

P2P debt and the capital structure of private SMEs*

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Abstract

This paper investigates the role of P2P (peer-to-peer) debt in the financing decisions of 1,001 unique firms that were financed by Funding Circle from 2010 to 2015. The firms are small (10-49 employees) with a median age of 11 years, virtually all are privately held, and two thirds of the debt raised has a maturity of 5 years. The econometric results indicate that firms' debt ratios are sensitive to P2P debt and to firm characteristics like firm size, asset tangibility and debt composition, but less sensitive to firm profitability. The larger the target leverage deviations, the higher the probability of firms issuing or having P2P debt. There is evidence that capital expansion plays an important role in explaining increases in P2P debt. Our findings extend the traditional pecking order theory of capital structure as P2P debt can be considered as an additional new external debt source for private firms. They also show that, in line with the trade-off theory, UK private firms have higher leverage ratios due to the high cost of issuing equity capital. The overall conclusion is that P2P debt with a mean maturity of 4.3 years fills an important funding gap for small firms and that contributes to increased capital expenditures over the course of the immediate post-funding event years.

JEL classification: D92, G32, L20

Keywords: Peer-to-peer markets; Pecking order; Private firms.

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1. Introduction

This paper investigates the role of P2P business loans as a major new source of outside entrepreneurial capital in the capital structure of small private firms. Since the seminal and comprehensive Cosh, Cumming, and Hughes (2009) study of the external funding sources for UK privately held entrepreneurial firms, various forms of alternative finance or crowdfunding have emerged as novel sources of outside capital. P2P debt is also known as lending-based crowdfunding or marketplace lending and is growing very rapidly in both the USA and UK.¹ Zhang, Baeck, Ziegler, Bone, and Garvey (2016) provide a comprehensive overview of alternative finance in the UK. Their analysis suggests that in 2015 P2P business lending accounted for 14% of the lending to UK small businesses based on British Banking Association lending data.

Although it has been linked to microfinance, credit unions and other antecedents in the finance arena, the general driver is the meteoric rise of other P2P markets such as eBay, Amazon and Uber that demonstrates the potential draw of electronic marketplaces over the past decade or so. The specific driver is the explosion of fintech which encompasses both digital and technology-based business innovations in the finance sector. Fintech has been a key contributor to alternative finance whereby providers are using internet platforms or marketplaces to bypass traditional financial markets. Crowdfunding is one of the leading fintech specialisms and it enables small firms to raise both crowdfunded equity and P2P debt. These have flourished in the context of UK light touch regulation and UK-based providers such as Funding Circle (hereafter FC) and Crowdcube are respective world leaders in this context. This paper focuses on the role of P2P business debt provided by FC as it remains a

¹ There is some ambiguity over the use of crowdfunding. It is often used in the European and US literature to include both equity- and debt-based crowdfunding. P2P lending is increasingly employed in the UK instead of debt crowdfunding or crowdlending. Belleframe (2015) in his overview of crowdfunding calls P2P platforms lending-based crowdfunding platforms (CFPs) and contrasts them with investment- or equity-based CFPs. Morse (2015) in a US study uses the term P2P crowdfunding to describe P2P consumer lending.

largely under-researched topic, particularly within the context of small firms' capital structure.²

The paper makes two important contributions to distinct literatures. The first contribution is that it employs a unique hand-collected dataset of 1,001 privately held small firms that raised new debt on the FC portal to shed new light on a relatively new form of crowdfunding known as P2P debt or crowdlending. It manages to glean new insights on this by linking the FC data with company data from the FAME database to create a unique de-identified P2P database. FC simply acts as an intermediary and holds no P2P debt on its balance sheet. P2P debt involves investors at large or the crowd funding small firms (and others) via an internet portal or marketplace. Financial institutions can contribute up to 30% of FC projects and as such they can be viewed as informed investors.³

Our findings reveal that P2P debt is overwhelmingly raised by small firms with 10-49 employees. These sample firms are relatively young with a median age of 11 years. Interestingly, they are privately held rather than quoted on the London stock exchange. Since such firms are only required to publish balance sheet information in their annual reports, they do not meet the financial statement lending technology requirements – most notably an income statement – demanded by banks for medium term loans. Importantly, over 67% of the P2P debt has a maturity or term of 5 years. The implication is that small private firms can access a novel source of medium term debt which can enable them to invest over a number of consecutive years. The major reason listed for accessing the FC platform was capital expansion. The sample firms are quite widely geographically dispersed but there is a slight overrepresentation in London and the South East. These findings complement and add to the

² The recent paper by Franks, Serrano-Velarde and Sussman (2016) is a notable exception but its focus is on FC's changing pricing mechanisms (flexible auction versus posted prices) and liquidity issues for P2P debt.

³ This part of P2P debt has some parallels with non-bank private debt but it is funded via a public internet platform. On Lending Club - the main US P2P platform - the crowd has been squeezed out and institutions now dominate. This crowdfunded private debt market now known as P2P marketplace lending can be viewed as internet-based private placements of debt.

overall P2P and crowdfunding findings of Zhang et al. (2016) and the Broughton and Calici (2016) study of Wave 1 of the BIS Longitudinal Small Business Study (LSBS).⁴ The latter find that only 1.8% (121) of the LSBS sample firms was using crowdfunding. The unweighted⁵ average firm size was 27 employees and 83% were incorporated firms, the others being partnerships or sole proprietorships.

The paper's second contribution is to the capital structure literature by investigating the drivers of the decision by the 1,001 small private UK firms to raise P2P debt as opposed to alternative sources of debt financing. This is the first study of the drivers of firms' choice to rely on P2P debt during a period where the other major source of debt financing – bank lending – was heavily constrained in the UK.⁶ As such, it complements the path breaking study of Brav (2009) that focuses only on the external financing of private medium and large-sized SMEs. New external equity is typically not a feasible source of funding for small private firms.⁷ Thus our sample of firms is largely confined to a choice between different sources of debt or loan capital. The results indicate that firms' debt ratios are sensitive to P2P debt and to firm characteristics like firm size, asset tangibility and debt composition, but less sensitive to firm profitability. The larger the target leverage deviations, the higher the probability of firms issuing or having P2P debt. Our findings provide new insight into the traditional pecking order theory of capital structure in that P2P debt can be considered an additional financing source for private firms. They also show that, in line with the trade-off theory, UK private firms have higher leverage ratios, probably due to the high costs of issuing equity capital.

⁴ See also Milne and Parboteeah (2016) for an interesting overview of the development of P2P lending in both the UK and USA.

⁵ The weighted size was a mere 3.5 employees as sole proprietorships are given a high weighting to reflect their numerical importance. The study does not distinguish between quoted and unquoted companies. Note also that some 6 of the 121 firm raised crowdfunded equity.

⁶ See Cosh et al. (2009) for a comprehensive list of the other sources of outside capital.

⁷ Crowdfunded equity may be a viable source of new equity for such firms but is beyond the scope of this paper.

As such, our paper links with both the Cosh et al. (2009) study of the sources of outside entrepreneurial capital for private UK firms and the Brav (2009) study of the characteristics of UK public and private firms in 1993-2003. Based on their survey study, Cosh et al. (2009) provide vital insights of whether firms attempt to obtain external funds in addition to internal funds and whether the external funds are obtained from venture capital providers. The Cosh et al. findings support the traditional pecking order hypothesis and indicate that smaller private firms may face a capital gap. Brav establishes that private firms depend almost entirely on debt finance, have higher leverage ratios and tend to avoid external capital markets. Our study contributes to prior relevant studies by investigating specifically the role of P2P debt in the firm's financial decision. Our findings suggest that P2P debt adds a new layer of outside debt to the traditional pecking order of external funds for private firms and this is a novel finding.

