Determinants of Peer-to-Peer Lending Expansion: The Roles of Financial Development and Financial Literacy*

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Abstract

To explore the determinants of the global peer-to-peer (P2P) lending expansion, this study examines factors that impact P2P lending using a sample of 62 economies over the period 2015–2017. We find that greater financial institutions’ efficiency, higher financial literacy, and less access to formal financial services are positively related with the expansion of P2P lending. This paper provides empirical evidence that the effects of financial development and financial literacy on P2P lending are different between emerging and advanced economies. We also present evidence that better information technology infrastructure and high new business density are positively associated with the expansion of P2P lending, suggesting that physical infrastructure is an essential prerequisite for it, while this is more likely to happen in dynamic business environments.

JEL classification: E51, G23, G53, N20, O33

Keywords: Financial Development, Financial Literacy, Fintech, Peer-to-Peer Lending

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1 Introduction

Online peer-to-peer (P2P) lending—a financial technology (fintech) service also known as crowdlending or debt-based crowdfunding—is a financial service in which lenders and borrowers transact directly without the intermediation of traditional financial institutions. P2P lending became a milestone in innovative financial solutions to individuals and firms in the aftermath of the global financial crisis, a period marked by a credit crunch, and the inability and reluctance of banks to lend to individuals and micro, small and medium-sized enterprises, with adverse social effects. Since the financial meltdown, P2P lending has generated significant interest for households, financial markets and policy makers. The COVID-19 pandemic further underpins the relevance of digital financial services, as the pace of technological adoption accelerates, including in the financial sector. The pandemic, however, also raises concern over possible rising economic inequalities, both within and across countries, which could be cushioned through increased financial inclusion.

The global crowdfunding market\(^1\) grew to a phenomenal $305 billion in 2018 from $0.5 billion in 2011 (Rau, 2019), yet the pace of growth has varied significantly across countries. In particular, the P2P lending market has grown significantly in the People’s Republic of China (PRC), the United States (US), and the United Kingdom (UK) (Claessens et al., 2018). However, in other countries, such as Indonesia, it is only starting to emerge. There is increasing evidence that fintech provides an important channel for financial inclusion (Demir et al., 2020). Given that P2P lending also has the potential to promote financial inclusion by providing better access to credit to people most needing it—in order to bridge or narrow the lending gap within and between countries—it is important to explore the factors explaining these differences in P2P lending diffusion, as well as to assess factors that promote P2P lending penetration.

An important, underinvestigated aspect in the literature on the macrofinancial environment is the link between financial development, financial literacy, and P2P lending. While the effects of competition between P2P lenders and banks for loans are well documented (Tang, 2019; Wolfe and Yoo, 2018; Cole et al., 2019), far less attention has been paid to the role that the existing financial ecosystem might play in the expansion of P2P lending. As most studies have considered specific countries, it could be hard to draw general conclusions. Against this background, we investigate how existing financial environments, in particular financial institutional development indicators—access, depth and efficiency, and financial literacy—can account for observed cross-country differences in the expansion of P2P lending. We use a new cross-country panel dataset from the Cambridge Centre for Alternative Finance consisting of 62 economies covering the years 2015-2017, which includes both advanced and emerging economies. We find that financial access and effi-

\(^{1}\) There are four types of crowdfunding: rewards-based crowdfunding, donation-based crowdfunding, debt-based crowdfunding (P2P lending), and equity-based crowdfunding
ciency are important determinants for the expansion of P2P lending. Importantly, however, the benefits of financial efficiency is only present in advanced economies and financial access is important in only emerging economies. Our results also suggest that financial literacy is positively associated with the expansion of P2P lending. This is consistent with the view that higher levels of financial literacy play a critical role in the adoption and use of fintech (Panos and Karkkainen, 2019). Additionally, our results highlight the important roles of Information and Communication Technology (ICT) infrastructure and business environment in the diffusion of P2P lending.

Our findings contribute to the literature on the relationship between fintech and financial system (Schindler, 2017; Jagtiani and Lemieux, 2017; Financial Stability Board, 2019), as well as technology diffusion and financial development (Sassi and Goaied, 2013; Comin and Nanda, 2019). Additionally, our findings can provide guidance to policy makers on how to design an ecosystem that is conducive for leveraging the benefits of fintech, with the example of P2P lending. This study makes four contributions. First, to the best of our knowledge, this paper is the first to analyze the impact of characteristics of the financial environment and financial literacy on the expansion of P2P lending at the macro level. While previous studies were conducted mainly at the individual country level, this paper exploits the cross-sectional dimension. Second, we use multi-dimensional financial development indicators to examine how (i) ability of customers to access formal financial services, (ii) ability of formal financial institutions to generate sustainable revenues at low cost, and (iii) size of financial markets impact P2P lending. Previous studies have mainly used a single indicator as proxies for financial development (Rau, 2019; Havrylchyk et al., 2019). We consider the effect of other dimensions of financial development on P2P lending diffusion. Third, we analyze the interrelationships between P2P lending, financial development, and financial literacy, showing not only elements of the formal financial system but also financial knowledge are important for the adoption and diffusion of P2P lending. Fourth, we use different sub-groups of the country’s level of development to examine the financial development-literacy-P2P lending relationship, and examine possible differences in these groups. Such possible differences can be important while considering policy actions as these may depend on a country specific level characteristics, such as their level of development.

The rest of the paper is organized as follows. Section 2 reviews related literature and introduces our hypotheses. Section 3 introduces our global dataset and provides an overview of P2P lending activities by region and period. Section 4 presents evidence from the regressions that helps identify the major factors of the observed cross-country disparities in P2P lending expansions. Section 5 concludes and discusses policy considerations.
2 Theoretical Background and Hypotheses

The role of financial development in promoting financial innovation has been widely studied in the last decade. More favorable financing environments lead to higher P2P lending growth because most P2P platforms regard accessibility, speed, and demand as important considerations, along with with the ability to access large amounts of collected data (Navaretti et al., 2018). Most of the empirical literature uses a single indicator, such as the ratio of private credit to gross domestic product (GDP) or stock market capitalization, as a proxy for financial development. However, given that financial development is a multidimensional process, considering only financial depth does not capture its entire complexity. A study by Cihák et al. (2012) explores financial development in terms of financial access, efficiency, and depth. Ayadi et al. (2015) investigate the relationship between financial development and economic growth. They use novel financial sector measures for the quantity (depth) and the quality (efficiency) of the banking sector. They argue that the effects of quality and quantity of the financial system on economic growth in advanced economies differ from the effects in emerging economies. The quantity effect is important in developing economies while the quality effect is more important in advanced economies. Hence, these three factors (financial access, efficiency, and depth) may yield different impacts on all forms of finance, including P2P loans.

