# The Business Models and Economics of Peer-to-Peer Lending.

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**Abstract**

This paper has reviewed peer-to-peer (P2P) lending, its development in the UK and other countries, and assessed the business and economic policy issues surrounding this new form of intermediation. P2P platform technology allows direct matching of borrowers and lenders diversification over a large number of borrowers without the loans having to be held on an intermediary balance sheet. P2P lending has developed rapidly in both the US and UK, but still represents a small fraction, less than one percent, of total bank lending. In the UK – but not elsewhere – it is an important source of loans for smaller companies. We argued that P2P lending is fundamentally complementary not competitive too conventional banking. We therefore expect banks to adapt to the emergence of P2P lending, either by co-operating closely with third party P2P lending platforms or offering their own proprietary platforms. We also argue that the full development of the sector requires much further work addressing the risks and business and regulatory issues in P2P lending, including risk communication, orderly resolution of platform failure, control of liquidity risks and minimisation of fraud, security and operational risks. This will depend developing reliable business process, the promotion of as full a degree as possible of transparency and standardisation and appropriate regulation that serves the needs of customers.

**Key words**: Market place lending, financial regulation, credit risk, credit markets, liquidity risk, standardisation, digital economy, banking competition, credit availability, small business lending, consumer credit

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# 1. Introduction

A wide range of "peer-to-peer" (P2P) financial platforms have emerged in the recent years, supporting personal loans (Zopa, Prosper, Lending Club), small business lending (First Circle, Kabbage), invoice discounting (The Receivables Exchange, Market Invoice) and foreign exchange transactions (Currency Cloud, Currency Fair, Transferwise). The volume of these activities has grown rapidly from a relatively low base. For example P2P lending in the UK has doubled every year in the past four years with the stock of loans exceeding £1bn in 2014 and £2bn in 2015 (Peer to Peer Finance Assocation 2015). Incumbent financial institutions are paying attention, investigating the possibility of developing their own "in house" P2P platforms (Jenkins & Alloway 2015).

Much commentary has focused on the possibility that the development of these new P2P platforms will overturn existing organizational and institutional structure of banking much has already occurred in for example recorded music distribution, in telephony or in air and travel reservation (King 2010). The perception that P2P lending can 'reinvent' the bank has prompted ambitious projections of P2P lending growth over the next 5-10 years (with suggestions that the stock of lending taken from banks by P2P platforms could be as high as $1 trillion dollars globally). This is though not the only possible outcome. Different business models may coexist – as for example in booking of holiday rooms, where Airbnb supports a C2C (consumer to consumer) exchange as an alternative to more traditional B2C (business to consumer) provision; or instead incumbents may adapt their business models to the new technology as has already happened in personal and household insurance markets and household utility services such as gas and electricity.

This report has been prepared with two principal objectives. First to provide an overview of P2P lending, explaining what it is and comparing it with other forms of P2P finance (Section 2) and documenting its development in the UK and other countries (Section 3). Our second objective (pursued in Section 4) is assessing the business model and the economics of P2P unsecured personal lending.

As we discuss in Section 2, P2P platforms do offer major competitive advantages over established banks in bringing together lenders and borrowers. These advantages include: extremely low interest margins because of their low administrative costs and because the platforms do not themselves take any risk exposure; the ability to offer loans to some customers who may be turned down for loans by established banks; and their innovative use of technology to provide much greater transparency, flexibility and rapid and a more convenient service for customers.

We though urge caution about the prospects P2P supplanting conventional banking. As we show in Section 3, the amount P2P lending remains very small relative to conventional bank lending, even in those jurisdictions such as the US and the UK where P2P lending has developed most rapidly. Our analysis in Section 4 of the business models and economics of P2P lending suggests that rather than disrupting banking, P2P lending is best viewed as complementary to conventional bank business models, allowing banks to economise on risk capital and concentrate on the provision of liquidity services which are the fundamental core of their business models. For this reason we expect that banks will either co-operate closely with third party P2P lending platforms (this is already happening in the US) or offer their own proprietary platforms, in order to provide both loan and investment services to their customers. We also argue that while there is scope eventually for a substantial proportion of lending to be provided through P2P platforms, and this could lead to large gains, both private and social, the full development of the sector requires much further work address the risks and business and regulatory issues in P2P lending. We argue that much greater standardisation of loan, credit performance and operational metrics will be key to supporting effective P2P lending.

In short the extent to which P2P lending platforms are successful in capturing credit activity depends largely meeting the challenges of amending and adapting existing business processes to support this new form of intermediation and only to a much more limited extent on exploiting technological innovation. As in many other areas of financial technology the issues are as much as 80% business process and as little as 20% technological. Current speculations about the growth of P2P lending are just that: speculative. All depends on the strategies of new entrants and their implementation and on the response of both incumbents and public authorities and their willingness to co-operate on the development of the sector. It is simply too early to make any reliable judgement on how large P2P lending will become in a few years time.

## 2. Peer to Peer in Finance

This section provides an overview of the development of peer to peer finance with a focus on peer to peer lending.

### The Origins of Peer to Peer

Peer-to-peer (P2P) is a term that describes interaction between two parties without the need for a central intermediary. The term originated in the field of computer networking, to describe a network where any one computer can act as either a client or a server to other computers on the network without having to connect to a centralized server. The internet is itself a P2P network.

The growth of the internet and its ability to facilitate disintermediation between users has given rise to a range of more specific P2P activities. The first such activity to become widely adopted (around the turn of the millennium) was peer-to-peer file sharing, where users could, by installing the necessary software on their computers, connect directly to other users on the network who had similar software, in order to share files such as photos, music, movies and games.

The widespread adoption of P2P file sharing, through services such as Napster, Gnutella, Kazaa, LimeWire and more recently BitTorrent have had a massive impact on the music and film industries, particularly on the sales of physical products such as CDs and DVDs (though ultimately delivery has moved away from P2P models to streaming services such as Spotify or NetFlix). Whether the overall impact on these industries has been positive or negative is open to debate and depends on one's point of view, but these industries have been funadmeantally transformed since Napster first appeared in 1999: *"What has clearly emerged is that there are a number of different dynamics at work, yielding a mixed result with respect to album sales, a likely positive result for the music industry as a whole through gains in concert and merchandising revenues, and a clearly positive effect on social welfare through improved market chances for non-star music, greater cultural diversity and increased consumer surplus."* (Grassmuck 2010). One question addressed in this paper is whether financial services industry could see equally fundamental shifts from the adoption of P2fP lending.

### The history of peer-to-peer finance

The history of P2P in finance can be traced back to the launch of two companies, UK-based Zopa in 2005 and US-based Prosper in 2006. Both facilitated peer-to-peer lending, whereby borrowers and lenders could bypass banks and deal directly with each other through a central marketplace. Chris Larsen, co-Founder of Prosper, described his company's offering as an "eBay for Credit" (Business Wire 2006).

To date, Prosper claims more than 2 million  members and total lending of $6bn of lending (Prosper 2016). Zopa reports that it has supported a cumulative total of £1.4bn of P2P loans and that currently has some 53,000 investors lending to its 114,000 borrowers (Zopa 2016a). In the years since Zopa and Prosper first launched, a number of other companies have successfully launched their own marketplaces. For example in the UK there are now eight members of the Peer2Peer finance association (see the following Section 3 for more detailed description of developments in the UK and other countries).

There has also been an expansion of several other novel alternative financial services operating outside of conventional banking and capital markets. These include: (i) "crowdfunding", which is where a sum of money is raised for a specific project (the funding) by lots of smaller contributions from individuals (the crowd). At the time of writing some 39 UK crowdfunding platforms were members of the UK crowdfunding association (see UK Crowd Funding Association 2016); (ii) alternative foreign exchange platforms, where individuals and businesses exchange foreign currencies without using banks; (iii) non-bank invoice discounting, where small firms can improve their cash flow by securing advances from investors against invoices due; and (iv) cryptocurrencies such as Bitcoin and LiteCoin that support instant, online payments in digital currencies without any central issuer.

A number of these other alternative forms of finance also have 'peer-to-peer' features. Independence of financial institutions, governments and central banks is a defining feature of cryptocurrencies (but also a limitation because to date they exchange only on relatively limited networks). Crowdfunding is also P2P by design. Other forms of alternative finance can be P2P. MarketInvoice, the leading UK invoice discounting firm is a member of the Peer to Peer Finance Association and offers a P2P platform for invoice finance. However as they emphasise on their webpages, their P2P platform is *not* open to retail investors.

Non-bank foreign exchange services such as Transferwise, CurrencyFair and CurrencyCloud are often described as 'peer-to-peer' but this is not always accurate. CurrencyFair offers an internal platform where clients can transact with each other – P2P – at current 'mid-market rates' (the average of buying and selling rates offered by the major international foreign exchange dealers). CurrencyCloud also offers direct exchange at mid-market rates between customers, but this is for business clients (larger corporate and financial institutions) not retail customers or small businesses.

Transferwise is not really a P2P service at all. Instead all customers exchange with Transferwise for a fixed fee at an exchange rate set at the time of the transaction. Is able to do this for relatively low fees because the large majority of their transactions net out internally – e.g. exchanges from Euro to Sterling matched by exchanges from Sterling to Euro. Transferwise then uses CurrencyCloud to exchange any final net imbalances from its customer orders (see Käärman 2016).