The paper is organised as follows. Section 2 outlines the distinctive features of the P2P lending markets in the UK, compares P2P debt and bank debt and provides the hypothesis development. Section 3 describes the data and variables used in this study and presents descriptive statistics. Section 4 analyses the empirical results. A final section concludes.

2. P2P debt and hypothesis development

2.1 P2P lending markets

P2P markets are revolutionising or uberising⁸ traditional markets for goods or services that often are dominated by monopolistic or oligopolistic suppliers. Einav et al. (2015) view the main function of P2P markets as making it easy for buyers to find sellers and engage in convenient and trustworthy transactions. P2P markets in finance developed later than general

⁸ This refers to the disruptive effects Uber had on the taxi market potentially spreading to other markets.

P2P markets. However, their recent rapid growth and, in particular, the mushrooming of P2P and crowdfunding platforms has led to them being designated as the fintech leaders of the alternative finance sector.⁹ Other prominent examples of the latter include foreign exchange transfer platforms such as CurrencyFair. Interestingly, the latter share most of the common features of P2P markets identified by Einav et al. (2015). These include lowering entry costs for sellers, engaging in spot transactions, employing technology to match buyers and sellers, doing little up-front screening, and maintaining quality using feedback mechanisms.

P2P debt markets enable small firms and consumers to access financing from the crowd and is by far the most developed form of for-profit crowdfunding.¹⁰ These markets are characterised by three distinctive features that distinguish them from P2P markets in general. First, P2P debt involves ongoing relationships between the lending platform (acting on behalf of the investors) and the borrowers (crowd) typically for periods of one to five years, depending on the term of the loan facility. By contrast, most general P2P markets like eBay or Amazon involve spot transactions only.

Second, they take advantage of technology and machine learning for two important tasks. One is to aggregate or pool the savings of individual investors and this aggregation of “part loans” is what distinguishes P2P debt in the UK from marketplace lending in the USA where financial institutions supply the whole debt. Another is to screen and allocate borrowers into different risk categories and to price their risk. Franks et al. (2016) use a huge sample of Funding Circle data to analyse its move from flexible price auctions to posted prices in their approach to risk pricing.

Third, they seek to maintain quality by using market design mechanisms and reputation to continue successfully to attract investor funds. One of the most important features is the

⁹ See Cumming and Schwienbacher (2016) for an interesting study of fintech venture capital.

¹⁰ Note that most early crowdfunding projects were generally in the arts and creative industries and were reward/product based rather than for profit. See Agrawal et al. (2015), Belleflamme et al. (2014), Belleflamme et al. (2015) and Mollick (2014) for more discussion.

provision point mechanism highlighted by Agrawal et al. (2013). In this case, the SME only receives the funds only if the funding target level is met or exceeded within a particular time period. Such a mechanism is a solution to a classic coordination and free-riding problem that arises in the provision of public goods.

One of the important issues addressed in this paper is where P2P debt might fit into the pecking order of outside debt for private firms. It links with Denis and Mihov (2003) who employ an incremental approach to study 1,560 new US debt financings on quoted firms' choice between bank debt, non-bank private debt and public debt. They establish a hierarchy or pecking order of debt funding and are one of the first to stress the role of credit quality in this process. They find the highest credit quality firms (as indicated by credit ratings) issue public debt in the bond markets, medium credit quality firms borrow from the banks, while the lowest credit quality firms are financed by non-bank private lenders under SEC Rule 144A.

This paper seeks to provide an answer to the question of whether P2P debt ranks above or below bank debt in terms of the firms it is likely to attract. P2P debt differs from bank lending. It can be viewed as a form of regulatory arbitrage or disintermediation as P2P debt is not subject to Basel III capital requirements under which commercial banks operate. Note that these requirements rise in tandem with risk and so banks were discouraged from lending to smaller (riskier) UK SMEs in the wake of the 2008 banking and financial crisis.

The implication is that lending platforms have a lending rate comparative advantage relative to commercial banks. Thus, firms that access P2P debt are likely to be small firms that probably experience difficulties in or are discouraged from raising medium term bank loans. The external funding problem is particularly acute for privately held small firms as their accounts are sparse and opaque. For instance, small private firms are required by UK company law to publish balance sheet financial information with their annual reports but are

not obliged to publish their profit and loss accounts. This makes risk assessment more challenging for banks. Finally, P2P debt provides more convenient and rapid means for private firms to raise external debt since it is time consuming to apply for a bank loan and the evaluation process may be lengthy and complicated. Due to the ease of raising funds via the internet, more and more small and private firms have obtained P2P debt in recent years.

2.2 Hypothesis development

This study investigates private firms' financial decisions on both traditional and unconventional capital sources – issued capital, bank debt and P2P debt. As previously mentioned, in recent years many firms, especially small private firms, consider raising capital from public crowdfunding platforms. While virtually all UK small firms have short run, overdraft financing from their clearing bank, many firms – especially the riskier ones – are unlikely to have access to medium-term bank debt where the latter has a maturity of 1-5 years. We conjecture that this makes small private firms more likely to be candidates for P2P debt when their credit quality is lower than that required by banks. Denis and Mihov (2003) find that firms preferring debt financing tend to have higher leverage ratios. As P2P debt is an alternative source of external funds, it is considered to be relevant to a firm's leverage ratio. Our first test is to examine the relationship between P2P debt and a firm's leverage ratio:

H1: P2P debt contributes to a firm's debt ratios.

Due to the relatively high borrowing costs, private firms are in general less likely to retire capital. Thus, our next testable implication is:

H2: When private firms have a financing deficit, they are likely to issue either debt or request more equity capital than retire debt or repurchase equity.

In line with H2, most small private firms are typically owned by founder entrepreneurs and thus are unlikely to make large investment in fixed assets due to funding gaps. If bank debt is unavailable or perceived to be unavailable as in the discouraged borrowers' hypothesis, then firms will be credit constrained and thus unable to invest (e.g. Fraser, 2012). In this context, P2P debt is probably the only accessible source of external financing for such firms and particularly for those pursuing growth opportunities. Although the amounts of P2P debt are not as large as bank debt, P2P debt cannot be ignored since is now part of many firms' capital structure. We predict that firms are more likely to issue P2P debt when their target debt ratios are higher than their actual ones. Our next test is on the choice of issuing P2P debt or not:

H3: The greater deviation of the predicted leverage ratios from the actual leverage ratio, the higher probability a firm issues P2P debt.

Most of prior studies focus on public firms and find that firm size matters to the pecking order theory. For instance, Frank and Goyal (2003) document that the pecking order theory applies well to large US firms but does not explain the financing decisions of small US firms well. Denis and Mihov (2003) find that firm size is positively related to public debt rather than bank debt, using US public firms. Fama and French (2005) conclude that many US publicly listed firms do not follow the pecking order theory and issue equity in the first place rather than debt. However, these studies do not explore whether firm size influences the financing decisions of private firms. Since the vast majority of private firms are tiny in terms of their firm size (i.e. total assets), they are not obliged to publish detailed financial and accounting reports. The only reliable information that is available to lenders and is the value of a firm's total assets given in their balance sheet. Thus, P2P investors are likely to invest in relatively bigger rather than in smaller private firms because these firms are more stable in terms of their economies of scale. This leads to our next hypothesis:

H4: P2P debt is positively impacted by the size of small private firms.