Access to finance plays an important role in the development of non-traditional finance, such as microcredit. The literature finds robust relationships between microfinance institutions and access to formal financial services. A number of empirical studies (e.g., Vanroose and D’Espallier (2013)) show that microfinance institutions expand in countries where the percentage of formal financial institution account holders is lower. Low-income households in emerging economies face difficulty in obtaining credit from formal financial institutions. Therefore, the demand for an alternative source of financing to existing formal financial institutions is expected to be higher. Not only microfinance institutions, but also digital finance can improve access to finance for unbanked people (World Bank, 2014). Demir et al. (2020) find that fintech has an impact on both financial inclusion and inequality using a panel of 140 countries. According to United Nations Development Programme (UNDP) (2015), many countries have been working to achieve the United Nations Sustainable Development Goals—in particular, Goal 9, which aims to improve digital inclusion. Given that digital devices, such as mobile phones, have become more affordable, financially excluded people are more exposed to these. Consequently, digital finance offers great potential to reaching the ones left behind, allowing them to avail of financial services.

Some comparative research looks at the relationship between P2P lending and access to formal financial services.
services using the US market. Jagtiani and Lemieux (2018) document that Lending Club—a California-based P2P lending platform—provides credit in countries where credit card loans are more concentrated and areas that have fewer bank branches per capita. Havrylchyk et al. (2019) examine the expansion of P2P lending using data from Lending Club and Prosper Market Place, another P2P lender. They find that P2P lending is negatively related to market concentration and the number of bank branches. P2P lending platforms provide additional credit to customers that are underserved by traditional financial institutions. Accordingly, we formulate our first hypothesis as follows:

**H1**: P2P lending expands in economies lacking access to formal financial institutions.

On the depth of the financial sector, recent cross-country research on digital finance by Rau (2019) and Navaretti et al. (2018) shows a positive relationship between crowdfunding volumes and financial depth. The quality of the financial sector (profitability and cost efficiency of the financial institutions) also matters for the expansion of fintech products. Rau (2019) confirms a positive effect of bank profits and financial system inefficiency on crowdfunding expansion, which supports the view that financial system rents are important for crowdfunding. However, de Ramon et al. (2018) show that higher competition leads to better efficiency in the banking market. High competition within a financial industry can make it easier for new players to enter the market. Conditioning on the fact that higher efficiency represents high competition and lower barriers to entry, higher efficiency may have a positive impact on the adoption of P2P lending. This leads to our second and third hypotheses:

**H2**: P2P lending expands in economies with more efficient financial institutions.

**H3**: P2P lending has a positive relationship with financial depth.

The link between financial literacy and variables related to financial behavior is widely studied (e.g., Klapper and Lusardi (2019)). Hilgert et al. (2003) find a positive relationship between financial knowledge and various financial outcomes. Higher financial literacy can improve cash flow management and lead to more saving and investment. Lusardi and Mitchell (2007), linking financial literacy to retirement and wealth accumulation, find positive relationships. Financial literacy also has an impact on investment behavior, including stock market participation and better equity diversification (Goetzmann and Kumar, 2008). Van Rooij et al. (2011) use the De Nederlandsche Bank Household Survey to see the relationship between financial literacy and stock market participation. They find that households with higher literacy are more likely to invest in stocks. An adequate level of financial literacy is also an important precondition to engage in fintech activities. Iyer et al. (2016) state that investors in P2P lending often lack financial industry knowledge and financial lending experiences. They confirm that P2P lenders use both soft and hard information to infer creditworthiness.
According to Morgan and Trinh (2019), the positive relationship between financial literacy and awareness of fintech products is strong in the Lao People’s Democratic Republic. Yakoboski et al. (2018), examining the financial literacy of millennials and their fintech activities, find fintech use depends on user knowledge, characteristics, and needs. Han et al. (2019) use two measures, financing familiarity and financing expertise, to test how financial knowledge affects P2P borrowing in the PRC. They conclude that financial literacy is predictive of P2P market participation. Therefore, our fourth hypothesis is:

\( H_4 \): The level of financial knowledge is positively associated with the expansion of P2P lending across economies.

We also extend our analysis by splitting samples into two county groups based on their level development. We thereby assess the extent to which the effects of financial development and financial literacy on P2P lending activities depend on a country’s level of economic development. Our fifth hypothesis is:

\( H_5 \): The effects of financial development and financial literacy are different between emerging and advanced economies.

We proceed by defining parameters of financial environment and channels that can lead to the expansion of P2P lending markets. Figure 1 illustrates the foundations of our analysis. The arrows show that funds flow from lenders to borrowers via two channels: traditional financial service, in which financial intermediaries (i.e. banks) borrow funds from lenders and the use these funds to make loans to borrowers. And non-traditional financial service, in which a borrowers borrow funds directly from lenders through the online P2P platforms. It also shows that financial development affects the financial intermediaries while financial literacy has an impact on both lenders and borrowers.

3 Data

We examine the roles of the financial environment and financial literacy on P2P loans growth using the following specifications:

\[
P_{2Pit} = \beta_0 + \beta_1 FN_{it} + \beta_2 Z_{it} + \epsilon_{it},
\]

\[
P_{2Pit} = \beta_0 + \beta_1 FL_{it} + \beta_2 FD_{it} + \beta_3 (FL_{it} \times FD_{it}) + \beta_4 Z_{it} + \epsilon_{it},
\]

where \( P_{2P} \) is P2P loan volume per capita, \( FN \) captures financial environment indicators - access, efficiency and depth, \( FL \) is financial literacy, \( FD \) is financial development, \( Z_{it} \) is a set of control variables, including...
GDP per capita, trade openness ratio, fixed broadband subscriptions, regulatory score, new business density, leader and time dummies. We use Equation (1) to test the relationship between the financial environment and P2P activities, while Equation (2) is used to examine the financial literacy-P2P lending relationship. By adding an interaction term, we also test the hypothesis that the effect of literacy on P2P loan activities varies depending on the degree of financial development. To test Hypothesis H5, both equations use different subgroups - emerging and advanced economies - providing an alternative way to examine whether the financial environment-literacy-P2P loans varies across income groups.