It is questionable whether the 'peer to peer' nature of P2P lending is in important, in the same way as in platforms such as AirBnB or Uber. The diversification of loans means that there is never a personal relationship between borrower and lender in the same way that is created by an AirBnB booking. Ratings of borrowers and lenders is not an important quality control mechanism as it is for example on EBay. While some individual P2P lending platforms may promote their personal or community orientation, this is not a fundamental feature of the business model.

**The competitive advantages of peer to peer lending platforms**

The rapid growth of P2P lending platforms, doubling their business annually in recent years, and their perceived cost and other advantages relative to established banks, have led a number of commentators to make quite ambitious projections about the extent to which P2P lending can capture market share in banking lending markets.[4] There are several reasons for expecting continued rapid growth of P2P lending. The exploitation of new technology, i.e. the fact that the Internet can facilitate disintermediation by allowing parties to communicate directly with one another, is of course a fundamental. But the potential for growth is also because of a number of competitive advantages of P2P lending platforms over the incumbent suppliers, i.e. the banks.

These advantages can be grouped in four categories: offering better rates of return than are available on bank deposits together with relatively low fees for borrowers; provision of credit to some categories of borrowers unable to access bank lending; a perception that P2P lending is more responsible and of greater social value than conventional banking; and finally technical innovation improving the quality and speed of service to both borrowers and lenders.

Lenders on P2P platforms have over the past five years achieved substantially better returns than could have been obtained from investing their money in conventional bank savings deposits. This is in part because of the cost advantages of P2P platforms compared to traditional banks. The focused nature of their activities ensures that the administrative and overhead costs required for setting up a P2P platform are relatively low. Platforms are also able to match borrwers and lenders (because they are not holding any of the loans themselves) without any interest margin. While lenders on P2P lenders are exposed to greater risk (there is no deposit insurance and no promise of returns) these risks have at least to date been substantially compensated by much higher rates of return.

A second reason for the growth of P2P lending has been providing greater access to credit. Since the onset of the global financial crisis, banks and traditional lenders have been more reluctant to provide credit to borrowers. Some individuals and small businesses who do not satisfy the more stringent criteria that banks now place on granting loans can, have been able through peer-to-peer lending services, find alternative lenders who are willing to take on the risk of providing such loans or to offer them at lower rates of interest.

[4] Three relevant reports from 2015 are: (PWC 2015) who project that P2P lending could grow by 2025 to 10% of the $800bn US market for revolving consumer debt and 4% of the $1.4 trillions of non-revolving consumer debt held by US financial institutions; (Moldow 2015) projects a global P2P lending to rise to $1 trillion globally by 2025, on the assumption that it captures 10% of consumer and other lending markets; and (Morgan Stanley Research 2015) who project that P2P lending will capture 10% of US lending by 2020 and reach a stock of $150-$490bn globally.

Another factor in the initial growth of P2P lending is the perception that – by directly linking individual borrowers and lenders – it offers a more socially beneficial form of finance, without the concerns sometimes levelled at banks and other conventional financial intermediaries that they sometimes exploit their market power and pursue profit without adequate regard to the interests of their own customers. This perception has though been somewhat eroded by the increasing presence of institutional investors as lenders on P2P lending platforms.

The final advantage of P2P lending is technological. Banks spend a great deal of money on technology, but the majority of that goes towards maintaining existing systems, rather than on innovating new ones. According to a report published by research and consulting firm Celent in January 2012, banks planned to spend 77.6% of their 2012 technology budgets on maintenance (Celent 2012) . Banks – particularly retail banks - tend to have large, legacy systems that are difficult to replace because of the infrastructure that has been built around them.

Start-up firms – P2P lenders but also 'challenger banks' seeking to compete with established banks in a fuller range of banking services using new technologies – can can design and implement operational systems that take advantage of the latest Web 2.0 technologies, without being hindered by the need for continuity with older legacy systems. This in turn can allow them to offer better quality service both to borrowers (a simple loan application process with a rapid decision and a transparent and flexible portal for monitoring their repayments and outstanding commitments) and lenders (for managing their lending and tracking the current status of their investments).

In addition modern technology allows P2P intermediaries to provide new approaches to intermediation not available with traditional bank business models. Thus to take a UK example, the minimum investment in the P2P lender FirstCircle of £100 is spread over more than 100 borrowers with a maximum of 1% exposure to each. The investor can see all the available information such as credit rating, location and business sector on each business they invest in.

While all P2P lending platforms employ similar methods of diversification, they have used technology to pursue two different approaches to matching lenders and borrowers. One is an online auction approach where borrowers indicate the maximum interest rates they are willing to pay on their loans and lenders the minimum rates they are looking to obtain for specified categories of risk. As new borrowers come onto the platform, they are matched with bidders looking to provide loans on the platform. The platform then conducts an automatic 'reverse auction' gradually increasing the interest rate payable on the loan until there are sufficient bids to fully fund the loan (subject to the diversification requirement limiting the magnitude of individual loan exposures). Provided this interest rate is at or below the maximum rate the borrower is willing to pay then the loan is funded at this interest rate. If not then it is rejected.

Another approach – somewhat easier for borrowers and lenders to understand– is an automatic matching of borrowers and lenders at announced market rates of interest set by the platform for each risk categories. This can mean delays in matching – since there are typically imbalances with more borrowers than lenders or more lenders than borrowers – but the platform can adjust interest rates over time to eliminate these imbalances.

## 3. The recent growth of P2P lending

This section provides a detailed review of the UK P2P lending market and some comparisons with P2P in other jurisdictions – the US, China and the rest of the EU. We highlight the relatively limited share of total lending markets achieved to date – despite rapid growth – the wide range of different business models and and the  major differences in economic and regulatory institutions which have resulted in substantially different development of P2P lending platforms in different jurisdictions.

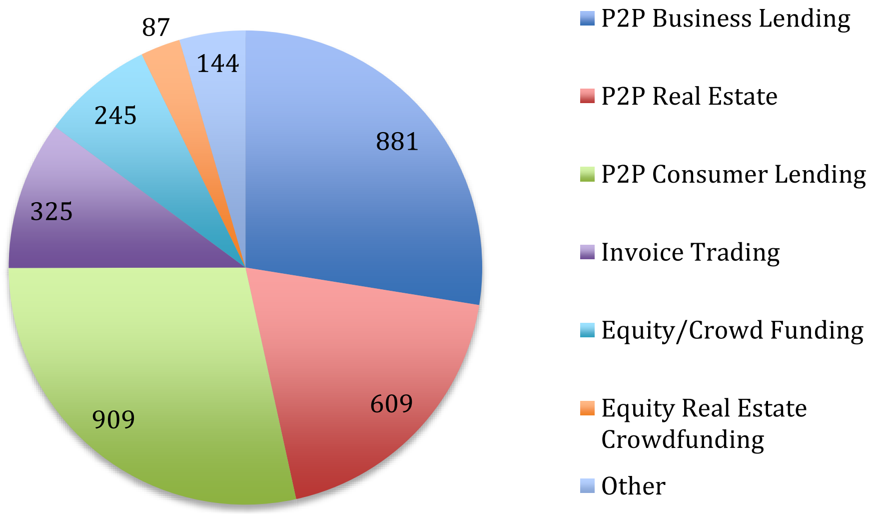
**The United Kingdom**

P2P lending has grown rapidly in the UK. It now makes an important contribution (13% in 2015) of the supply of new loans to the small enterprises (those with turnover of £1million or less). There is also a large and growing volume of P2P unsecured consumer lending but this is still accounts for only a small share of the total UK market for unsecured consumer loans.

(Zhang et al. 2016a) report total funding of £3.2bn raised in UK "alternative finance" market during 2015 of, of which £2.4bn of gross lending was attributable to peer to peer lending (debt finance in which the platform or intermediary takes on no risk or open positions).

Figure 1 shows a breakdown of this alternative finance. P2P consumer lending is the largest category, followed by P2P business lending and P2P real estate lending (primarily for buy to let residential mortgages).

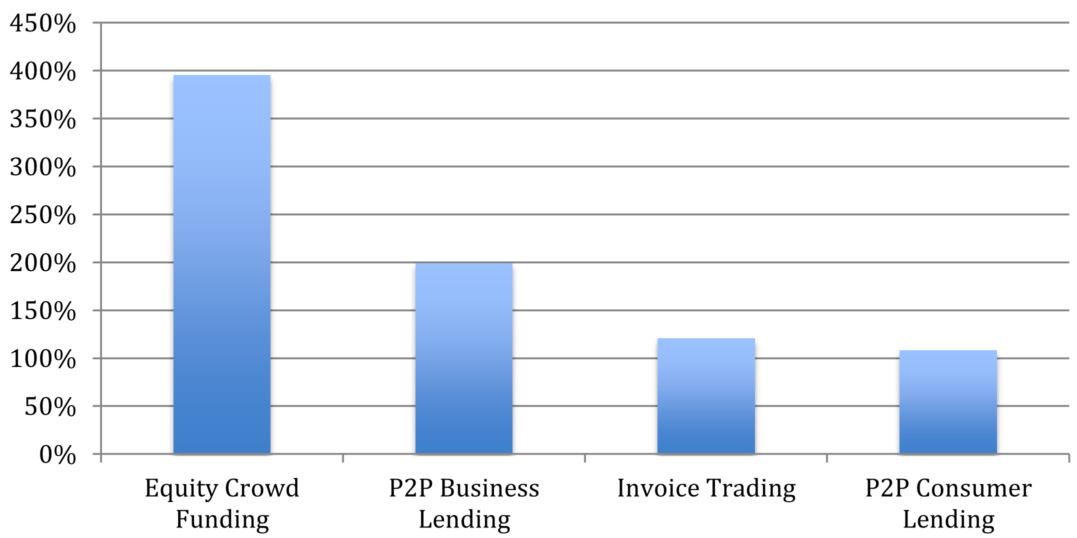
**Figure 1: The £3.2bn UK 2015 Alternative Finance Market**




Note. Our figure based on data on the end-year stock of financing from (Zhang et al. 2016a).