As the pecking order theory suggests (Myers and Majluf, 1984), firms would first use internal funds to finance corporate activities before pursuing external finance. In addition, debt financing is preferable to equity financing as the latter is costlier and managers are reluctant to cede control of their enterprises to outsiders. Following Shyam-Sunder and Myers (1999), we use the financing deficit regression model to examine the pecking order behaviour of our small private firm sample. Our next testable implication is:

H5: Debt (either P2P debt or other debt) is preferable to issued capital.

Apart from P2P debt, firms' other debt is mainly bank debt. The main difference between bank and P2P debt is the degree of information asymmetry which influences the order or sequencing in how external financing sources are chosen. Compared with other non-bank public debt providers, banks request more financial information from applicants in order to better assess and monitor borrowers. As such, firms with lower asymmetric information will normally borrow from banks first and those with higher asymmetric information will tend to borrow privately (Fama, 1985). Moreover, P2P debt amounts typically are much smaller than those of bank loans. Therefore, we expect that other debt (mainly bank debt) is still the main debt capital alternative to P2P debt for private firms.

Finally, we investigate the use of P2P debt proceeds. We particularly focus on capital expenditures. These expenditures are the main reason for cash outflows for small private firms and in particular those that pursue growth opportunities. P2P firms are at the early stage of their entrepreneurial finance life cycle and thus are unlikely to have sufficient levels of retained profits to finance their capital expenditures. Such firms will need to fund their growth through bank debt or, more likely in the case of our sample period, P2P debt. Thus, we predict that

H6: P2P debt has a significant impact on the capital expenditures of small private firms in the years following that in which debt is raised.

3. *Data and sample*

3.1 **Sample construction**

This subsection reports on the data for our unique sample of small private firms with outstanding P2P debt raised via the Funding Circle platform. This platform was chosen for two reasons. First, Funding Circle, founded in 2010, is the UK's and indeed Europe's largest P2P lender to SMEs. It has over 42,000 investors and has lent to more than 10,000 firms. Second, it is the only large P2P provider that specialises in lending to small firms in the UK. While its rival Zopa has also begun to lend to small firms, it still primarily lends to consumers.

Funding Circle makes available on its website aggregated data on its lending by risk category, interest rate, region, industry and reasons for borrowing. Extant crowdfunding and P2P studies typically use such aggregated data from large, long-established platforms such as Kickstarter. Our approach is different from the previous work in that we hand-collect a large sample of firms with outstanding P2P debt from the Funding Circle (FC) website.¹¹ Related financial information for these firms is obtained from the Financial Analysis Made Easy (FAME) database¹² to create a de-identified database.¹³ The sample FC firms are overwhelmingly small private (i.e. non-listed) UK firms. They are defined by Companies House as small and so are required to submit balance sheet financial information only. Since they are not obliged to submit a profit and loss statement, income data from the balance sheet had to be extracted to create the control variables for the empirical analyses. Thus, firms not listed in FAME are excluded. We also exclude utility firms (USSIC codes 4900-4939),

¹¹ Available from <https://www.fundingcircle.com/uk/> [Accessed from September 18, 2015 to January 25, 2016].

¹² FAME is compiled by Bureau van Dijk (BvD). The data are collected from Jordans, a leading provider of legal information in the United Kingdom. In turn, Jordans collect the data from Companies House.

¹³ The data are de-identified to avoid any confidentiality issues. Our interest is solely in the data at aggregated levels and not that of individual firms.

financial firms (USSIC codes 6000-6999) and public sector firms (USSIC codes 9000-9999) due to the regulations they are subject to and their distinct financial policies and capital sources. This filtering process results in a final sample of 3,883 firm-year observations and 1,001 unique firms with P2P debt.

Since the sample is a fraction of the FC loanbook, it is interesting to see how representative it is for the purposes of our analysis. Appendix 1a summarises the firms' profile by industry, along with the share of the corresponding industry from the total number of loans in FC's portfolio as of May 2016. The sample includes a diverse range of firms. Overall, the sample industry percentages are quite close to the total number of funded projects. There are two exceptions. First, the sample overweights manufacturing and engineering and, second, it underweights property and construction. However, the combined percentages for these two industries are very close with figures of 30% and 29% for the sample and total, respectively.

One of the interesting and attractive aspects of P2P debt is that, in contrast with traditional bank debt, borrowers are not geographically constrained to borrowing from local sources only. In principle, any firm with an internet connection can become a borrower (assuming that it has the capacity to repay the loan). Appendix 1b provides the location of the sample firms by region. As a benchmark, we report the regional sample and total loan shares as well as the proportion of the population located in each region.¹⁴ The figures suggest that Scotland and Northern Ireland are underrepresented in our sample. On the other hand, the share of loans in our sample from the London and the South East regions are very close to those in the FC's loanbook. Indeed, the combined share of the London and the South East regions account for nearly 37% of the total loans (both in our sample and the FC's loanbook), which is in line with the spatial concentration of crowdfunding highlighted in Agrawal et al.

¹⁴ Population estimates were downloaded from the Office for National Statistics, UK, mid-2015.

(2011). This is to be expected for two reasons. First, London and the South East were least affected by the post-2008 recession. Second, London has been described as the crowdfunding capital of the world. The Northern powerhouse¹⁵ (North West and North East regions) accounted for 26% of P2P debt as against 23% of total loans and the population. This is consistent with manufacturing being overweighted in our sample.

In the remaining regions, the Midlands' sample share of 17% and the East of England's share of 6% are slightly higher than the corresponding total loanbook shares the regions' population shares, whereas those for Wales and the South West shares are representative. Overall, all sample figures are reasonably close to the percentage shares of each region from the total loanbook, suggesting that our sample is representative.

3.2 Descriptive statistics

Table 1 provides descriptive statistics for the proportion of P2P debt (P2PDEBT), logged total assets (SIZE) and age in years since inception (AGE) for our sample P2P debt each year over of sample period between 2010 and 2015.

[Table 1 around here]

The table show that many firms started to have P2P loans in 2014 as crowdlending became more established (Panel A). The median age of the firms with P2P debt is 11 years. The average amount raised by all P2P debt is £64.5k but that in 2015 is £73k.¹⁶ Panel B shows that the vast majority (80%) of sample P2P loans were raised in 2014 and 2015.

The maturity breakdown of FC's P2P debt is presented in Figure 1.

¹⁵ This term is used as shorthand for proposals to boost economic growth in the North of England by the 2010-15 Coalition government and 2015-20 Conservative government in the United Kingdom, particularly in the core cities of Manchester, Liverpool, Leeds, Sheffield and Newcastle.

¹⁶ This is virtually the same as the average P2P business size of £76k in 2015 reported in Zhang et al. (2016).

[Figure 1 around here]

The figure shows that P2P debt with a 5-year maturity predominates and this accounts for 67% of the total. The weighted average maturity of debt is 4.3 years (untabulated) and this contrasts sharply with the short term overdraft debt that banks typically provide private SMEs. The clear implication is that medium term P2P debt provides more stability for future planning and for sustained capital expenditure programmes by small firms.

Table 2 reports summary statistics for the dependent and independent variables used in the regression models in this paper. The detailed variable definitions are summarised in Appendix 2. The table shows the sample means (and standard deviations in parentheses) of the variables for the pre-P2P debt firm-year observations (column 2), for observations with P2P debt (column 3), and all observations (column 4). The final column gives the *t*-statistic (and corresponding *p*-values in parentheses) for equality of means for columns 2 and 3.