We use P2P loan data from the Cambridge Centre for Alternative Finance\(^3\). The sample contains yearly data from 2015 to 2017. The total P2P loan volumes are in US dollars based on the exchange rate at the end of 2015, 2016, and 2017. In total, 62 economies are part of the sample\(^4\). Table 1 presents total P2P loan volumes by region and year. During 2015–2017, the total Asian loan market share was about 82%, while Europe accounted for less than 5% of total global P2P loans volume. The size of the P2P loan markets has varied considerably over time. While it first expanded considerably in 2016, it then declined in 2017. In our sample, a larger proportion of loans has been more concentrated in the PRC, the UK, and the US, with the size of the P2P loan market in the PRC being larger than the rest of the world, including the UK and the US. We account for that by including dummies for these three countries, along with time dummies.

[Table 1 about here]

We are aware that the global P2P lending market has been developing rapidly. While the PRC dominated this market until 2018, there has been a remarkable decline amid a series of defaults, platform failures, and shifts in regulation thereafter. After years of fast growth, P2P platforms in the PRC decreased considerably their lending activities in 2018 and beyond\(^{\text{Cornelli et al. 2020}}\). As a result, in 2020, the market in the PRC only accounted for about 1% of total alternative finance volumes\(^{\text{Cambridge Center for Alternative Finance 2021}}\). Given the previous weight of the Chinese market, total global market volumes have also decreased, by 42% in 2019 and a further 35% in 2020. When excluding PRC data, not only global P2P lending market volume has increased 2018-2020 but also most individual regions, including in Asia-Pacific, Europe, UK, US-Canada, and in Latin America\(^{\text{Cambridge Center for Alternative Finance 2021}}\). Despite these recent developments we are convinced that our comprehensive 2015-2017 dataset allows for a meaningful econometric analysis on the dynamics and determinants of global P2P markets.

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\(^3\)Since 2014, the Cambridge Centre for Alternative Finance has collected data by surveying crowdfunding companies and public sources. Because of data availability, we use data from 2015 to 2017. Explanations of their data collection can be found at [https://www.jbs.cam.ac.uk/faculty-research/centres/alternative-finance/](https://www.jbs.cam.ac.uk/faculty-research/centres/alternative-finance/).

\(^4\)We group the 62 economies into three regions: Asia, America, and Europe. We limit our analysis to three regions, mainly because of data availability. Appendix Table A.1 lists the economies.
For financial development, we employ four measures from the International Monetary Fund Financial Development Index Database. We use a financial development index as the overall measure of financial development. To capture the complexity of financial development further, we also consider how financial institutions develop in terms of access, depth, and efficiency. Svirydzenka (2016) develops the methodologies using a set of key indicators\footnote{See Appendix Table A.2.}. Financial access consists of the number of bank branches and ATMs per 100,000 adults. Financial depth considers private sector credit, pension funds, mutual funds, and insurance premiums. Financial efficiency reflects both operational efficiency and the profitability of financial institutions. Financial access, depth, and efficiency are aggregated into the overall financial development index. In her analysis, countries such as India, Malaysia, and Viet Nam rank high on depth but lower on access. This highlights that financial systems need to be extensively assessed. Countries with deep financial markets do not necessarily also have better financial market access or greater levels of financial efficiency. Appendix Table A.2 lists definitions of variables and data sources.

We use data from the Standard & Poor’s Ratings Services Global Financial Literacy Survey to assess financial literacy, which was conducted in 2014 in more than 140 economies. Four basic concepts (interest compounding, inflation, risk diversification, and numeracy) were tested. Based on the dataset, Scandinavian countries score highest, followed by Canada, Israel, and the UK. Overall, the survey results reveal a great dispersion of financial literacy levels across economies.

For the country-specific control variables, we include GDP per capita, trade openness, fixed broadband subscriptions, regulatory score, and new business density. Most of the data are taken from the World Development Indicators. These country-specific control variables have been shown to significantly impact P2P lending and financial innovation\footnote{See Appendix Table A.2.}. Bank for International Settlements (BIS) and Financial Stability Board (FSB) (2017); and Navaretti et al. (2018). On the supply side, infrastructure—particularly internet access—and regulation play a role in financial innovations.

Sufficient demand is important for nascent financial markets segments to prosper, such as P2P lending markets. Since the global financial crisis in 2008, new businesses struggle to secure debt financing in advanced economies, and lack of access to formal financial institutions and higher lending interest rates in emerging economies can be the biggest obstacles to start-up entrepreneurs (Bruton et al., 2015). When the supply of capital from formal financial institutions is limited, entrepreneurs may seek alternative forms of financing, such as P2P loans. The pairwise correlation among key variables and explanatory variables are reported in Appendix Table A.3.
4 Empirical Findings

The following discussion focuses on the estimation results based on the panel regression of Table 2 and Table 3. We include fixed effects by adding indicators for P2P market leaders (PRC, UK, and US) and year dummy variables. For comparison and robustness checks, we conduct cross-sectional regressions separately for each of the years (2015–2017), with results in Table 4 and Table 5.

[Table 2 about here]

Table 2 reports the panel regression results from the P2P loan model at the country level, where the dependent variable for each case is the log of P2P loan volume per capita. There are three regressions: (i) full sample, (ii) emerging economies, and (iii) advanced economies. It shows estimation results obtained by including the financial development dynamics (access, efficiency, and depth).