Figure 2 shows 2015 growth rates of the principal segments of UK alternative finance reported by (Zhang et al. 2016b). Comparing gross provision of funding in 2015 over the previous year, the fastest growth was in equity crowd funding which grew by nearly 400% (following similarly rapid growth in 2104 compared to 2013). P2P business lending was the second largest growth area of 2014. P2P consumer lending and invoice trading were grew more slowly but still more than doubled in 2015 compared to 2014.

**Figure 2: Annual Growth Rates of UK Alternative Finance 2015 on 2014**



Notes. Our figure based on data from (Zhang et al. 2016a). Figures for Equity crowdfunding and P2P Business Lending combine real-estate lending and non-real estate business lending.

The series of reports on alternative finance from NESTA and the Cambridge Centre for Alternative Finance provide a wealth of further detail about alternative finance and P2P lending in the UK. They document for example participation both by gender and by region. (Baeck et al. 2014) report that in 2014 the average size of a P2P business loan was £73,222 and these loans were sourced from an average of 796 investors. In the same period the average P2P consumer loan was £5471. The median investment by P2P lenders was in excess of £5000. Some 46% of P2P consumer loans in the UK in 2014 were used to purchase a vehicle.

(Zhang et al. 2016b) report a growing share of investment in UK P2P lending platforms from institutional investors. They report that in 2015 institutional investment accounted for 32% of gross lending in peer-to-peer consumer lending, 26% of peer-to-peer business loans and 25% in peeer-to-peer lending secured on real estate, with all these proportion rising steadily through the year i.e. by end year about *one third* of all 'P2P' lending in the UK was from institutional investors (see their Figure 18, page 29). They also provide information on a wide range of other forms of alternative finance (community shares, reward-based crowdfunding, pension-led funding, donation-based crowdfunding, debt-based securities together providing only a little over £100mn of finance in 2015 but growing fast from their low initial base).

There are eight established P2P lending platforms in the UK, all members of the UK Peer=to=Peer Financing Association (http://p2pfa.info/ which states that it represents over 90% of the UK peer to peer and invoice trading market). Their business models vary considerably, as illustrated the figures on their net lending flows to different categories of borrower in Table 1 below.

Zopa – launched in 2005 as the first Peer-to-Peer lending platform in the world – offers only unsecured consumer lending (including a small sole proprietor businesses). The smaller platform LendingWorks also supports only unsecured consumer lending. Funding Circle – launched in 2010 and now by a small margin the largest UK P2P platform– is not involved in consumer lending at all, supporting instead only unsecured lending to small business and lending secured on residential property. The smaller platform ThinCats also supports unsecured business lending and lending secured on residential property. Two other platforms – LendInvest and Landbay – support only lending secured on property. RateSetter is the only platform supporting lending to all three categories of lending – unsecured consumer, unsecured small business and real estate lending.

**Table 1: UK P2P lending volumes by platform and compared with other UK creditmarkets.**

| | Balance | Net Lending Flow, 2015 (£mn) | | | | Number of: | |
|---|---|---|---|---|---|---|---|
| Platform | End-2015 (£mn) | Consumer | SME | Secured on Property (mainly buy-to-let) | Total | Lenders '000 | Borrowers '000 |
| Funding Circle | 657 | - | 243 | 89 | 332 | 42.9 | 15.4 |
| Zopa | 625 | 293 | - | - | 293 | 53.0 | 113.6 |
| RateSetter | 517 | 154 | 68 | 24 | 245 | 26.5 | 138.5 |
| Lendinvest | 195 | - | - | 108 | 108 | 2.2 | 1.0 |
| Thincats | 89 | - | 21 | 6 | 27 | 1.8 | 0.3 |
| Market Invoice | 36 | Annual lending of £264mn to businesses | | | | 0.2 | 1.6 |
| Landbay | 21 | - | - | 19 | 19 | 0.8 | 0.1 |
| LendingWorks | 14 | 10 | - | - | 10 | 1.1 | 2.9 |
| Total P2P | 2,155 | 456 | 332 | 246 | 1,033 | 128.3 | 273.6 |
| All lenders | 522,620 | 14,606 | 2,294 | 6,784 | 21,380 | | |
| P2P as % total | 0.4% | 3.0% | 12.6% | 3.6% | 4.8% | | |

Notes. All P2P data calculated from tables in the press releases of the UK Peer-to-Peer Finance Association (Peer-to-Peer Finance Association 2016b; Peer-to-Peer Finance Association 2015c; Peer-to-Peer Finance Association 2015b; Peer-to-Peer Finance Association 2015a). The data on other lenders is from the Bank of England: BankStats Table 5.2 for stock and flow of consumer credit from monetary financial institutions (banks and building societies); BankStats Table A8.1 for the stock and flow of lending to small and medium sized enterprises (SMEs) by monetary financial institutions. Lending secured on property is calculated using Bank of England MLAR Table 1.33 to compute stock and flow for buy-to-let residential mortgage lending only and deducting P2P (we restrict comparison in this way because most UK P2P lending secured on property goes into the buy-to-let market, itself about 15% of total UK stock and flow of residential mortgage lending). The figures given here on lending flows are net of repayments and so not directly comparable with the gross lending figures reported by (Zhang et al. 2016b) and illustrated in Figure 1.

These seven platforms all provide a simple and easy to understand portal for retail investors (we describe three of these in more detail below). The eighth member of the Peer-to-Peer Finance Association, Market Invoice, has yet another business model, entirely different from any of the other seven. It provides business lending secured on invoices (note there are a number of other invoice lending finance companies in the UK that are not members of the P2P finance association. Also, as Market Invoice make clear on their website, they do not accept investment from retail lenders – instead all their investment comes from a variety of sophisticated i.e. institutional investors who are expected to understand fully the risks of this form of lending.

There are a number of other UK P2P platforms that are not, as yet, members of the P2P Finance Association. Interest has been encouraged by a government decision that from April 2016 UK savers will be able to include money place into P2P lending as part of their allowance for investments in "ISAs" (tax exempt savings vehicles). The UK regulator, the Financial Conduct Authority, reports that in the UK "*As at 30 March 2016, eight firms have been fully authorised to operate*

*P2P platforms. There are a further 86 firms awaiting a decision, of which 44 have interim permission. Firms with interim permission were previously licensed by the Office of Fair Trading, which regulated consumer credit before the FCA, and are able to continue carrying out consumer credit activities until we decide whether to fully authorise them. Only P2P loans on platforms operated by firms with full authorisation will be eligible investments for the Innovative Finance ISA."*

We have conducted a brief web search, uncovering a few of these other firms. At the end of March, 2016, SavingsStream (https://savingstream.co.uk) reported £121mn of P2P lending in bridging loans for property development. Verus360 (http://www.verus360.com ) supports P2P lines of credit (overdrafts). Their website does not report any figures on their total lending. According to their website Wellesley and Co (https://www.wellesley.co.uk) has loaned (by end March 2016) some £310mn to business customers investing in property. Assetz Capital (https://www.assetzcapital.co.uk) support lending to SME busineses, property developers and buy-for-let lending, reporting cumulative lending to March 2016 of £80mn. Proplend is a smaller platform supporting loans on commercial and residential property (https://www.proplend.com ) with loans at end March of £11mn. FolktoFolk (https://www.folk2folk.com) provide business loans securied on property, with a focus on local communities. They say they have to date loaned some £90mn without any defaults. PlatoformBlack http://www.platformblack.com/ is a invoice trading company with an online presence who report having supported to date some £124mn of invoice financing. Some of these platforms – for example Wellesley – invest their own money in the loans they support, along with the money of platform lenders

Table 1 (final rows) compares total P2P lending, using the data from the Peer-to-Peer Finance Association, with the total amount of credit provided by other providers of loan finance the UK. Such comparisons are not entirely straightforward. There are at least three different possible measures of market size – the end-period stock of loans outstanding, the gross amount of lending during the period before loan repayment and the net amount of lending after deducting loan repayments. Each can yield different outcomes for the market share of P2P lending. Another problem is comparing 'like with like' – there are several different submarkets for lending, including consumers of different credit standing and businesses of different size and credit worthiness; and also different types of loan product. Some – such as lending secured on property, is paid back relatively slowly with principal outstanding for several years; others such as unsecured consumer lending are paid back over shorter periods often between two and five years; yet other products are flexible lines of credit, e.g. overdraft facilities which usually comparatively expensive, but drawn down used for short periods and repaid relatively quickly. Calculations of market share can vary substantially depending on which measures are used.