[Table 2 around here]

Several findings stand out. First, firm-year observations with P2P debt are characterised by significantly higher leverage (in total and net terms), higher levels of capital expenditures (CAPEX), total assets (SIZE), higher turnover (TURNOVER), net working capital (NWC) and profitability (PROFIT) levels, a smaller deficit (less negative) (DEFICIT) gap and a lower ratio of short term liabilities (SHORT_TO_LONG). All of these are significant at the 5% level or better. Second, firm-year observations with P2P debt are indistinguishable from pre-funding observations in terms of average return on assets (ROA). Also, pre-funding observations are characterised by negative growth rates (GROWTH) and observations with P2P debt are characterised by positive growth rates, but the difference in these figures appears to be statistically insignificant.

4. Empirical results

This section analyses various aspects of external entrepreneurial finance. These include the determinants of debt ratios of our small non-listed sample firms, their decision to raise or retire capital and their external financing choices. Following Brav (2009), we use firms' balance sheet data to quantify their leverage and differentiate between capital issuances or repurchases. In particular, we measure leverage as the sum of short-term loans and overdrafts plus long-term liabilities, all divided by total assets. Net leverage takes account of cash and other short-term net assets. We calculate the outstanding balance of each firm's loan(s) at the end of the fiscal year using an amortization schedule calculator and assuming that the monthly payments are fixed.¹⁷ If the firm has more than one loan, the outstanding balance at the end of the fiscal year for each loan individually is first calculated and then these outstanding loan amounts are summed to obtain the total value of P2P debt for firm.

4.1 Access to debt

This section analyses private SMEs' access to debt as the main source of their external entrepreneurial finance. In doing so, it studies the determinants of their debt ratios using a regression framework as in Brav (2009) and Rajan and Zingales (1995). A P2P debt dummy variable is employed to help quantify the change in leverage due to such debt. The choice of explanatory and control variables is motivated by the previous theoretical and empirical literature of capital structure. For example, Berger and Udell (1995), Rajan and Zingales (1995), Hovakimian et al. (2001), and Petersen and Rajan (2002), among others, find that firm size, asset tangibility, growth, profitability and age are key determinants of firms' debt

¹⁷ All P2P loans in our sample are being amortized. For each company, we assume that the accounting reference date reported by FAME is the end of the fiscal year. Given that FC provides the duration and date at which the loan was accepted, calculating the outstanding balance using an amortization schedule is straightforward.

ratios. We also include the composition of firms' debt (SHORT_TO_LONG) to control for contracting problems (e.g. Faulkender and Petersen, 2006; Brav, 2009).

Table 3 presents our pooled Ordinary Least Squares regression estimates for net leverage (and leverage) for the full sample from 2010 to 2015 and the corresponding *t*-statistics, adjusted for clustering by firm. The independent variables are lagged one period (except for the binary P2P dummy variable) to avoid potential endogeneity issues and all variables are divided by total assets to mitigate for heteroskedasticity.

[Table 3 around here]

Interestingly, both leverage measures (net and total) are positively and significantly related to the P2P debt dummy at the 1% critical value and these remain significant – both economically and statistically – even when all the control variables are added. This is a novel finding in the context of leverage and access to external entrepreneurial finance for private SMEs and supports Hypothesis H1. The results suggest that access to P2P debt results in an increase of more than five percentage points in both leverage measures stemming from this new debt source. The implication of the results is a new layer in the pecking order of external finance for private SMEs.

Table 3 shows a negative relation between both leverage measures and profitability (proxied by ROA) in line with Brav (2009) who posits that private firms' leverage is more sensitive (than that of public firms) to operating performance. This is because their absolute cost of external capital is high. Leverage is positively and significantly related to the proportion of short-term debt and assets tangibility in line with the trade-off theory of capital structure. These findings are robust regardless of whether or not we take into account bank deposits and other short term investments when measuring leverage. The table shows a positive and statistically significant relationship between net leverage and size. There is a

negative relation between net leverage and growth and a negative one between leverage and age but both are statistically significant at the 10% level only.

Overall, the results indicate that the P2P debt dummy variable exerts a positive impact on firms' debt ratios as predicted by hypothesis H1. This effect is economically significant as it implies an increase of one third (more than five percentage points) of the mean net leverage ratio for the full sample and a new layer in the pecking order of external finance for private SMEs. All the other statistically significant results are consistent with static trade-off theory. Both leverage ratios are significantly impacted by firm characteristics like profitability (ROA), asset tangibility and debt composition. These findings are similar to those of Brav (2009). for his sample of medium and large private firms. He established that leverage is highly sensitive to performance variables like ROA in line with traditional trade off theory. However, he also finds highly significant coefficients for all his other independent variables including growth and capital expenditures. Our findings are in agreement for most variables except capital expenditures which we find to be insignificant for both leverage measures.

4.2 Raising or retiring capital

This subsection examines how access to capital markets affects the decisions of small private firms on whether to raise or retire capital. Brav (2009) argues that private firms tend to rely more on debt than on equity since their cost of equity is higher for two reasons. One is that the owner managers (and other large shareholders) in private firms are reluctant to cede or dilute their control. The other is that private firm equity will be less attractive to outside investors due to the high degree of information asymmetry between insiders and outsiders. These two factors combine to raise the cost of equity for private firms. In the context of this

paper, P2P debt offers a new source of external capital to private firms that is less expensive than other (bank) debt and equity capital..

The capital issuance and retirement decisions of firms within our sample are explored using a multinomial logit model as in Brav (2009). The dependent variable takes the value of 0 if the firm takes no action (the baseline), 1 if it issues either debt or equity, and 2 if it either retires debt or repurchases equity. A firm is defined as issuing (repurchasing) equity if the percentage change in its shareholders' funds (the face value of total outstanding shares) is larger (smaller) than 5% (-5%). Similarly, a firm is defined as issuing (retiring) debt if the percentage change in the sum of short-term debt and long term liabilities is larger (smaller) than 5% (-5%). Following Brav (2009) and Leary and Roberts (2010), a firm's deficit and net working capital (NWC) are used as control variables.

The multinomial model results are presented in Table 4. In interpreting the results, the sign of the reported coefficient estimates shows whether a small change in the explanatory variable increases or decreases the odds ratio of the indicated alternative relative to the no - action baseline case. Model (1) includes all the explanatory variables (excluding Z-score) employed by Brav (2009) and, similarly, a firm's deficit and net working capital are used as control variables. Model (2) adds leverage as an explanatory variable.

[Table 4 around here]

The results show that small private firms are more likely to raise capital when they have a deficit and to retire capital when they have a surplus. The results support our hypothesis H2. The implication is that private firms are likely to raise external capital only when they have to, which is consistent with the higher cost of capital they face. The results indicate that the larger the firm size, the less likely it is to raise or retire capital, possibly due to economies of scale in cash management. Both of these findings are consistent with those of Brav (2009) for his sample of private firms. Also, consistent with firms raising capital to finance future

investments, we find that the probability of private firms to issue (retire) capital is positively (negatively) related to an increase in growth opportunities, but the relationship is statistically insignificant at conventional levels.