Table 2a shows the effect of financial development on P2P lending for all markets. The impact of access to formal financial institutions on the P2P lending expansion is negative and quite large. The result suggests that lower bank branch and ATM penetration are positively associated with an expansion of P2P lending activities. This finding is in line with Hypothesis $H_1$, suggesting that P2P lending expands in financial environments lacking access to formal financial institutions. It is also consistent with the finding by Havrylchyk et al. (2019) that access is essential for P2P lending to expand. Financial institution efficiency enters positively and significantly in column [2], implying that efficiency measures such as the quality of the financial institution are important for the expansion of P2P lending. Better efficiency can imply higher competition and lower barriers to enter financial markets (de Ramon et al., 2018). They are in accordance with Hypothesis $H_2$.

A positive relationship between financial institution efficiency and P2P lending volumes could signal that P2P lending platforms can expand in economies where bank competition is high. This finding also relates to the literature on technology diffusion and financial development (Sassi and Goaied, 2013; Comin and Nanda, 2019). In contrast to the other two financial development factors, the variable measuring financial depth and financial development are not statistically significant in columns [3] and [4], which does not support Hypothesis $H_3$.

Table 2b reports estimation results for two different sub-samples (emerging and advanced economies). Columns [1]–[5] show the results for all emerging economies and columns [6]–[10] show the results for all advanced economies. On the other hand, for emerging markets, only access among the financial development variables is significant and the magnitude of financial access is larger than in Table 2a. On the other hand,
for advanced markets, only efficiency variables are significantly positive and larger than in Table 2a. In other words, the effect of financial access is more pronounced in emerging economies, while that of financial efficiency is stronger in advanced economies. These somewhat contrasting results between advanced and emerging economies point toward some possible thresholds at play. Given that advanced economies are characterized by a higher degree of financial institutions’ access, it may not be a major driver in these countries for P2P lending penetration once having reached a sufficiently high level. Financial efficiency, in turn, may only provide an enabling environment for P2P lending expansion once reached a certain level, which can be primarily found in advanced economies. Hence, these results support the hypothesis $H_5$ and seem intuitive given that access to formal financial institutions in emerging economies may be limited in comparison to advanced economies. P2P loans can be more in demand in developing economies, which in turn can be a means of expanding access to finance. Among advanced economies, countries with higher financial efficiency promote the expansion of P2P lending. This is in line with previous studies on technology adoption and efficiency (Comin and Hobijn 2004; Galang 2012), and confirm that, in advanced economies, the direct effect of financial efficiency on P2P lending is significantly positive. The effects of other financial development variables, such as financial depth and financial development indicators, do not appear to be significant.

Among our country-specific control variables, fixed broadband subscriptions and new business density are statistically significant explanatory factors for the expansion of P2P lending. And we find little or no evidence to support the importance of other control variables. P2P lending involves internet-based loan transactions. Hence, the use of the internet is contingent on the adoption of technologies such as computers, and P2P lending users thus require internet access.

According to Bank for International Settlements (BIS) and Financial Stability Board (FSB) (2017), technological advances in the internet are among the supply factors driving fintech adoption. Although Rau (2019) and Havrylych et al. (2019) found no robust impact of the internet on P2P lending, our results confirm that internet penetration is an important driver for the expansion of P2P lending. In addition, the findings show that the level of new business density is positively related to the volume of P2P lending. Interestingly, new business density appears to matter for P2P loan expansion. Borrowers (e.g., entrepreneurs) often apply for multiple sources of finance, even after they are turned down by other sources (Robb and Robinson 2014). P2P lending platforms can provide alternative sources of credit for small businesses and start-ups, which may have difficulty accessing credit through traditional banks. This satisfies demand in general, and even also creates new demand. It could further indicate a dynamic and innovative business environment in general, leading to more demand for P2P lending. No significant variation in P2P lending is observed among
Table 3 presents the estimates for the full sample, emerging, and advanced economies separately. The dependent variable is the log of P2P volume per capita during 2015–2017. To understand the effect of financial literacy on P2P lending, we first run our baseline regression in column [1], [4], and [7], then include financial development index and an interaction term between financial literacy and financial development. The results are in accordance with Hypothesis $H_4$, which indicates that the level of financial knowledge is positively associated with the expansion of P2P lending across economies. We find that financial literacy matters for the expansion of P2P lending for both emerging and advanced economies, with the estimated magnitude in emerging countries exceeding the one in advanced economies. Economies with higher literacy are more likely to show active P2P lending activity. The results are consistent with Han et al. (2019) who show that financial literacy is positively associated with P2P lending activities. Since lenders and borrowers in P2P lending may lack knowledge on financial investment and experience compared to the ones in traditional financial institutions, limited financial literacy can pose a significant challenge hampering the expansion of P2P lending markets. The fixed broadband subscription is an important predictor of the expansion of P2P lending, but other variables, including financial development, and new business density, are not statistically significant. Additional robustness checks not reported here reveal that the inclusion of the variables of financial access, efficiency, and depth do not alter the results reported in Table 3.

For robustness checks, we ran a series of additional regressions. Table 4 and Table 5 report cross-sectional regression outputs separately for each of the years. They present the estimates using two different specifications: a basic specification and a second specification in which we add dummies for developed economies. The coefficient signs are mostly consistent with the ones from the panel regression models. The number of observations is lower than in the panel estimations of Table 2 and Table 3, but the sample still includes a fair selection of economies at different stages of development and P2P lending adoption. The effects of financial development and financial literacy vary over time, incl. in with regard to their statistical significance.

Table 4 reports the impact of financial access, efficiency, and depth on P2P lending for each year from 2015 to 2017. Formal financial institution access is more important in 2015 and 2016, while financial institution efficiency seems to do a better job capturing the expansion of P2P lending for 2017. In the early stage of the
P2P lending adoption, broadband matters more, but the effect fades away over time. Higher demand levels associated with higher new business density link to an increase in P2P lending in 2015 and 2016. Table 5 shows financial literacy has a significant and positive causal link on P2P lending in 2015, but they are not significant for 2016 and 2017. Factors affecting P2P lending adoption can vary over time. Financial access, financial literacy, broadband, and new business density play important roles in the early stage of P2P lending markets, while financial efficiency is an driver in expanding those markets.