Our figures (Table 1, bottom row of column 2) indicate that on a stock basis P2P at end 2015 was less than one half of one per cent of the total stock of UK lending of more than £500bn in the loan markets where P2P platforms are active. We have not been able to find a breakdown of the total stock of P2P lending into the three main submarkets (consumer, SME and secured on property) Assuming this breakdown is in proportion to the share of net flows in our Table 1, then we find that P2P is 0.53% of total unsecured consumer lending in the UK while P2P SME lending is 0.45% of total SME lending in the UK.

It is more difficult to obtain reliable figures for the share of P2P in UK lending secured on property. Even making allowance for P2P lenders that are not members of the P2P finance association, the stock of P2P lending secured on property is only around 0.05% of the total £1.5 trillion stock of UK on property, including owner occupied, buy to let and commercial property.[5] This percentage is though clearly too low since P2P lenders compete only in the sub-markets for buy to let and smaller commercial and residential property developments. UK regulations do not currently allow P2P loans for purchase of an owner-occupied dwelling (the primary residence of the borrower) at all. Larger commercial properties are too 'lumpy' to be able to exploit the diversification of risk needed for P2P lending to operate.

For this reason our figures for total lending on property in Table 1 (both on stock and a net flow basis) are for buy to let lending only, excluding lending secured on other forms of property. The resulting percentage (0.29%) is closer to that we obtain for consumer and SME lending, though still a rather arbitrary number and probably an overestimate since it excludes lending to property developers.

The shares of both small business and consumer P2P platforms in flows of UK lending are higher than these stock shares (either on a gross basis before repayments or a net basis after deducting repayments). (Zhang et al. 2016b) report gross 2015 P2P consumer lending in the UK of £909mn, which works out at 1.4% of the £69.9bn of total gross unsecured consumer lending in the UK.[6] Our Table 1, column 3, making the same comparison on a net flow basis reports a higher share of 3.0%. The gross calculation is though probably the more accurate representation of the market share captured by P2P (the gross percentage is artificially boosted by comparatively low repayments of P2P consumer lending in 2015 based on lower volumes of P2P gross lending in earlier years, we report this figure because the P2P finance association report a breakdown by customer group for net not gross lending).

The share of UK P2P in smaller business lending is rather harder to pin down than that for unsecured consumer loans, because the wide variety of different business borrowers. Looking at the broadest possible definition of the market, including lending secured on property and invoice financing yields slightly higher estimates of the P2P share of small business lending compared to that for unsecured consumer lending. (Zhang et al. 2016b) make this comparison on a gross basis, reporting that total debt finance for in 2015 for smaller business (lending secured on property, invoice financing and debt securities) was £1.8bn and amounted to 3.43% of the total £53bn of gross lending to SMEs reported by

[5] Bank of England BankStats Table 5.3 reports end-2015 lending secured on residential property of £1.28 trillion. The De Montfort University reports on commercial property lending estimate a stock of lending secured on commercial property of over £0.25 trillion.
[6] Data series LPQB4TX from the Bank of England interactive database.

the Bank of England for 2014.[7] We note thought that total 2015 gross lending to SMEs by all monetary institutions (excluding overdrafts) has since been published as £ 57.9bn, reducing this percentage to 3.1%.[8]

The market share of P2P lending is though considerably higher when looking at unsecured loans to the smallest companies, i.e. excluding invoice financing and loans secured on property. Our Table 1 reports that P2P lenders were responsible for 12.4% of this market (lending to small and medium sized businesses) on a net flow basis, even when excluding invoice finance and debt securities. This is a somewhat uncertain figure since, in recent years since the global financial crisis, smaller businesses in the UK have been repaying lending to banks faster than they have been accessing new lending i.e. the total net lending flow has been negative. 2015 was the first year in which the aggregate net lending flow has turned positive and net flows may well in subsequent years grow substantially (hence reducing the share of P2P lending platforms in net lending flows).

A similarly high and probably more reliable figure for the share of P2P lending in small business lending is reported by (Zhang et al. 2016b) page 19. They find that gross P2P platform lending to SMEs (£881mn excluding invoice finance and debt securities) was 12% of total new loans to the smallest companies (those with turnover of less than £1mn-£2mn, the precise threshold varying from one reporting bank to another) as reported in the quarterly BBA survey of lending to smaller and medium sized business. The most recent BBA survey (British Bankers Association 2016), published since their report indicates total new lending to smaller companies in 2015 of £6.7bn, so this figure updated for 2015 (£881mn/£6.7bn) has since risen to 13.1%.

We now provide some further description of the three largest UK P2P lending platforms.

Zopa (www.zopa.com)
The first online service that brought together individual savers and borrowers was Zopa.com, launched in the UK in February 2005 as a marketplace for peer-to-peer lending. Zopa uses credit scores provided by the credit bureau Equifax (and also sometimes additionally information from CallCredit) to allocate borrowers into one of five 'market places' (A*, A, B, C, D or E). The borrowers are individuals and very small businesses (sole traders). Borrowers obtain loans with repayment of interest and principal over periods of between one and five years.

On average borrowers in the A* and A categories have incomes well above national average and strong credit ratings. B and C borrowers have incomes closer to the national average and clean credit histories. D and E borrowers have incomes close to the national average and chequered credit histories. The following table (taken from the Zopa website in March 2016) shows their

[7] There appears to be some mistake in their calculation: £940mn is only
[8] Bank of England figure from BankStats Table 8.2, this includes all business lending, including for property development and property investment.

calculations of expected annual default rates and projected annual net return within these six different markets.

**Table 2: March 2016 projected default and return for Zopa investments**

| % | A* | A | B | C | D | E |
|---|---|---|---|---|---|---|
| Expected Annual Default in Current Economic Environment | 0.0-1.0 | 0.5-2.5 | 2.5-4 | 4.5-6.5 | 9-11 | 10-12 |
| Projected Annual Return after expected defaults. | 2-4 | 2-5.5 | 4-6 | 5-7 | 7-9 | 10-14 |

The mechanism for lending on the Zopa platform is described by the "Zopa principles" on their webpages (Zopa 2016b). Lenders decide how much to lend, their lending criteria ("*the amount you wish to lend, the markets in which you wish to lend, the rate you are prepared to lend at and the period over which you are prepared to lend*"). In practice the borrower does not control the lending rate, rather the loan is allocated randomly and automatically to the first borrowers queued in the chosen 'markets', with each borrower.  The default setting on the platform is automatic lending, meaning interest and principal are repaid by borrowers is automatically loaned again to new borrowers in the nominated markets.

Zopa charges a servicing fee that is paid monthly by the borrower, before the payment of interest and principal to lenders. As described on their website with this fee "*Zopa maintains a Safeguard fund to protect its lenders against borrowers who default (fail to repay their loans). Additionally a small proportion of the fee is an admin fee that is paid to Zopa*." Contributions to the safeguard fund are based on average expected defaults according to their own risk models, with the aim of maintaining the fund at at least 110% of projected annual defaults (currently, in March 2016 the fund is reported to be 120% of projected annual defaults).

Since March of 2016 Zopa has offered three different lending products, each offering different risk exposure and projected returns: Zopa Access, Zopa Classic and Zopa Plus. Access and Classic are limited to loans in market places A*- C and are protected by the Safeguard fund. Plus also allows investment in categories A* - E and there is no protection from the Safeguard fund.

In Zopa, as in all other UK P2P lending platforms, the lending is a legal contract between lenders and borrowers. The platform is not itself exposed to borrower credit risk. Also, in contrast to a conventional bank deposit, the Zopa loan account does not allow investment to be withdrawn on demand or at the end of a fixed term. Zopa lenders can however withdraw, either by taking back interest and principal as these are repaid (by turning off the default automatic relending option) or by selling their existing loans on the platform to other lenders (paying a 1% fee with the Zopa Classi and Zopa Plus products or without fee with Zopa Access).

Zopa's annual balance sheet and income and expenditure accounts can be found via UK companies house (company number 05197592, documents currently available via https://beta.companieshouse.gov.uk/ ). These reveal accounting losses of £1.4mn in 2011, £1.8mn in 2012, £2.6mn in 2013 and £5.6mn in 2014. These are relatively large in comparison to the amount of lending supported by the platform, for example the 2014 loss is around 2% of the average stock of lending supported on the platform during the course of that year. Section 4 discusses the significance of these continuing losses for the Zopa business model.

Funding Circle (www.fundingcircle.com)

Funding Circle was the first UK-based P2P lending service to focus on business funding, i.e. where savers lend directly to small businesses through an online marketplace. It was launched in August 2010. Since its launch it has expanded internationally to offer similar lending platforms in the US, the Netherlands, Spain and Germany as well as in the UK.

Similar to other P2P lending marketplaces, Funding Circle uses a many-to-many approach, whereby lenders set their amount and interest rate, borrowers set the amount they want to borrow, and the online auction process determines how those amounts are distributed between borrowers and lenders.