The Table 4 results on the DEFICIT variable in both specifications are as expected: firms are likely to issue capital when they have a deficit and to retire capital when they have a surplus. These show that small private firms are only likely to raise entrepreneurial finance only when they need it. The SIZE coefficients indicate that smaller SMEs are more likely to raise capital when they need it (probably due to insufficient internal funds) but also to retire it when they have a surplus. Firms with higher levels of net working capital are more likely both to raise and to retire capital, possibly using the new capital to retire debt. By contrast, Brav (2009) finds that his sample of private firms with higher levels of net working capital are less likely to retire capital. Our Model (2) adds leverage as an explanatory variable as a proxy for risk.¹⁸

The new results indicate that latter has no impact on our previous results with one exception. Including leverage has the effect of rendering insignificant the impact of net working capital on the probability of raising capital. These results also indicate that the higher the leverage levels, the lower the probability of raising new capital in particular and also of retiring existing capital. To sum up, our results on the decision to raise or retire capital are highly consistent with those of Brav (2009) for his medium and large private firm sample.

4.3 P2P debt and external financing choices

This subsection first presents results on the decision of private firms to issue or hold P2P debt or not. The debt decision is interesting as it can shed light on the aversion of private firms to

¹⁸ Brav (2009) employs the Z-scores of firms but such data are not available in FAME,

external finance that is well documented in the literature. It is tested within a Probit regression framework with two distinct dependent variables. The first response binary variable assumes a value of one for firms that prefer to issue P2P debt as the source of debt financing and zero for firms that take no action on issuing P2P debt while the second assigns a value of one for firms that hold P2P debt and zero for firms that do not. The choice of general explanatory and control variables is motivated by Brav (2009) and the theoretical and empirical literature on capital structure. For example, Rajan and Zingales (1995) and Havakimian et al. (2001) find that firm size and profitability (among others) are key determinants of firms' debt ratios. Building on Brav (2009), we model the decision to raise P2P debt in the spirit of Hovakimian et al. (2001) using the predicted debt ratios from the leverage regressions (in columns (2) and (4) of Table 3) as proxies for the target debt ratios. The independent variables include the target adjustment of leverage, ROA, and firm size. The target adjustment of (net) leverage, TMA_LEV (TMA_NET_LEV), is the difference between the predicted (net) leverage ratios from the leverage regression models of Table 3 column 2 (4) and the actual (net) leverage ratio in the previous year.

The results from the Probit regression are reported in Table 5.

[Table 5 around here]

The coefficients on both the target leverage deviations are significantly positive for the P2P debt dummy variables. They indicate that the larger the target leverage deviations, the higher the probability of firms issuing more P2P debt in regressions (1) and (2) and the higher the probability of holding P2P debt in regressions (3) and (4). Consistent with the trade-off theory of capital structure, these results support H3. In addition, the profitability (ROA) levels are inversely related to the probability of raising or holding P2P debt at the 1% significance level in all specifications. It is probable that low ROA levels imply low retained earnings and thus a need to raise external capital. This contrasts with the Brav (2009) finding

of an insignificant coefficient on this variable for the debt-equity choice for the private firms in his sample. Finally, the results indicate that the larger the firm size (natural logarithm of total assets), the higher is the probability of issuing and of holding P2P debt at the 1% significance level. The results are in line with the view that larger firms face lower asymmetric information costs and thus are more likely to issue or hold P2P debt. They offer support for our hypothesis H4.

The target adjustment hypothesis of the static trade-off theory predicts that, the greater the deviation from the target leverage and the more profitable the firm, the more likely the firm will choose debt in the issuance decision. The results in Table 5 can be summed up as extending this prediction to the case of P2P debt and establishing strong support for it.

Table 6 presents Probit regression results on three external financing choices for the full sample from 2010 to 2015. The choice between debt and equity results are presented in the first and second columns where the dependent variable is equal to one if the firm issued debt (including P2P debt) only and zero if it issued equity capital only. In the third and fourth columns, the dependent variable is equal to one if the firm issued other non-P2P debt (mostly bank debt) only and zero if it issued equity capital only.

[Table 6 around here]

A firm is defined as a debt issuer if its change in total debt (ΔDEBT) exceeds 5%. ΔDEBT is defined as the difference between the total of short term loans and overdrafts and long term liabilities in the current year and the corresponding total in the previous year, scaled by the latter total. Similarly, a firm is defined as an equity capital issuer if the change in its issued capital between a given year and the previous year, divided by the issued capital in the previous year, exceeds 5%. The results in column (1) indicate a statistically significant (at the 1% level) increase in the probability of issuing debt when firms' net leverage deviations from

target (TMA_NET_LEV) increase.¹⁹ Similarly, the results in column (3) show an increased likelihood of issuing other debt when net leverage deviations increase and this is also significant at the 1% level.

The final four columns of Table 6 present results on the choices between the decision to raise P2P debt versus other financing choices. The dependent variable in the fifth and sixth columns is equal to one if the firm issued only P2P debt (the change in P2P debt between a given year and its previous year is greater than zero) and zero if it issued equity capital only. The dependent variable in the final two columns is equal to one if the firms issued P2P only and zero if it issued other debt. The results in columns (5) and (6) indicate an increase in the probability of issuing P2P debt (rather than equity) if the firm experiences an increase in both net leverage and leverage deviations from target, respectively. Both coefficients are significant at the 1% level. Moreover, both coefficients are considerably larger from an economic viewpoint than the corresponding coefficients in regressions (1) and (2) for total debt. These results and those in columns (1) to (4) indicate that the preference for debt over equity receives strongest support from P2P debt (hypothesis H5). This is plausible as private firms are more likely to prefer medium term P2P debt (rather than short term bank debt) to equity for both cost and control reasons.

The results in columns (7) and (8) indicate a lower likelihood of raising P2P rather than other debt if the firm experience increases in both net leverage and leverage deviations from target, respectively. Both coefficients are significant at the 1% level. Finally, the results indicate an inverse relation between the probability of raising P2P debt versus other debt and profitability and the coefficients are significant at the 1% level. The implication from these

¹⁹ The TMA_NET_LEV independent variable is the deviation of the predicted net leverage ratios from the net leverage regression model in Table 3 column (2) and the actual net leverage ratios in the previous year. TMA_LEV is defined analogously using the leverage regression and leverage ratios in the previous year.

results is that small private firms have a better chance of raising P2P debt if their leverage deviations from target are decreasing and their profitability is low.

4.4 Funding capital expenditures

It is interesting to analyse the link between the capital raised and the subsequent investments by the firm. The main purpose for P2P debt given on applications on the FC platform is for capital expansion. Therefore, we use a regression model similar to that employed by Kim and Weisbach (2008) and relate capital expenditures to the three competing sources of funding for the 2010-2015 sample period. The dependent variable is the total amount of capital expenditures (CAPEX) in years 1 and 2, after the base year in which the funds are raised. The reason we observe the following two years is because over two thirds of firms raised P2P debt only in 2014 and 2015 (see Table 1). The funding independent variables include P2P debt, other (mainly bank) debt and the change in issued capital. The results are summarised in Table 7.

[Table 7 around here]

The results indicate that capital expenditures are positively and significantly related to each of the three funding variables. The positive impact of P2P and other debt on capital expenditures is statistically significant at conventional levels in years 1 and 2 following the funding year. The results also show that capital expenditures are positively and significantly related to equity capital in year 1. Most importantly, we conduct the equality of means test and document that the P2P are significantly different to the corresponding equity coefficients as indicated by equality of means test results in year 1. Similarly, the coefficient of other debt is also significantly different to that of equity capital in year (p-value = 0.034).