Table 5 about here

5 Conclusion

We investigate factors determining the expansion of P2P lending across economies using data on P2P loan volumes per capita for 2015–2017 for 62 economies. We use a set of financial development indicators—financial access, efficiency, depth, and financial literacy. The main finding is that formal financial institutions’ access and efficiency, as well as financial literacy, best explain the observed expansion in P2P lending per capita. In particular, the effect of financial access is stronger in emerging economies, while the effect of financial efficiency is stronger in advanced economies. P2P lending expands in economies where barriers exist to access to formal financial services and in economies with higher financial literacy. Moreover, information technology infrastructure and new business density seem to drive expansion of P2P lending. In other words, P2P lending expands in economies with more businesses and start-ups and better infrastructure.

Our overview of the determinants of P2P loan expansion across economies provides several policy insights. It is important for policy makers to understand how the degree of financial institution development and levels of financial knowledge can explain differences across economies in P2P loan activities. To harness the possible benefits of P2P lending, enhanced financial literacy is needed, such as through targeted training. Moreover, essential infrastructure, broadband is required. Policy makers need to consider these two dimensions as otherwise, those most in need could remain left behind. Our finding that P2P lending reaches regions otherwise underserved by traditional financial institutions underlined this great potential for promoting financial inclusion. Finally, high new business density facilitates the penetration of P2P lending services. Hence, policy makers should assure the creation of an enabling ecosystem for innovators and entrepreneurs, that will also help scale up the usage of new technologies, including P2P lending. However, policy makers need to pay careful attention to rapid and unregulated expansion of financial technologies, such as P2P platforms, as these could undermine financial stability, consumer protection, and cybersecurity. Policy makers must therefore adequately balance financial innovation (e.g., P2P loan expansion) with financial stability.
An important direction for future research would be to explore different drivers that influence the speed of P2P lending expansion at different stages of P2P lending development. Furthermore, one could link it with explicit measures of financial inclusion. Granular transactional data would help in that regard. As we had no data available on international P2P loan transactions, future work could examine the patterns of P2P lending deal flows across economies, incl. where regulations on P2P lending are applied differently. Last, an assessment of the interplay of changes in the regulatory environment and P2P lending expansion could shed light on the effectiveness of financial policies.
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## Tables

### Table 1  Peer-to-Peer Loan Volumes

| Year   | Region | Volume ($ million) | Proportion (%) |
|--------|--------|--------------------|----------------|
| 2015   | America| 34,529             | 26             |
|        | Asia   | 93,624             | 70             |
|        | Europe | 5,101              | 4              |
|        | Total  | 133,255            | 100            |
| 2016   | America| 33,025             | 12             |
|        | Asia   | 242,774            | 86             |
|        | Europe | 7,595              | 2              |
|        | Total  | 283,395            | 100            |
| 2017   | America| 9,632              | 7              |
|        | Asia   | 111,782            | 88             |
|        | Europe | 6,318              | 5              |
|        | Total  | 127,732            | 100            |
| 2015-2017 | America| 77,187             | 14             |
|        | Asia   | 448,180            | 82             |
|        | Europe | 19,015             | 4              |
|        | Total  | 544,383            | 100            |

### Leaders

| Year   | Region | Volume ($ million) | Proportion (%) |
|--------|--------|--------------------|----------------|
| 2015   | PRC    | 92,694             | 71             |
|        | UK     | 4,288              | 3              |
|        | US     | 34,368             | 26             |
|        | Total  | 131,351            | 100            |
| 2016   | PRC    | 240,905            | 86             |
|        | UK     | 6,068              | 2              |
|        | US     | 32,413             | 12             |
|        | Total  | 279,387            | 100            |
| 2017   | PRC    | 109,965            | 89             |
|        | UK     | 4,894              | 4              |
|        | US     | 8,739              | 7              |
|        | Total  | 123,599            | 100            |
| 2015-2017 | PRC    | 443,566            | 83             |
|         | UK     | 15,250             | 3              |
|         | US     | 75,521             | 14             |
|         | Total  | 534,338            | 100            |

*Note*: United States (US) dollar values are based on the exchange rate at the end of 2015, 2016, and 2017. Leaders include the People's Republic of China (PRC), the United Kingdom (UK), and the US. *Source*: Authors' calculations based on data from the Cambridge Centre for Alternative Finance.
Table 2a  Financial Institutions Development and Peer-to-Peer Loans (Panel Regression)

Whole sample

| Variables                      | [1]   | [2]   | [3]   | [4]   | [5]   |
|-------------------------------|-------|-------|-------|-------|-------|
| **Access**                    | -2.169** | -1.998* |       |       |       |
|                               | (1.097) | (1.080) |       |       |       |
| **Efficiency**                | 3.279* |       | 3.124* |       |       |
|                               | (1.880) |       | (1.852) |       |       |
| **Depth**                     | 0.338  | 0.129  |       |       |       |
|                               | (1.488) | (1.491) |       |       |       |
| **FD**                        |       |       | -1.055 |       |       |
|                               |       |       | (2.261) |       |       |

Control variables

| Log of GDP per capita         | 0.639  | 0.642  | 0.677  | 0.917  | 0.463  |
|                               | (0.460) | (0.501) | (0.658) | (0.594) | (0.703) |
| Trade openness                | -0.005  | -0.004  | -0.003  | -0.003  | -0.005  |
|                               | (0.004) | (0.004) | (0.004) | (0.004) | (0.004) |
| Log of broadband (per 100 people) | **1.215** | **0.922** | **0.947** | 0.868 | **1.248** |
|                               | (0.534) | (0.546) | (0.547) | (0.549) | (0.555) |
| Regulatory score              | 0.169  | -0.123  | -0.001  | 0.081  | 0.014  |
|                               | (0.306) | (0.287) | (0.305) | (0.330) | (0.296) |
| New business density          | 0.099  | **0.102** | 0.099  | 0.102  | **0.099** |
|                               | (0.061) | (0.057) | (0.066) | (0.063) | (0.055) |
| Leader dummy                  | Yes    | Yes    | Yes    | Yes    | Yes    |
| Time fixed effects            | Yes    | Yes    | Yes    | Yes    | Yes    |
| R-squared                     | 0.602  | 0.594  | 0.578  | 0.579  | 0.617  |
| Observations                  | 133    | 133    | 133    | 133    | 133    |