Borrowers are credit-checked through Experian and categorised into one of six risk bands (A+, A, B, C, D or E ). Lenders pay a one-off fee that varies with risk band and added to the loan amount. This varies from 2% for shorter maturity borrowing by A+ borrowers to 5% for longer maturity (4-5 year) loans in the higher risk bands. A 5% fee is also paid for secured lending with a title to assets. All property related lending pays a 2% fee.

Lenders can allocate their funds to individual businesses in one of two ways:

- Using the autobid tool, for chosen risk categories and lending maturities. This is similar to the approach used by Zopa for its consumer lending. The lenders deposit is automatically allocated, across a large number of companies applying for funding. The lender chooses a maximum proportion of their lending (e.g. 1%) that will go to individual borrowers
- Making bids manual bids for loans on the Funding Circle marketplace (current borrowers looking for funding can be viewed via https://www.fundingcircle.com/lend/loan-requests/ ). This allows the lender to use their own judgement about which borrowers they wish to fund. Loans are then activated when they attract sufficient funding (including any allocations from autobidding).

Funding Circle's annual balance sheet and income and expenditure accounts can be found via UK companies house (company number 06968588, documents currently available via https://beta.companieshouse.gov.uk/ ). These reveals accounting losses of £1.1mn in 2011, £3.8mn in 2012, £4.0mn in 2013 and £10.8mn in 2014. These are relatively large in comparison to the amount of lending supported by the platform, for example the 2014 loss is around 4% of the average stock of lending supported on the platform during the course of that year. Section 4 discusses the significance of these continuing losses for the Funding Circle business model.

Rate Setter (www.ratesetter.com)

RateSetter was launched in October 2010 . Like Zopa they offer a "provision fund" for bad debt (the 2013 launch of Zopa's safeguard fund seems to be a response to Ratesetter). This is funded out of the borrowers' credit fee and serves to reimburse lenders in the event of a late payment or default.

As we have described in our discussion of Table 1 above, RateSetter is the only major UK P2P platform that lends to all three major categories of borrower – consumers, SMEs and lending secured on property.

RateSetter also differs from other P2P lending companies in that it does not categorise borrowers by credit rating, instead it only accepts what it calls "prime" borrowers. Lending rates are then set based up the term of the loan rather than the credit rating of the borrower.

Ratesetter allows lenders either to invest at market rates (similar to Zopa or Funding Circle autobid) or instead lenders can specify their minimum lending rates and the platform automatically allocates at the maximum rate that can be found above this minimum. The difference between these choices is that with a minimum rate funds may remain uninvested (investing at market rate is effectively setting no minimum rate).

We have been unable to find income and expenditure accounts for RateSetter via company house. The only accounting statements we found are balance sheets for RateSetter Trustee Services Ltd (company number 08090884), which uses the small companies exemption which means it need not report an income and expenditure account. We have found press reports stating that RateSetter has announed an accounting profit of £0.6mn for the year ending March 31st 2015 and was also profitable in the previous year, but no further information to back this up.

**The European Union**

We complete this section by making some brief comparisons of the UK with the development of P2P lending in other jurisdictions. Using data from (Wardrop et al. 2015) it is clear that the UK is the clear leader in the alternative finance market in the EU. For the year 2014, EUR 2.9 billion was the size of the entire alternative finance market in the EU, but only EUR 620 is outside of the UK. Alternative finance as a whole though, grew 144% in 2014 in the EU other than the UK, compared with 2013. The UK is home to the highest number of alternative finance platforms, followed Spain, France, The Netherlands and Germany.

**The United States**

The United State has been the pioneer along with the UK in the development of P2P lending. However, unlike in the UK, US P2P lending is largely focused on consumer credit. As we now discuss there are several other institutional and regulatory differences between P2P lending in the US and the UK –the US industry has evolved further away from the original concept of directly linking individual lenders and borrowers, becoming instead a largely a mechanism for the sale of loans to institutional investors. Despite this rather different orientation, US P2P or 'marketplace' lending still represents as it does in the UK a relatively small share of total unsecured consumer lending.

To mention some of the most prominent platforms in the US, the oldest and largest platforms Prosper and Lending Club were established to offer consumer lending and refinancing of student loans. Other well established platforms focusing on consumer lending are Avant (focusing on personal loans) and SoFi (specialising in refinancing of student loans). The market for P2P business lending remains relatively smaller than in the UK, the leading providers being OnDeck, CAN Capital and Kabbage. GroundFloor and LendingHome provide short term bridge mortgage finance.

Figures for P2P lending are not so conveniently available for US as for the UK or EU. (Morgan Stanley Research 2015) puts the level of marketplace lending (the usual term in the US for P2P lending) at $12bn at the end of 2014. As in the UK, this was still only a very small fraction – 0.36% – of total US unsecured consumer lending of $3.3 trillion.[9] This is fairly similar to the 2014 share of unsecured consumer lending taken by P2P lending platforms in the UK.

Another difference from the UK is that US marketplace lending involves an even greater share of investment from banks and institutional investors. For example in 2015Q3 only 15% of the originations of Lending Club, the largest US marketplace lending platform, were financed by individual investors, 85% were taken by institutional investors such as banks, asset managers and hedge funds.[10] US marketplace lenders are also much more associated with leveraged investment strategies than their UK counterparts – either because they themselves accept balance sheet risk or because institutional investors use leverage to support their exposure to online loans.[11]

Many of the US platforms have also developed partnerships with US banks.[12] US Marketplace lending is increasingly seen not as competitors to banks but as an opportunity, providing a new source of investment assets for banks with surplus funds, as an alternative way of financing loan assets for those in need of funds, and as a model for improved technology offering to both deposit and loan customers.

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[9] Figure taken from (Frame 2015), who also provides a succinct overview of the development of marketplace lending in the US.
[10] Figure reported in (Wack 2015b)
[11] See (Wack 2015a)
[12] For discussion of this trend see (PwC 2015) and (Aranoff 2016).

Another distinguishing feature of US marketplace lending – not used to same extent by UK P2P platforms – is reliance on 'big data analytics', using sophisticated methods of data collection, from social media and other sources, and analysis in order to improve on standard US metrics of consumer credit standing , such as the Fair-Isaacs FICO score. Many US marketplace lenders claim substantial improvements in understanding and pricing credit risk from these sophisticated methods.

Despite its small market share and the increasing extent of partnerships between marketplace lending platforms and banks, the growth of marketplace lending has caused some concern amongst some banks in the US.[13] This may in part be because the borrowers – both consumers and smaller businesses – are those who previously would have approached smaller US 'community' banks for loans. So while the US banking industry as a whole is not yet greatly threatened by market place lending, some individual institutions are much more worried about potential loss of customers. There has as a result been lively discussion of the rise of market place lending in the US banking periodical The American Banker.

The law and regulation applied to P2P lending is of course different in the US than in the UK. One challenge is regulatory limits on consumer loan interest rates applicable in many states. To deal with these controls, US market place lenders work with partner banks, who formally grant loans once they are agreed on the P2P lending platform (for example Lending Club works with WebBank, a Utah-chartered financial institution) before selling them back to the platform investors. This practice has however been thrown into doubt by rulings on a case currently before the US Supreme Court and the industry awaits clarification of its legal position.[14]

There has also been a somewhat greater concern in the US compared to the UK with the need for consumer and prudential regulation. The US Consumer Financial Protection Bureau is increasingly involved in oversight of market place consumer lending, including a well publicised enforcement action against Lending club for lack of clarity in interest rates paid by one group of borrowers.[15] The FDIC has stated that it wishes to keep a close watch on developments in market place lending, including potential risks to insured bank partnerships with marketplace lenders. The US Treasury has conducted a "request for information" in order to assess US regulatory policies.

Another institutional difference between market place lending in the US and P2P lending in the UK is the well-established US practice of third party servicing of bank loans. It is standard practice for US banks to outsource such servicing the banks. This outsourcing plays an important role in the securitisation of US lending, allowing loans to be sold between institutions with no impact on the process of collection. This in turn means that there is a clear identification of servicing costs for platforms. As we suggest below, in Section 4, achieving

[13] See for example the interviews reported in (Kline 2015).
[14] See (Wack 2016b)
[15] See

similarly clear identification of servicing costs may be a potential challenge for UK P2P lenders.

We can complete this brief discussion of US marketplace lending with a closer look at the operations of Lending Club, the leading US marketplace lender which went public through an IPO in Dec 2014. The post IPO stock price performance has disappointed investors, declining steadily from around $25 at the time Lending Club went public to less than $10 per share in early 2016. Being a public company does however mean that Lending Club puts a great deal of information about its performance into the public domain.

In 2015 Lending Club originated $8.3bn dollars of loans, nearly double the $4.3bn originated in 2014. Of its total originations since Lending Club started operations only 1.2% are business loans. Their lending is almost all consumer loans, with 68.5% used to refinance existing lending or credit cards (see https://www.lendingclub.com/info/statistics.action).

Its operating revenues and operating costs, from the Dec 2015 10-K are reproduced in Table 3 below. As indicated a large proportion of its revenues are transaction fees paid by borrowers when loans are originated. It also obtains servicing fees from investors, deducted from interest and loan repayments.