In the spirit of Kim and Weisbach (2008), we also calculate the implied change in the dependent variable when each source of funds is increased by one pound (£1) for a median-sized firm in 2014 in the two-digit SIC code 73 (Business Services). The results of these calculations are also presented in Table 7. The implied change per pound raised by either P2P or other debt financing is positive and increasing for the first three years after the base year during which capital is raised but decreases in the fourth year. In number, for every pound raised, capital expenditures rise by 30 pence for the first year after P2P debt funding. Over a 2-year horizon, capital expenditures rise by 37 pence. These findings suggest that firms use their P2P debt to engage in a programme of capital expenditures over a subsequent period of at least 2 years. In contrast, the implied change per pound raised by issuing capital decreases significantly over the subsequent 2 years. For a robustness check, we run the same regression model of future capital expenditures on the firms' P2P debt that is raised in the first year (i.e. we control for the noise of the remaining balance after the funding received) and find qualitatively similar results. The results are not reported here but are available upon request from the authors.

5. *Conclusions*

P2P business debt is a novel form of medium term external debt financing for small, unlisted entrepreneurial firms in which funds are raised via an internet portal. This paper investigates a unique sample of 1001 UK firms financed by the Funding Circle (FC) marketplace over the 2010-2015 period. The FC data are supplemented by financial data from FAME to analyse P2P debt in the context of theories of capital structure. The sample firms are relatively young with a median age of 11 years and the overwhelming majority are privately held rather than quoted on the London stock exchange.

Our econometric results indicate that sample firms' debt ratios are sensitive to P2P debt and to firm characteristics like firm size, asset tangibility and debt composition, but less sensitive to firm profitability. Small private firms are more likely to raise capital when they have a deficit and to retire capital when they have a surplus. These results are highly consistent with those of Brav (2009) for his medium and large private UK firm sample. They extend the traditional pecking order theory of capital structure as they show that P2P debt can be considered as an additional external debt source for private firms. The Probit regression results show that the larger target leverage deviations, the higher the probability of firms issuing or having P2P debt which is consistent with the trade-off theory of capital structure.

Finally, the results indicate that firms' P2P debt and other debt has a larger positive impact on capital expenditures than equity capital in the year in which the external funds were raised and in the following year. Given small private firms' limited published financial information (balance sheets only), they are unlikely to be able to access medium term bank debt. In this sense, P2P debt with a mean maturity of 4.3 years fills an important funding gap that contributes to increased capital expenditures over the course of the immediate post-funding event years.

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Table 1 Characteristics of P2PDEBT and age of firms with P2P debt

This table provides descriptive statistics for P2PDEBT, SIZE and AGE for our sample firms with P2P debt each year over of sample period between 2010 and 2015. P2PDEBT is the P2P debt amount (£000) scaled by a firm's total assets (detailed definition can be found in Appendix 2). AGE is the number of years in levels since a firm's inception. There are 1,001 unique firms having P2P debt over the sample period.

<i>Panel A: Firms with P2PDEBT</i>					
	P2PDEBT		AGE (years)		No. of firms
	Mean	Median	Mean	Median	
2010	0.083	0.083	35.00	35.00	1
2011	0.108	0.058	15.18	11.00	11
2012	0.153	0.085	13.31	11.00	59
2013	0.144	0.109	12.72	10.00	211
2014	0.179	0.130	12.40	11.00	611
2015	0.206	0.155	12.30	10.00	641
Total	0.184	0.133	12.47	10.00	1,001

<i>Panel B: Firms whose P2PDEBT in year t greater than year t-1</i>					
	P2PDEBT		AGE (years)		No. of firms
	Mean	Median	Mean	Median	
2010	0.083	0.083	35.00	35.00	1
2011	0.108	0.058	15.18	11.00	11
2012	0.155	0.087	13.02	11.00	43
2013	0.147	0.113	12.74	10.00	175
2014	0.195	0.144	12.04	10.00	474
2015	0.236	0.192	12.32	10.00	423
Total	0.201	0.147	12.34	10.00	934

Table 2 Variable descriptive statistics

The table shows the debt characteristics for the sample that that raised P2P debt on the Funding Circle platform between 2010 and 2015. It also reports summary statistics for the dependent and independent variables used in the regression models. The definitions are given below and also summarised in Appendix 2 (FAME data item is in italics). CHANGE_DEBT is the difference between the total of *Short Term Loans Overdrafts* and *Long Term Liabilities* in the current year and the corresponding total in the previous year, scaled by the latter corresponding total. LEVERAGE is the total of *Short Term Loans Overdrafts* and *Long Term Liabilities* scaled by *Total Assets*. NET_LEVERAGE is the total of *Short Term Loans Overdrafts* and *Long Term Liabilities* minus the sum of *Bank Deposits* and *Investment? Current Assets*, all scaled by *Total Assets*. P2PDEBT is the amount of peer-to-peer debt (in thousands), scaled by *Total Assets*. The loan and interest data for P2P debt are collected from the Funding Circle website. We calculate the outstanding P2P debt for every year. PROFIT is the difference between the *Profit Loss Account* total in the current year minus the previous year's corresponding total. ROA is PROFIT scaled by the average of current *Total Assets* and *Total Assets* in the previous year. TURNOVER is the difference between *Shareholders Funds* in the current year and *Shareholders Funds* in the previous year. GROWTH is the percentage change of TURNOVER between the current and the previous years. CAPEX is the difference between *Fixed Assets* in the current and previous years, scaled by *Total Assets*. TANGIAT is the sum of *Tangible Assets* and *Investments Fixed Assets*, scaled by *Total Assets*. SIZE is the natural log of *Total Assets*, inflation adjusted in 2015 pounds. SHORT_TO_LONG is *Short Term Loans Overdrafts* divided by the total of *Short Term Loans Overdrafts* and *Long Term Liabilities*. AGE is the natural log of firm years since incorporation. NWC is the sum of *Stock WIP*, *Trade Debtors* and *Other Current Assets*, minus *Trade Creditors*, all scaled by *Total Assets*. DEFICIT is the difference between *Fixed Assets* in the current and previous years, minus the sum of *Bank Deposits* and *Investments Current Assets* in the previous year, plus PROFIT, all scaled by *Total Assets*. ROA, GRWOTH, CAPEX, TANGIAT, SIZE, SHORT_TO_LONG, AGE, TURNOVER, NWC, and PROFIT are lagged one year.

	Full sample	Sub-sample without P2P debt	Sub-sample with P2P debt	<i>t</i> -test on means of two sub-samples
	Mean (SD)	Mean (SD)	Mean (SD)	<i>t</i> -value (<i>p</i> -value)
ΔDEBT	2.056 (10.660)	1.133 (7.884)	3.469 (13.757)	-6.713*** (0.000)
LEVERAGE	0.236 (0.211)	0.215 (0.217)	0.269 (0.197)	-7.878*** (0.000)
NET_LEVERAGE	0.163 (0.248)	0.145 (0.258)	0.192 (0.228)	-5.790*** (0.000)
P2PDEBT	0.073 (0.134)	0 (0.000)	0.184 (0.159)	-56.235*** (0.000)
ROA	0.027 (0.142)	0.027 (0.150)	0.026 (0.128)	0.09 (0.928)