Note: GDP = gross domestic product, Access is financial access, efficiency is financial efficiency, depth is financial depth, and FD is financial development. This table reports panel estimation results for a whole sample. Numbers in parentheses are robust standard errors, which are clustered at the country level. ***, **, and * represent 1%, 5%, and 10% significance, respectively. The dependent variable is log of peer-to-peer (P2P) loan volume per capita. Financial development is an aggregate of financial access, efficiency, and depth. Log of broadband is log of fixed broadband subscriptions per 100 people. The sample period is 2015–2017. All regressions include time fixed effects and dummies for P2P lending leading countries (People’s Republic of China, United Kingdom, and United States). All variables are defined in Appendix Table A.2.
Table 2b  Financial Institutions Development and Peer-to-Peer Loans (Panel Regression)
Emerging economies versus advanced economies

| Variables       | Emerging Economies | Advanced Economies |
|-----------------|--------------------|--------------------|
| Access          | -5.475***          | -5.302***          |
|                 | (1.668)            | (1.543)            |
| Efficiency      | 2.936              | 3.057              |
|                 | (2.152)            | (1.943)            |
| Depth           | 0.026              | 0.150              |
|                 | (1.764)            | (1.648)            |
| FD              | -3.365             | 0.551              |
|                 | (3.165)            | (3.596)            |
| Control Variables |
| Log of GDP per capita | -0.109 0.692 0.596 0.761 -0.038 |
|                 | (0.770) (0.821) (0.911) (0.843) (0.912) |
| Trade openness  | -0.004             | 0.000              |
|                 | (0.006)            | (0.007)            |
| Log of broadband| 1.896***           | 1.814***           |
|                 | (0.665)            | (0.665)            |
| Regulatory score| 0.379              | -0.297             |
|                 | (0.324)            | (0.348)            |
| New business density | 0.097 0.124 0.103 0.098 0.119 |
|                 | (0.087)            | (0.098)            |
| Leader dummy    | Yes                | Yes                |
| Time fixed effects | Yes  Yes  Yes  Yes  Yes |
| R-squared       | 0.562              | 0.407              |
| Observations    | 78                 | 55                 |

Note: GDP = gross domestic product, Access is financial access, efficiency is financial efficiency, depth is financial depth, and FD is financial development. This table reports panel estimation results for emerging and advanced economies separately. Numbers in parentheses are robust standard errors, which are clustered at the country level. ***,**, and * represent 1%, 5%, and 10% significance, respectively. The dependent variable is log of peer-to-peer (P2P) loan volume per capita. Financial development is an aggregate of financial access, efficiency, and depth. Log of broadband is log of fixed broadband subscriptions per 100 people. The sample period is 2015–2017. All regressions include time fixed effects and dummies for the P2P lending leading countries (People’s Republic of China, United Kingdom, and United States). All variables are defined in Appendix Table A.2.
| Variables | Whole Sample | Emerging Economies | Advanced Economies |
|-----------|--------------|--------------------|--------------------|
|           | [1]          | [2]                | [3]                | [4]          | [5]          | [6]          | [7]          | [8]          | [9]          |
| Literacy  | 0.056**      | 0.054**            | 0.051              | 0.096***     | 0.086*       | 0.016        | 0.064**      | 0.080***     | 0.136        |
|           | (0.024)      | (0.025)            | (0.101)            | (0.044)      | (0.045)      | (0.236)      | (0.029)      | (0.032)      | (0.186)      |
| FD        | -0.727       | -0.899             | (2.558)            | -3.535       | -7.856       | (4.056)      | (14.200)     | 3.234        | 7.523        |
|           | (2.698)      | (6.708)            | (10.01)            | (14.200)     | (14.364)     |              |              |              |              |
| Literacy * FD | 0.003 | 0.126              | (0.128)            | 0.064**      | 0.080***     | (0.129)      | (0.005)      | (0.005)      | (0.005)      |

Control Variables
Log of GDP per capita
0.101 0.210 0.209 0.205 0.438 0.358 -0.627 -1.035 -1.103
(0.546) (0.730) (0.725) (0.872) (0.966) (0.962) (1.064) (1.269) (1.344)
Log of broadband
1.044* 1.023* 1.030* 0.799 0.817 0.935 -1.271 -1.727 -1.772
(0.532) (0.551) (0.555) (0.691) (0.670) (0.676) (1.287) (1.196) (1.170)
Log of broadband
1.044* 1.023* 1.030* 0.799 0.817 0.935 -1.271 -1.727 -1.772
(0.532) (0.551) (0.555) (0.691) (0.670) (0.676) (1.287) (1.196) (1.170)
Log of broadband
1.044* 1.023* 1.030* 0.799 0.817 0.935 -1.271 -1.727 -1.772
(0.532) (0.551) (0.555) (0.691) (0.670) (0.676) (1.287) (1.196) (1.170)
Regulatory score
-0.198 -0.159 -0.158 -0.126 0.025 0.050 -0.519 -0.717 -0.775
(0.297) (0.317) (0.321) (0.365) (0.360) (0.380) (0.585) (0.668) (0.647)
New business density
0.073 0.074 0.074 0.086 0.082 0.085 0.061 0.048 0.049
(0.056) (0.057) (0.057) (0.078) (0.077) (0.080) (0.068) (0.078) (0.079)
Leader dummy
Yes Yes Yes Yes Yes Yes Yes Yes Yes
Time fixed effects
Yes Yes Yes Yes Yes Yes Yes Yes Yes
R-squared
0.591 0.592 0.592 0.486 0.511 0.519 0.533 0.628 0.635
Observations
130 130 130 75 75 75 55 55 55