Lending Club recorded a substantial net loss of £31.5mn dollars in the year ending Dec 31st 2014, 0.4-0.5% of the stock of loans originated by Lending club outstanding at end 2014. As can be seen from Table 3 Lending Club was in 2015 still pursuing in an expansionary strategy with large expenditures on sales and marketing and engineering and product development.

## Table 3: Operating Performance of Lending Club

| Years Ended December 31, $'000 | 2015 | 2014 | 2013 | 2012 |
|---|---|---|---|---|
| | (audited) | (audited) | (audited) | (unaudited) |
| **Statement of Operations Data:** | | | | |
| Transaction fees | $ 373,508 | $ 197,124 | $ 85,830 | $ 30,576 |
| Servicing fees | 32,811 | 11,534 | 3,951 | 1,929 |
| Management fees | 10,976 | 5,957 | 3,083 | 824 |
| Other revenue (expense) | 9,402 | (1,203) | 5,111 | 716 |
| Total operating revenue | 426,697 | 213,412 | 97,975 | 34,045 |
| Net interest income (expense) and fair value adjustments | 3,246 | (2,284) | 27 | (238) |
| Total net revenue | 429,943 | 211,128 | 98,002 | 33,807 |
| Operating expenses: (2) (3) | | | | |
| Sales and marketing | 171,526 | 85,652 | 37,431 | 18,201 |
| Origination and servicing | 61,335 | 37,326 | 17,978 | 7,589 |
| Engineering and product development | 77,062 | 38,518 | 15,528 | 4,855 |
| Other general and administrative | 122,182 | 81,136 | 19,757 | 10,024 |
| Total operating expenses | 432,105 | 242,632 | 90,694 | 40,669 |
| Income (loss) before income tax expense | (2,162) | (31,504) | 7,308 | (6,862) |
| Income tax expense | 2,833 | 1,390 | — | — |
| Net income (loss) | $ (4,995) | $ (32,894) | $ 7,308 | $ (6,862) |

This table highlights a major concern about Lending Club and other marketplace lenders. The high levels of transaction fee revenue, relative to the servicing and origination costs, are an outcome of the high rates of growth of loans originated. As their business matures and this growth slows, they will then have to engage in substantial cost reductions to remain profitable (indeed they are only barely profitable even with recent rapid rates of origination growth). Such cost reduction should be possible, Lending Club has very high levels of sales, marketing and administrative costs relative to revenues suggesting considerable scope for cost reduction as the business matures. Still the prospective long run level of profitability, relative to the stock of originated loans, remains very unclear and the volatilility of their stock prices should not be viewed as in any way surprising.

In recent months there have been growing investor concerns about the ability of Lending Club and other US market place lenders to maintain the past rapid rate of growth in loan originations, which have supported their strong revenue growth. The rapid influx of institutional investment funds is leading to declining rates of interest on market place loans; this combined with an small rise in default rates is causing investors to have serious doubts about future growth.[16] Still, given that market share still remains relatively small, rapid future growth is still possible.

**China**

We complete this section with a very brief discussion of P2P lending in China. We mention China at all only because P2P platform lending in China, mainly to small businesses, is reported to have nearly quadrupled to a staggering $150bn in 2015, more than ten times the size of US marketplace lending originations.[17] There are apparently more than 2,000 online P2P lending platforms in China.[18] There are though substantial concerns about fraud, especially since the early 2016 failure of the platform Ezubo with the loss of some $11bn dollars of investor money.[19]

Chinese P2P lending illustrates how differently online P2P online lending can evolve in a distinct and relatively undeveloped regulatory and legal environment. The lending supported is very much riskier than in the US or the UK, with no fully developed system of credit referencing. Most Chinese P2P platforms are providing business loans financed out of investment by Chinese households. This is a response to the very limited opportunities open to smaller businesses for borrowing from banks and the low returns offered to savers. The Chinese P2P platforms themselves vary considerably, many are not true P2P platforms without their own risk exposure, but rather take positions themselves or claim to offer guarantees to investors.[20]

[16] (Wack 2016a)
[17] See (Xinhua 2016)
[18] A useful overview of this market is provided by (Williams-Grut 2015). A more detailed description is provided by (Deer et al. 2015).
[19] See (Wu 2016).
[20] See (Deer et al. 2015)

The Chinese regulatory authorities are now taking action to impose closer oversight of P2P lending. It remains to be seen how the sector develops, especially in the challenging situation of structural change in the Chinese economy towards growth that is less reliant on investment and exports than it has been in the past.

**Other countries**

The only other country where we have found much reference to growth of P2P lending is for Australia. We have not though conducted any review of Australian P2P lending platforms or checked on developments in any other jurisdications, apart from the EU, the US and China.

# 4. An Assessment of the Business Models and Economics of P2P Lending

This paper is completed with a critical discussion of the business models and economics of P2P lending, the prospects for its continuing growth and the risks and regulatory and economic policy issues resulting from the emergence of this new form of intermediation.

A basic question running through the discussion of this section is why, before the emergence of P2P lending, lending – especially to individuals and smaller companies unable to borrow on securities and money markets – was provided by institutions (banks) providing a combination of credit, deposit and payment services. This section therefore begins with a discussion of the business models of conventional banking and the synergies that lead banks to combining these services.

It then discusses to what extent the technologies that support P2P lending could potentially lead to an 'unbundling' of banking, separating credit provision and term deposits from payment services and the provision of liquidity. Finally it discusses the risks of P2P lending, arguing that these can be addressed by promoting the greatest possible platform transparency, and priorities for regulation and public policy.

**The Business Models of Conventional Banking**

There are a range of explanations of why banking services – deposits, payments, and lending as well as a range of other financial services such as off-balance sheet guarantees and securities trading – are provided together by banks and not to any substantial extent by other firms. In order to analyse the prospects for P2P lending taking loan and deposit business from banks, it is first necessary to take a view on why banks have dominated the provision of loans, deposits an payment services and why these services are provided together not independently.

The perspective adopted here is that the critical defining feature of banks, which in turn leads them to jointly offer both deposit, payment and lending services, is the provision of liquidity to customers.[21] Bank deposit customers have a right to draw deposits on demand, either by withdrawal of cash or by using a bank payment instrument. Time deposits offer a future guarantee on repayment. Bank borrowers also value flexibility in their use of loan facilities, both in drawing down on loans when they are needed and repaying at a time of their choice in order to avoid unnecessary interest costs. Customers are willing to accept lower rates of return on deposits / higher costs of borrowing in return for these liquidity services; but there are economies of scale in liquidity provision.

Uncertainty of these flows is reduced substantially at the bank portfolio level and even more at the level of the whole economy. Banks can exploit these economies of sale, lowering their cost of funding and boost their returns on lending by providing liquidity services on deposits and flexibility in loan contracts to a large

[21] This same viewpoint can be found, amongst others, in (Lewis 1992; Kashyap et al. 2002).

pool of customers; and obtaining further economies of scale at industry level by borrowing and lending in money markets to manage temporary surpluses or shortages of liquidity.

The provision of payment services is also closely associated with bank liquidity provision. It is possible for means of payment, including nowadays card payments and electronic credit transfers that are executed nearly instantaneously, to be provided via third parties (and some payment instruments e.g. credit cards indeed are quite often offered in this way), but technological economies of scale generally support the bundling of payment services into transaction deposit accounts.

There are further economies of scale in credit risk assessment and loan portfolio management reinforcing the synergies of bank liquidity provision.[22] In order to use their advantages in the supply of liquidity to offer flexible credit products, such as lines of credit (overdrafts), banks must also be expert in assessing borrower credit worthiness, and therefore also have a competitive advantage also in providing fixed term loans. Bank provision of payment services, allowing observation of otherwise private customer cash flows, can also be an important part of the screening of bank borrowers and the monitoring of borrower behaviour (though the costs of analysing payment flows to support credit assessment may only be worthwhile for larger borrowers).

While the discussion here emphasises the liquidity provision as the core defining feature of banks, explaining why payments, deposit, lines of credit and fixed term loans are provided together, other aspects of banking that can also play an important role at least for some institutions and in some contexts. Another view of banking emphasises 'banking relationships', i.e. banks may have implicit commitments to supporting customers, perhaps rooted in connections through a local community or expectations of ongoing long term commercial relationships. This may be important for some institutions (examples where such relationship banking still appears to play a substantial role are US community banks and German savings banks). Relationships also matter in providing banking services to larger corporates, both non-financial and financial.

Discussion of competition to banks from P2P must also take account of specialised bank skills in managing particular assets – for example the knowledge needed to extend loans to particular industrial sectors or particular categories of borrower (screening), in monitoring borrower behaviour (when for example imposing loan covenants) and in managing exposure following default (through claiming collateral, pursuing legal redress or supporting borrower workout or repayment efforts). State supervision and support of banking –

[22] Much of the banking research literature focus on the role of banks in overcoming information asymmetries in credit provision and other financial contracts, especially through the screening and monitoring of borrowers and the enforcement of loan contracts. According to this perspective the employment of specialised technologies to overcome information assymetries is the key feature that distinguishes banks from other firms, not as we argue liquidity provision. This perspective on bank intermediation is emphasised for example in many textbooks and reviews of the literature e.g. (Bhattacharya & Thakor 1993).

through detailed regulation, state-backed deposit insurance and the provision of the broader bank safety net – is also a potential further barrier to entry and may be a major determinant of banking market shares and pricing.