GROWTH	-0.027 (11.612)	-0.154 (10.097)	0.168 (13.610)	-0.843 (0.399)
CAPEX	0.017 (0.112)	0.013 (0.112)	0.023 (0.111)	-2.837** (0.005)
TANGIAT	0.29 (0.257)	0.298 (0.259)	0.277 (0.254)	2.452* (0.014)
SIZE	5.821 (1.172)	5.781 (1.167)	5.883 (1.178)	-2.637** (0.008)
SHORT_TO_LONG	0.064 (0.207)	0.078 (0.230)	0.042 (0.164)	5.284*** (0.000)
AGE	2.176 (0.627)	2.124 (0.640)	2.255 (0.597)	-6.402*** (0.000)
TURNOVER	14.641 (52.957)	12.665 (52.737)	17.666 (53.167)	-2.879** (0.004)
NWC	0.562 (0.271)	0.549 (0.269)	0.583 (0.272)	-3.836*** (0.000)
PROFIT	13.105 (49.937)	11.143 (49.244)	16.108 (50.850)	-3.032** (0.002)
DEFICIT	-0.063 (0.192)	-0.083 (0.185)	-0.032 (0.198)	-8.278*** (0.000)
Observations	3,883	2,349	1,534	
No. of firms	1,001	814	1,001	

Table 3 Determinants of leverage

The table presents pooled Ordinary Least Squares regression results for net leverage (leverage) for the 2010-2015 sample period. The independent variables are lagged one period, except for the dummy variable (Dummy_ P2PDEBT). Dummy_ P2PDEBT is defined as one if the firm has a P2P loan in a given year, zero otherwise. Other control variables (not reported in the table) are year and two-digit SIC code industry dummies. Definitions for other variables can be found in Table 1 and Appendix 2. The *t*-statistics adjusted for clustering by firm are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

DEP. VARIABLE MODEL	NET_LEVERAGE		LEVERAGE	
	(1)	(2)	(3)	(4)
Dummy_P2PDEBT	0.056*** (4.117)	0.055*** (4.429)	0.052*** (4.331)	0.059*** (5.276)
ROA		-0.150*** (-4.803)		-0.066** (-2.549)
GROWTH		0.000* (1.704)		0.000 (1.175)
CAPEX		-0.009 (-0.240)		0.002 (0.066)
TANGIAT		0.357*** (13.006)		0.296*** (11.436)
SIZE		0.015*** (2.630)		-0.004 (-0.688)
SHORT_TO_LONG		0.069*** (2.924)		0.055*** (2.783)
AGE		-0.005 (-0.464)		-0.020* (-1.929)
Constant	0.333*** (7.805)	0.108** (2.514)	0.322*** (7.385)	0.292*** (6.355)
Observations	3,883	3,883	3,883	3,883
Adjusted R-squared	0.072	0.199	0.076	0.178

Table 4 Decision to issue or retire capital

The table presents multinomial logit regression results for the full sample from 2010 to 2015. The dependent variable is zero for firms that take no action on issuing equity or debt, on retiring debt or on repurchasing equity. It takes the value of one for firms that issue either debt or equity, and two for firms that either retire debt or repurchase equity. The definitions of other variables can be found in Table 1 and Appendix 2. All independent variables are lagged one period, except DEFICIT. The other control variables (not reported in the table) are year and two-digit SIC code industry dummies. The z-statistics adjusted for clustering by firm are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

MODEL	(1)		(2)	
VARIABLE	ISSUE	RETIRE/ REPURCHASE	ISSUE	RETIRE/ REPURCHASE
DEFICIT	2.079*** (6.430)	-1.641*** (-5.174)	2.379*** (7.181)	-1.528*** (-4.776)
SIZE	-0.391*** (-6.521)	-0.287*** (-4.649)	-0.384*** (-6.269)	-0.284*** (-4.632)
GROWTH	0.002 (0.538)	-0.005 (-1.042)	0.003 (0.734)	-0.005 (-0.978)
NWC	1.098*** (4.071)	1.391*** (5.098)	0.196 (0.695)	1.068*** (3.791)
LEVERAGE			-3.116*** (-9.682)	-0.889*** (-3.261)
Constant	2.727*** (5.474)	2.064*** (3.257)	4.521*** (8.145)	2.639*** (3.964)
Observations	3,883	3,883	3,883	3,883
Pseudo R-squared	0.0892	0.0892	0.113	0.113

Table 5 The choice of issuing or holding P2P Debt

The table presents probit regression results for the full sample from 2010 to 2015. The dependent variable for Columns (1)-(2) is the dummy variable P2PDEBT, zero for firms that take no action on issuing P2P debt and one for firms that issue crowd fund loan. A firm is defined as a P2P debt issuer if the difference between P2PDEBT in the current year and previous years is greater than zero. The dependent variable for Columns (3)-(4) is Dummy_P2PDEBT which is zero for firms that do not hold P2P debt in a given year and one for firms holding P2P debt in that year. TMA_NET_LEV is the difference between the predicted net leverage ratio from the net leverage regression model of Table 3 Column 2 and the actual net leverage ratio in the previous year. TMA_LEV is the difference between the predicted leverage ratio from the leverage regression models of Table 3 Column 4 and the actual leverage ratio in the previous year. The definitions for other variables can be found in Table 1 and Appendix 2. The other control variables (not reported in the table) are year and two-digit SIC code industry dummies. The z-statistics adjusted for clustering by firm are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

VARIABLES	P2PDEBT_ISSUES		Dummy_P2PDEBT	
	(1)	(2)	(3)	(4)
TMA_NET_LEV	0.443*** (4.374)		0.478*** (3.090)	
TMA_LEV		0.972*** (7.001)		0.908*** (4.293)
ROA	-1.267*** (-6.336)	-1.244*** (-6.204)	-1.094*** (-4.686)	-1.067*** (-4.574)
SIZE	0.096*** (5.345)	0.096*** (5.177)	0.195*** (5.884)	0.198*** (5.927)
Constant	-4.348*** (-8.919)	-4.350*** (-8.867)	-4.093*** (-9.602)	-4.108*** (-9.010)
Observations	3,881	3,881	3,218	3,218
Pseudo R-squared	0.330	0.337	0.407	0.412

Table 6 External financing choices

The table presents probit regression results for the full sample from 2010 to 2015. The dependent variable in the first and second columns is equal to one if the firm issued debt (including bank and P2P debt) only and zero if it issued equity only. The dependent variable in the third and fourth columns is equal to one if the firm issued other debt (i.e. mainly bank debt, excluding P2P debt) and zero if issued equity capital only. The dependent variable in the fifth and sixth columns is equal to one if the firm issued P2P debt only and zero if issued equity only. In the last two columns, the dependent variable is equal to one if the firm issued P2P debt only and zero if issued other debt. A firm is defined as debt issuer if its change in total debt (Δ DEBT) is greater than 5%. Δ DEBT is the difference between the total of short term loans overdrafts and long term liabilities in the current year and the corresponding total in the previous year, scaled by the latter total. A firm is defined as an equity issuer if the change in its issued capital between a given year and the previous year, divided by the issued capital in the previous year, is greater larger than 5%. A firm is defined as a P2P debt issuer if the change in P2PDEBT between a given year and its previous year is positive. The loan and interest data for P2P loans is collected from the Funding Circle website. TMA_NET_LEV is the difference between the predicted net leverage ratio from the net leverage regression model of Table 3 Column 2 and the actual net leverage ratio in the previous year. TMA_LEV is the difference between the predicted leverage ratio from the leverage regression model of Table 3 Column 4 and the actual leverage ratio in the previous year. The definitions for the other variables can be found in Appendix 2. The other control variables (not reported in the table) are year and two-digit SIC code industry dummies. The z -statistics adjusted for clustering by firm are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