Note: GDP = gross domestic product. Access is financial access, efficiency is financial efficiency, depth is financial depth, and FD is financial development. This table reports panel estimation results for a whole sample, emerging and advanced economies separately. Numbers in parentheses are robust standard errors, which are clustered at the country level. ***, **, and * represent 1%, 5%, and 10% significance, respectively. The dependent variable is log of peer-to-peer (P2P) loan volume per capita. Financial development is an aggregate of financial access, efficiency, and depth. Financial literacy x financial development is an interaction term. Log of broadband is log of fixed broadband subscriptions per 100 people. The sample period is 2015–2017. All regressions include time fixed effects and dummies for the P2P lending leading countries (People’s Republic of China, United Kingdom, and United States). All variables are defined in Appendix Table A.2.
| Variables | 1       | 2       | 3       | 4       | 5       | 6       | 7       | 8       | 9       | 10      |
|-----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Access    | -3.879** | -3.514** | -4.069*** | -3.676** |         |         |         |         |         |         |
|           | (1.513)  | (1.530)  | (1.545)  | (1.575)  |         |         |         |         |         |         |
| Efficiency| 4.015**  | 3.203    | 3.984*   | 3.050    |         |         |         |         |         |         |
|           | (2.273)  | (2.193)  | (2.318)  | (2.236)  |         |         |         |         |         |         |
| Depth     | 0.396    | 0.407    | 0.302    | 0.221    |         |         |         |         |         |         |
|           | (2.110)  | (1.918)  | (2.171)  | (1.969)  |         |         |         |         |         |         |
| FD        |         | -3.274   |         |         | -3.782  |         |         |         |         |         |
|           |         | (3.215)  |         |         | (3.365) |         |         |         |         |         |
| Control Variables |        |         |         |         |         |         |         |         |         |         |
| Log of GDP per capita | 0.587 | 0.469 | 0.599 | 1.273 | 0.211 | 0.134 | 0.378 | 0.463 | 0.972 | -0.047 |
|           | (0.561) | (0.606) | (1.041) | (0.786) | (0.961) | (0.827) | (0.863) | (1.175) | (0.949) | (1.079) |
| Trade Openness | -0.010** | -0.007 | -0.006 | -0.008* | -0.010** | -0.009 | -0.006 | -0.005 | -0.007 | -0.009 |
|           | (0.004) | (0.004) | (0.004) | (0.005) | (0.004) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) |
| Log of broadband | 2.025*** | 1.614** | 1.630* | 1.432** | 2.116** | 2.222*** | 1.650** | 1.678* | 1.563** | 2.227*** |
|           | (0.657) | (0.661) | (0.816) | (0.690) | (0.764) | (0.711) | (0.713) | (0.848) | (0.733) | (0.798) |
| Regulatory score | 0.021 | -0.414 | -0.318 | -0.103 | -0.120 | 0.002 | -0.421 | -0.327 | -0.102 | -0.120 |
|           | (0.399) | (0.402) | (0.428) | (0.452) | (0.418) | (0.402) | (0.411) | (0.436) | (0.457) | (0.423) |
| New business density | 0.153** | 0.154** | 0.151** | 0.164** | 0.150** | 0.155** | 0.155** | 0.153** | 0.166** | 0.153** |
|           | (0.056) | (0.059) | (0.064) | (0.061) | (0.058) | (0.057) | (0.060) | (0.065) | (0.062) | (0.059) |
| Leader dummy | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Developed dummy | No | No | No | No | No | Yes | Yes | Yes | Yes | Yes |
| R-squared | 0.738 | 0.712 | 0.684 | 0.694 | 0.755 | 0.742 | 0.712 | 0.685 | 0.697 | 0.758 |
| Observations | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |

Note: GDP = gross domestic product, Access is financial access, efficiency is financial efficiency, depth is financial depth, and FD is financial development. This table reports cross-section estimation results for the year 2015. Numbers in parentheses are ordinary least squares standard errors. ***, **, and * represent 1%, 5%, and 10% significance, respectively. The dependent variable is log of P2P loan volume per capita. Financial development is an aggregate of financial access, efficiency, and depth. Log of broadband is log of fixed broadband subscriptions per 100 people. All regressions include dummies for the P2P lending leading countries (People’s Republic of China, United Kingdom, and United States). In columns 6–10, the developed economy indicators are included. All variables are defined in Appendix Table A.2.
### Table 4b  Financial Institutions Development and Peer-to-Peer Loans (Cross-Sectional Regression by Year)

**Variables** | **[1]** | **[2]** | **[3]** | **[4]** | **[5]** | **[6]** | **[7]** | **[8]** | **[9]** | **[10]**  
---|---|---|---|---|---|---|---|---|---|---  
Access | -3.023*** | -3.474*** | -3.989* | -3.391** | -3.391** | -3.391** | -3.391** | -3.391** | -3.391** | -3.391**  
  | (1.455) | (1.500) | (1.449) | (1.509) | (1.449) | (1.509) | (1.449) | (1.509) | (1.449) | (1.509)  
Efficiency | 0.380 | 0.091 | -0.114 | -0.446 | -0.446 | -0.446 | -0.446 | -0.446 | -0.446 | -0.446  
  | (3.142) | (3.076) | (3.162) | (3.043) | (3.162) | (3.043) | (3.162) | (3.043) | (3.162) | (3.043)  
Depth | 1.536 | 1.085 | 1.234 | 0.602 | 0.602 | 0.602 | 0.602 | 0.602 | 0.602 | 0.602  
  | (1.755) | (1.751) | (1.781) | (1.750) | (1.781) | (1.750) | (1.781) | (1.750) | (1.781) | (1.750)  
FD | -2.710 | -2.710 | -4.039 | -4.039 | -4.039 | -4.039 | -4.039 | -4.039 | -4.039 | -4.039  
  | (2.951) | (2.951) | (3.038) | (3.038) | (3.038) | (3.038) | (3.038) | (3.038) | (3.038) | (3.038)  
Control Variables | | | | | | | | | |  
Log of GDP per capita | 0.566 | 0.736 | 0.187 | 1.068 | 1.068 | -0.382 | 0.071 | -0.302 | 0.323 | -0.560  
  | (0.543) | (0.568) | (0.846) | (0.663) | (0.663) | (0.784) | (0.819) | (0.977) | (0.821) | (0.950)  
Trade Openness | 0.000 | 0.003 | 0.005 | 0.002 | 0.001 | 0.005 | 0.007 | 0.007 | 0.006 | 0.005  
  | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005)  
Log of broadband | 0.656 | 0.234 | 0.543 | 0.205 | 0.848 | 1.060 | 0.495 | 0.706 | 0.522 | 1.166  
  | (0.666) | (0.674) | (0.747) | (0.664) | (0.757) | (0.696) | (0.711) | (0.764) | (0.687) | (0.773)  
Regulatory score | 0.156 | -0.085 | -0.140 | 0.106 | 0.090 | 0.077 | -0.141 | -0.198 | 0.080 | 0.069  
  | (0.327) | (0.367) | (0.334) | (0.373) | (0.380) | (0.324) | (0.370) | (0.339) | (0.368) | (0.374)  
New business density | **0.179** | **0.182** | **0.177** | **0.189** | **0.175** | **0.177** | **0.183** | **0.178** | **0.190** | **0.176**  
  | (0.067) | (0.072) | (0.071) | (0.070) | (0.070) | (0.066) | (0.072) | (0.071) | (0.069) | (0.068)  
Leader dummy | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes  
Developed dummy | No | No | No | No | No | Yes | Yes | Yes | Yes | Yes  
R-squared | 0.518 | 0.463 | 0.474 | 0.475 | 0.523 | 0.551 | 0.481 | 0.4888 | 0.505 | 0.552  
Observations | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46 | 46  