This is not at all to deny the possibility that new technology may dramatically shift the 'boundaries' of the bank. Despite the widespread adoption of computerised storage of banking records, and introduction of a variety of electronic payment methods, many basic banking operations are still rooted in the previous era of paper based transactions. The possibility of linking deposit liabilities directly to specified loan assets as is done in P2P lending platforms was simply not a possibility fifteen or twenty years ago. It remains to be seen the extent to which the P2P business model and the associated level of transparency to support indirect (off balance sheet) lending becomes a standard part of the services offered by banks and offered by them to their own customers rather than by competing non-bank P2P platforms.

**The potential for P2P disintermediation of banking**

With this theoretical and conceptual background we now consider the scope for P2P platforms capturing business from established banks. For such disintermediation to be truly 'peer to peer', simultaneously taking both borrower and depositor business away banks, there must both be sufficient benefits (in terms of pricing, improved customer service) to attract both borrowers and depositors and also willingness on the part of these customers to forgo the liquidity services (flexibility in use of credit / withdrawal of deposits) provided by banks.

The experience of P2P platforms from both the US and the UK, shows that it has been much more difficult to persuade depositors, rather than borrowers, to participate on P2P platforms. Hence these platforms have had to attract institutional investment in order to maintain platform growth.

This is not so surprising. Many existing bank customers, both consumers and smaller firms, should be willing to agree fixed term loans from P2P platforms in order to gain from comparatively low interest rates or simply to access otherwise unavailable credit. To persuade them to do so, these rates do not need to be much lower than what is on offer from banks. The main constraint is on the investor side. Lending on a P2P platform rather than making a bank deposit involves for personal customers the loss of deposit insurance protection and acquainting themselves with a very unfamiliar product. Despite their transparency of P2P platforms, and their strong track record of recent performance, it is difficult for retail depositors to understand the risk involved and therefor to be comfortable about lending on P2P platforms. ISA (limited tax exempt status) in the UK will help attract new retail depositors but it is difficult to believe that this on its own will lead to a transformative increase in retail lending via P2P platforms.

As our analysis of the share of P2P share of the total stock of lending in Section 3 reveals, the process of capturing borrowers from banks has not to date proceeded very far, even in the US or the UK. Returns on offer are though very attractive and so continued institutional investment could support further growth of P2P lending at recent rapid rates (roughly doubling every year) for some time to come. In order for them to continue committing funds to P2P platform lending institutional investors are though likely to want even greater transparency than is already offered by P2P platforms (see our discussion of P2P risks and standardisation below, not least of the reasons is the lack of consistency and comparability in credit assessment criteria across platforms making it difficult to quantify risks over the business cycle, and also concerns about the impact of any platform failure).

Suppose these challenges of risk-monitoring and risks assessment are overcome, can the development of P2P platforms then lead to the end of banking as we know it? Not at all, at least not if it is correct as suggested in this section that the core banking activity is liquidity provision rather than intermediation. The customers, both lenders and depositors, most easily attracted by the better rates on offer through P2P platforms will be those customers with least need for the liquidity services of banks. These are the customers who are already able to take advantage of the best rates on offer from banks, for term deposits or term loans, not the higher rates for lines of credit or instant access deposits. As we have already argued banks themselves are also likely to seek to retain these customers through providing their own P2P plaforms. The impact on bank net income will therefore be much smaller than the impact on bank assets (while assets will be reduced bank return on assets will increase).

Most P2P platforms do offer some liquidity services, for example Funding Circle in the UK allows its business customers to repay loans early, with their automated bidding re-investing funds in new loan applications. Most platforms also allow investors to sell loans they hold, for a fee, for example Zopa Classic. P2P platforms though are at a competitive disadvantage relative to banks in providing such liquidity services, not having access to money market funding or to central bank liquidity provision.

The impact of P2P lending should therefore be viewed as complementary to rather than competitive with bank offerings, taking off-balance sheet lending that would otherwise consume relatively large amounts of bank capital. Banks can therefore be expected, as is already happening in the US, to either set up their own P2P platforms or work with existing platforms, allowing them to market P2P borrowing to their existing customers as well as improving the availability of credit to some customers who do not easily qualify for conventional bank lending (as appears to have been the case in UK P2P lending to small businesses).

The development of P2P appear in turn appears to be a promising way of promoting the stability of banks and of the banking system as a whole, by providing additional loss absorbing funding for customer loans. This is of course provided that the institutional investment supporting P2P lending is long term and from outside the banking system. Financial stability could instead be undermined by P2P lending if a large share of institutional investment came from domestic or international banks investing in illiquid P2P loan portfolios refinancing their positions using short term money market borrowing. Funding of P2P lending in this manner would parallel the unstable short term repo and ABCP money market funding of sub-prime mortgage backed securities and other US dollar structured credit securities held by US and international banks that triggered the global financial crisis of 2007-2008 (though that experience should make both banks and regulators alert to the dangers of employing maturity mismatch to invest in P2P loans).

**Platform transparency and the risks of P2P intermediation**
In this sub-section we note a number of potential risks to which we believe the industry will need to pay greater attention in the future and argue, further, that industry standardisation provide the most effective response to these risks.

The risks we have in mind are the following:

1. The industry already provides high levels of disclosure on historical loan default and projections of future performance. These are in many cases accompanied by loan loss reserve funds – such as those provided by Zopa and RateSetter in the UK – to provide lenders with compensation for default. This work though has largely focussed on expected default and as yet does not provide much quantification of the critical dimensions of *variability of default* or of *loan loss recovery*.[23] With regard to variability of default, diversification across a large number of borrowers already provides lenders with substantial protection against expected levels of default and loss. What remains unprotected, even with diversification, is the variability of default and loss over the business cycle – losses can jump substantially in a major economic downturn and could easily exhaust a default fund based on offering protection upto the average annual level of defaults. The industry has a lot still to do to quantify the risks of loss in a business downturn and to educate investors about these risks.
2. There are similar challenges of developing greater levels of transparency and best practice operational processes in relation to loan loss recovery. One problem – which may be a particular concern for lending secured on property – is that recovery levels depend to an important degree on the role of lenders in contract enforcement, to obtain maximum recovery in the event of loan default through exercising claims on security or reaching agreement with borrowers on loan rescheduling. Banks have specialised units to carry out such tasks, but it remains unclear how much activity of this kind will be carried out by P2P lenders to minimise post-default loan losses. Most P2P platforms will emphasise that they have very high standards of credit assessment and that they lend is only to high quality borrowers where anticipated default rates are extremely low, so this is not a significant issue. But achieving the full potential future growth of the industry will require extending lending to higher risk borrowers, especially so if P2P lending is to provide credit to

[23] These are basic concepts of credit risk, discussed in standard textbooks such as (Servigny & Renault 2004; Bouteille & Coogan 2013).

borrowers refused bank credit, so this is still a key issue to be addressed in the future.

3. The industry also needs to confront openly the risks of platform failure, either bankruptcy following large financial losses or the possibility of operational failure. As we have discussed in Section 3, a number of largest P2P platforms including Zopa, First Circle and Lending Club are loss making. Much of these losses can be attributed to the needs of system development and of the active marketing of their services to new customers, but still it is clear that platform viability depends on achieving sufficient scale to cover the fixed costs of operation. As the industry matures, it can be expected that a number of platforms will fail to achieve sufficient scale and have to close. This raises the question of what happens to the lending on a discontinued platform, something that should be answered before such an eventuality transpires with potentially damaging consequences for P2P platforms that remain.
4. Investors also need to be aware of the possibility of falling P2P loan prices resulting from a self-reinforcing withdrawal of funds by institutional investors subject to 'mark-to-market' valuation of their P2P investments. One attraction of P2P loans to institutional investors, and a factor behind the substantial increase in institutional lending on US P2P platforms, is the possibility of readjusting their exposure by selling loans to other investors. However this liquidity -- while useful for individual investors -- may not always be reliably available. A decline in the returns anticipated on P2P lending – triggered for example by a rise in default rates -- or simply a desire to readjust investment portfolios and shift them into safer assets because of some economic shock unrelated to P2P lending, could cause investors to seek to liquidate their exposures and lead to a sharp rise of P2P rates and decline of P2P loan valuations. With mark-to-market valuation, especially if some investments are highly leveraged or subject to binding short term portfolio performance metrics, this could in turn trigger further sales and price falls. Over time such instability should decline, as investors become more familiar with this new asset class and less constrained market participants become willing to commit capital to stabilise prices during episodes of price volatility. But until the market matures in this way investors should expect episodes of relatively large price instability.
5. Finally there are the ever present dangers of fraud, cybercrime and operational outages (though we do not claim any particular expertise on theses issues).

An effective means of addressing all of these risks is industry standardisation. The UK Peer-to-Peer Financing Association is already playing a leading role in promoting transparency and data standards.[24] But more can be done.

Agreed standardised metrics of various loan characteristics, such as borrower credit standing, industry and purpose of loan are needed to allow the migration of loan contracts from one platform to another, for the development of

[24] See (Peer-to-Peer Finance Association 2015b; Peer-to-Peer Finance Association 2016a)

comparable risk measures and for allowing risk to be assessed using combined data from many platforms. Such metrics can also help support the timely determination of losses on defaulted loans, either through outright sale or through management of recovery of retained loans using collection agencies.