VARIABLES	DEBT or EQUITY		OTHER DEBT or EQUITY		P2PDEBT or EQUITY		P2PDEBT or OTHER DEBT	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
TMA_NET_LEV	0.729*** (3.510)		0.829*** (4.042)		1.208*** (3.839)		-0.474*** (-3.244)	
TMA_LEV		1.089*** (4.709)		1.156*** (4.640)		2.110*** (5.771)		-0.485*** (-2.626)
ROA	0.138 (0.366)	0.161 (0.427)	0.300 (0.730)	0.312 (0.758)	-1.032* (-1.730)	-1.075* (-1.688)	-0.755*** (-3.160)	-0.735*** (-3.114)
SIZE	-0.079* (-1.779)	-0.078* (-1.739)	-0.036 (-0.728)	-0.031 (-0.635)	-0.015 (-0.202)	-0.019 (-0.256)	-0.032 (-1.149)	-0.034 (-1.223)
Constant	1.787*** (5.138)	1.765*** (5.093)	1.423*** (3.709)	1.382*** (3.600)	-1.242 (-1.462)	-1.240 (-1.375)	-3.014*** (-7.188)	-3.005*** (-7.158)
Observations	1,517	1,517	928	928	698	698	1,873	1,873
Pseudo R-squared	0.0637	0.0741	0.0611	0.0706	0.389	0.417	0.285	0.284

Table 7 Proceeds for capital expenditures

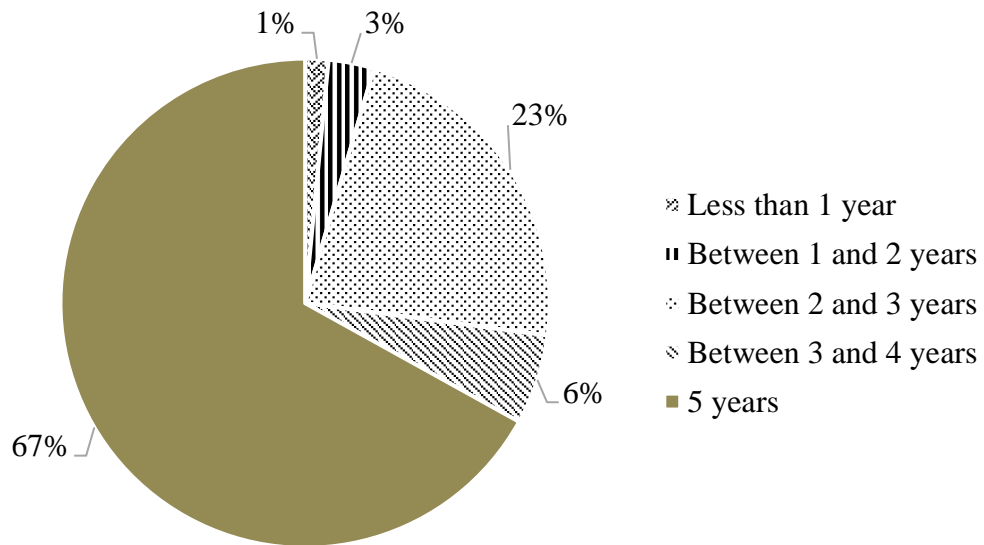
This table shows the results of OLS regression models for the examination of the distribution of capital raising to capital expenditures. The sample period is from 2010 to 2015. The dependent variable is the total amount of capital expenditures (CAPEX) in 1 and 2 years after the base year that the capital is raised. The independent variables are P2P debt (P2PDEBT), other debt (OTHERDEBT), the difference in issued capitals between a given year and the previous year (EQUITYCAP), and firm size measured by total assets (ASSETS) in natural log form as in the equation below. CAPEX, P2PDEBT, OTHERDEBT and EQUITYCAP are scaled by total assets. All regression models control for year and two-digit SIC code industry dummies. The definitions for all variables are presented in Appendix 2. The results for firm size and the two fixed effects dummies are not reported in the table. Standard errors are clustered by firm. The *t*-statistics are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Pound changes are the implied change in the dependent variable when each separate source of funds is increased by one pound for a median-sized firm in 2014 in the two-digit SIC code 73 (Business Services).

$$\ln \left[\frac{\sum_{i=1}^t CAPEX_i}{ASSETS_0} + 1 \right] = \beta_1 \ln \left[\frac{P2PDEBT_0}{ASSETS_0} + 1 \right] + \beta_2 \ln \left[\frac{OTHERDEBT_0}{ASSETS_0} + 1 \right] + \beta_3 \ln \left[\frac{EQUITYCAP_0}{ASSETS_0} + 1 \right] + \beta_4 \ln[ASSETS_0] \\ + \sum_{i=2010}^{2015} \theta_i Year Dummy + \sum_{j=1}^{53} \lambda_j Industry Dummy + \varepsilon$$

<i>t</i>	Obs.	$\ln \left[\frac{P2PDEBT}{ASSETS} + 1 \right]$		$\ln \left[\frac{OTHERDEBT}{ASSETS} + 1 \right]$		$\ln \left[\frac{EQUITYCAP}{ASSETS} + 1 \right]$		<i>p</i> -value	£ Change			Adj. R-squared
		β_1	<i>t</i> -stat	β_2	<i>t</i> -stat	β_3	<i>t</i> -stat		$H_0: \beta_1 = \beta_3$	P2PDEBT	OTHERDEBT	
1	2,930	0.307***	(3.400)	0.406***	(6.780)	0.993***	(3.656)	0.0165**	0.303	0.405	1.037	0.073
2	2,120	0.367**	(2.076)	0.491***	(5.162)	0.440	(1.394)	0.839	0.367	0.497	0.443	0.061

Figure 1 The maturity of the sample P2P debt

The figure reports the share of loans by maturity. Maturities range from 1 to 5 years and each share is calculated as a percentage of the total number of P2P loans raised by the firms in our sample.



Appendix 1 Data characteristics relative to Funding Circle’s overall loans portfolio

Appendix 1a Sample characteristics by industry

The first column (Sample) reports the share of firms within the sample from the corresponding industry. The last column (Total) reports the share of each industry from the total number of loans raised through the Funding Circle platform. The total number of loans at the time these figures were calculated was 18,444. All numbers are percentages.

Industry	Sample (%)	Total (%)
Manufacturing and Engineering	19.4	11.8
Retail	13.0	11.8
Property and Construction	10.8	17.1
Professional and Business Support	9.8	10.8
Other	8.4	6.3
I.T and Telecommunications	7.0	7.4
Leisure & Hospitality	6.3	7.6
Healthcare	4.9	5.1
Automotive	4.5	3.9
Wholesale	4.5	4.3
Transport and Logistics	4.0	3.4
Education & Training	2.6	2.8
Consumer Services	1.9	2.0
Agriculture	1.4	1.7
Finance	1.3	2.8
Arts & Entertainment	0.3	1.3

Appendix 1b Sample characteristics by regions

The first column (Sample) reports the share of companies within the sample from the corresponding region. The second column (Total) reports the share of each region from the total number of P2P loans raised through the Funding Circle platform. The final column (Population) reports the population of each region as a share of the total population in UK. According to the Office for National Statistics mid-2015 estimates that total population of UK is 65,110,034. All numbers are percentages.

Region	Sample (%)	Total (%)	Population (%)
South East	23.2	23.1	14
Midlands	17.0	14.1	16
London	13.6	14.2	13
North West	13.4	12.0	11
North East	12.5	10.3	12
South West	11.4	11.2	8
East	5.8	3.7	10
Wales	3.0	3.5	5
Scotland	0.1	5.8	8
Northern Ireland	0.1	2.1	3