interesting topic as well. It would be interesting to see what the effects of these bundling activities could entail.

Additionally, In order to analyze the investment-based crowdfunding business models, acknowledged CFP key performance indicators (KPIs) could be measured. These KPIs are compiled by the European Crowdfunding Network (ECN) in which KPIs such as financial performance, external performance, extended performance and data management are addressed. Analyzing these KPIs could offer interesting insights for the business modeling of crowdfunding platforms.

APPENDIX: SAMPLE OF CFPS USED IN THIS STUDY

Table 12: Dataset of CFPs based on equity and hybrid

CFP	Country	Activity
Seedrs	UK	Mainly equity crowdfunding
Eureeca	UK	Mainly equity crowdfunding
Funderbeam	UK	Mainly equity crowdfunding
Crowdcube	UK	Equity crowdfunding + bonds
Crowdforangels	UK	Equity crowdfunding + bonds
Backtowork24	IT	Equity crowdfunding + real estate crowdfunding
Two Hundred	IT	Mainly equity crowdfunding
Opstart	IT	Equity crowdfunding + real estate crowdfunding
WeAreStarting	IT	Mainly equity crowdfunding
Anaxago	FR	Equity crowdfunding + real estate crowdfunding
Lendopolis	FR	Equity crowdfunding + bonds
WiSEED	FR	Equity crowdfunding + real estate crowdfunding + bonds
Invesdor	FL	Equity crowdfunding + bonds
Sociosinversores	ES	Mainly equity crowdfunding
Capital Cell	ES	Mainly equity crowdfunding
Companisto	DE	Equity crowdfunding + bonds
Spreds	BE	Equity crowdfunding + bonds + P2P business lending

Table 13: Dataset of CFPs based on debt

CFP	Country	Activity
Ablrate	UK	P2P business lending + P2P property lending
Fundingcircle	UK	Mainly P2P business lending
Assetz Capital	UK	P2P business lending + P2P property lending
Crowdestor	LV	Mainly P2P business lending
BorsadelCredito	IT	Mainly P2P business lending
Credit.fr	FR	Mainly P2P business lending
WeShareBonds	FR	P2P business lending + corporate bonds
MyTripleA	ES	Mainly P2P business lending + factoring services
Flex funding	DK	Mainly P2P business lending
Look&Fin	BE	Mainly P2P business lending

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