Platforms also need to offer much greater transparency about their own operational and financial performance. In the case of the UK we have had to rely for our research on the very limited statutory disclosures made through Companies House. Even the SEC submissions of the publicly listed P2P platform Lending Club provides only limited insight into the costs and revenues of their business model. As we report Zopa, Funding Circle and Lending Club have all reported substantial losses over the past two years. While we have no reason to doubt their long-term viability, they simply do not provide sufficient publication information to work out their ongoing costs such as loan servicing and distinguish these from expenditure devoted to the development of their customer base and operational systems.

We note that with respect to operational oversight the US P2P industry has one substantive advantage over that in the UK, with the routine of loan servicing (such as collection of payments) often outsourced to operational specialists. This provides benchmarking of servicing costs for the entire industry. We see benefits for the UK P2P industry of the development of similar outsourcing arrangements, which could be used by both banks and non-banks to provide and facilitate the sale of loans amongst and investors and their transfer across platforms.

Greater standardisation, both the ability to transfer loans from one platform to another and full business transparency, will challenge P2P platforms. The pertinent question is what ultimately is their competitive advantage? Will they themselves become commoditised low return utilities through standardisation of their credit assessment and operational process? As a result individual P2P platforms may be reluctant to adopt industry standards, because of fear of losing control over their own 'secret sauce'.

Our view is that individual platforms need to accept not resist standardisation. The key distinguishing feature of P2P lenders is not the platform they operate, but rather the interface they provide to that platform, any distinguishing features of their customer base (not just type of borrower, but also for example social or community orientation that may affect loan performance and characteristics) and the different services they offer their customers for portfolio allocation and risk assessment and management. Standardisation at industry level is critical to the long term growth and stability of the P2P industry and therefore in the interests of the leading industry participants.

**Regulation and public policy**

We complete our analysis with a brief discussion of regulatory and public policy issues in P2P lending, distinguishing (i) operational risk and customer protection; (ii) prudential safety and systemic risk; and (iii) finally the promotion of competition and efficiency in credit markets. We argue that industry wide standardisation is key to achieving these regulatory goals and should therefore also be a priority for regulatory oversight of P2P lending.

We have summarised the key sources of risk in P2P lending in the previous sub-section. Regulators in the US, the UK and in other jurisdictions and now looking carefully at this newly emerging form of financial intermediation.[25] The stated objective of both US and UK regulators is to ensure appropriate oversight without blocking financial innovation and the use of P2P platforms to provide credit to borrowers who are unable to borrow from banks.

An issue for regulators is prioritisation – they cannot address all regulatory concerns over P2P lending at once. The immediate priority in regulatory oversight is appropriately on operational risks and customer protection.  The UK FCA for example have paid close attention to the segregation of client money. There are though many other operational issues. We have already discussed orderly platform closure (UK regulators now require all P2P platforms to have plans for orderly resolution) and the management of arrears and default. Another is appropriate communication of risks to retail investors.

From a prudential perspective P2P platforms, provided they are operationally sound, should pose much lesser prudential risks than traditional banks. Lenders on these platforms absorb loan losses directly, loan losses are no threat to the viability of the platform.  Moreover, as we have documented, the market for P2P lending is still a long way from posing substantial systemic financial risks. Regulators though should still be paying attention to prudential and systemic risk. We emphasise three points that do not yet seem to prominent in regulatory thinking:

(i) prudential safety can be promoted by ensuring that there are no barriers to the possibility of banks reducing their risk exposures through putting their own loan books on P2P platforms (whether run by themselves or by a third party); and that banks get appropriate reduction in capital requirements for such transfers (allowing for any differences in credit quality between transferred and retained loans);
(ii) The most likely source of systemic risk in P2P platforms is from liquidity not credit risks, in particular the possibility discussed above of withdrawal of investor funds leading to a self-reinforcing collapse of prices. Regulators will though have to pay careful attention if the growth of P2P institutional investment continues, to ensure this does not replicate the same kind of systemic risks that materialized in the global financial crisis of 2007-2008, for example if banks were to using short term money market funding to invest in the P2P loans originated by other institutions.
(iii) Close attention is warranted to the role of P2P lending in property markets, and the possibility that they could exacerbate systemic risk in both commercial property and buy-to-let residential property (we

[25] See (US Treasury 2015; Financial Conduct Authority n.d.; The Financial Conduct Authority 2016)

find it somewhat surprising that P2P property lending qualifies for the new ISA tax exemption status, introduced in the UK from April 2016).

Finally, as regulators are already doing, proper attention should be paid to achieving the potential for P2P lending overcoming barriers to access to credit. In this respect the initial experience in the UK, in which P2P lending is providing a substantial share now exceeding 13% of new lending to the small businesses, is encouraging.

We believe that all these tasks will be helped by the greatest possible degree of standardization of loan conditions and credit and performance metrics. The argument is much the same as already made in relation to platform transparency and P2P platform risks. The greatest possible degree of standardization will help limit operational risks, promote customer protection and enhance prudential safety (especially through allowing the fullest possible participation including participation by banks in P2P platforms).[26]

[26] We note in the UK the related initiative (HM Treasury 2014) to develop standardized APIs for SME data so that transaction information can be shared by all potential lenders, not only the bank providing a business with payment and bank account services. This standardization could be a further support for the growth of P2P lending.

## 5. Summary and Conclusions

This paper has reviewed peer-to-peer (P2P) lending, its development in the UK and other countries, and assessed the business and economic policy issues surrounding this new form of intermediation.

Section 2 describes P2P lending. This employs similar information technologies to those that have supported other internet based commerce, in order to allow direct investment in consumer and small business loans, both by individuals and institutional investors. The technology allows diversification over a large number of borrowers without the loans having to be held on an intermediary balance sheet. These platforms can also allow the interest rates on loans to be determined by competition between lenders and for lenders to realise their investments by selling their loans (with a charge) to other lenders on the platform (although for retail investors a much simpler interface with automatic allocation of investments to different borrowers is usually employed). These liquidity and price-setting features, together with the large scale of funding from institutional investors, have led to the use in the US of the term 'market place lending' rather than 'Peer-to-peer' lending to describe these platforms.

Section 3 reviews development in the UK and other countries. P2P lending has developed rapidly in both the US and UK, more than doubling every annually for several years, but from a very small base. Even today it represents a small fraction, less than one percent, of total bank lending. In most other countries development of P2P lending is behind even that of the US and the UK.[27] In the UK P2P lending has though become an important source of loans for smaller companies, amounting to 13% of new conventional bank loans to firms with turnover of less than £1mn-£2mn per year (but does not appear to have achieved the same importance in small company finance in any other jurisdictions). 2015 data suggests that P2P lending captured a rather smaller share around 1.4% of the gross flow of unsecured lending in the UK and appears to be at around a similar proportion in the US.

P2P or market place lending has developed along a slightly different path in the US compared than in the UK, with a much greater emphasis on consumer finance and an even greater involvement of institutional investment funds. We also observe the emergence of greater co-operation between banks and P2P platforms in the US, though this is a development that may follow in time also in the UK.

Section 4 has argued that P2P lending is fundamentally complementary with not competitive too conventional banking. This argument is based on our view that the fundamental core of most bank business models is the provision of liquidity services. Synergies in liquidity explain the co-existence of loan, deposit and payment services in banks. We therefore expect banks to adapt to the emergence

[27] With the exception of China where, as a result of the structural limitations of established banks, a variety of forms of non-bank lending using the internet have grown at an extraordinary pace over the past few years; but the business models of these non-bank lenders varies considerably and is often very different from P2P lending in other jurisdications. For this reason Chinese experience is not really comparable with that of the US and the UK.

of P2P lending, either by co-operating closely with third party P2P lending platforms  or offering their own proprietary platforms to serve their existing customers. We also argue that while there is scope eventually for a substantial proportion of lending to be provided through P2P platforms, and this could lead to large gains, both private and social, especially through widening access to credit or example by smaller companies, the full development of the sector requires much further work addressing the risks and business and regulatory issues in P2P lending.

We have highlighted five areas of risk to the future development of P2P lending: (a) adequate development and communication of risk measures, especially the possibility of substantial increase of default in a major business downturn; (b) the related problem of enforcement of contracts following loan default and ensuring maximum possible loan loss recovery; (c) the need to deal with potential platform failures without losses to lenders; (d) potential liquidity risks especially from involvement of institutional investors subject to 'mark to market' valuations unable to absorb short term losses; and (e) fraud, cryptographic security and operational risks.

We argue that much greater standardisation of loan, credit performance and operational metrics will be key to addressing these risks and supporting the fullest development of P2P lending. Co-operation on the further development of business and technical standards for the industry should therefore be a priority for both industry participants and regulators.

To conclude, we suggest a 20%: 80% rule of thumb applies to the future P2P lending, much as it does in other applications of financial technology, The future of P2P lending will only be determined to a relatively minor degree (20%) by technological developments; it will depend to a much larger extent (80%) on successfully developing reliable business process, standardisation and appropriate regulation that serves the needs of customers.

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