**Note:** GDP = gross domestic product, Access is financial access, efficiency is financial efficiency, depth is financial depth, and FD is financial development. This table reports cross-section estimation results for the year 2016. Numbers in parentheses are ordinary least squares standard errors. ***, **, and * represent 1%, 5%, and 10% significance, respectively. The dependent variable is log of P2P loan volume per capita. Financial development is an aggregate of financial access, efficiency, and depth. Log of broadband is log of fixed broadband subscriptions per 100 people. All regressions include dummies for the P2P lending leading countries (People’s Republic of China, United Kingdom, and United States). In columns 6–10, the developed economy indicators are included. All variables are defined in Appendix Table A.2.
| Variables                  | [1] | [2] | [3] | [4] | [5] | [6] | [7] | [8] | [9] | [10] |
|---------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| Access                    | -0.541 |     |     |     |     |     |     |     |     | 0.216 |
|                           | (1.695) |     |     |     |     |     |     |     |     |      |
| Efficiency                | 7.091** | 7.409** |     |     |     | 7.478** | 7.770** |     |     |
|                           | (2.799) | (2.929) |     |     |     | (2.887) | (3.030) |     |     |
| Depth                     | -0.332 | -1.115 |     |     |     | -0.317 | -0.985 |     |     |
|                           | (1.862) | (1.793) |     |     |     | (1.915) | (1.826) |     |     |
| FD                        | 1.089  | 1.259 |     |     |     | 1.004  | 1.013  |     |      |
|                           | (2.998) | (3.170) |     |     |     | (1.128) | (1.091) |     |      |

Control Variables

Log of GDP per capita

|                      | 0.833 | 0.489 | 0.975 | 0.728 | 0.852 | 0.849 | 0.901 | 1.004 | 0.848 | 1.196 |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                      | (0.684) | (0.646) | (0.926) | (0.773) | (0.885) | (1.024) | (0.922) | (1.128) | (1.013) | (1.091) |

Trade Openness

|                      | -0.004 | -0.005 | -0.004 | -0.004 | -0.005 | -0.004 | -0.007 | -0.004 | -0.004 | -0.007 |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                      | (0.005) | (0.004) | (0.005) | (0.005) | (0.005) | (0.006) | (0.005) | (0.006) | (0.006) | (0.005) |

Log of broadband

|                      | 0.831 | 0.924 | 0.688 | 0.773 | 0.718 | 0.824 | 0.756 | 0.678 | 0.718 | 0.561 |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                      | (0.772) | (0.681) | (0.809) | (0.732) | (0.807) | (0.856) | (0.736) | (0.854) | (0.797) | (0.863) |

Regulatory score

|                      | 0.463 | 0.089 | 0.455 | 0.365 | 0.147 | 0.464 | 0.100 | 0.457 | 0.364 | 0.138 |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                      | (0.409) | (0.393) | (0.417) | (0.439) | (0.425) | (0.415) | (0.396) | (0.424) | (0.445) | (0.430) |

New business density

|                      | 0.053 | 0.060 | 0.057 | 0.055 | 0.066 | 0.053 | 0.058 | 0.056 | 0.054 | 0.064 |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                      | (0.069) | (0.063) | (0.069) | (0.068) | (0.066) | (0.070) | (0.064) | (0.070) | (0.069) | (0.067) |

Leader dummy

|                      | Yes  | Yes  | Yes  | Yes  | Yes  | Yes  | Yes  | Yes  | Yes  | Yes  |
|----------------------|------|------|------|------|------|------|------|------|------|------|

Developed dummy

|                      | No   | No   | No   | No   | No   | Yes  | Yes  | Yes  | Yes  | Yes  |
|----------------------|------|------|------|------|------|------|------|------|------|------|

R-squared

|                      | 0.510 | 0.578 | 0.509 | 0.510 | 0.582 | 0.510 | 0.582 | 0.509 | 0.510 | 0.586 |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|

Observations

|                      | 47   | 47   | 47   | 47   | 47   | 47   | 47   | 47   | 47   | 47   |

Note: GDP = gross domestic product, Access is financial access, efficiency is financial efficiency, depth is financial depth, and FD is financial development. This table reports cross-section estimation results for the year 2017. Numbers in parentheses are ordinary least squares standard errors. ***, **, and * represent 1%, 5%, and 10% significance, respectively. The dependent variable is log of P2P loan volume per capita. Financial development is an aggregate of financial access, efficiency, and depth. Log of broadband is log of fixed broadband subscriptions per 100 people. All regressions include dummies for the P2P lending leading countries (People's Republic of China, United Kingdom, and United States). In columns 6–10, the developed economy indicators are included. All variables are defined in Appendix Table A.2.
| Variables       | 2015    | 2016    | 2017    | 2015    | 2016    | 2017    | 2015    | 2016    | 2017    |
|-----------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Literacy        | 0.069** | 0.033   | 0.046   | 0.068*  | 0.022   | 0.049   | (0.032) | (0.036) | (0.032) |
| FD              | -2.213  | -1.497  | -0.548  | -2.307  | -2.855  | -0.164  | (3.349) | (3.114) | (2.627) |
| Control Variables |        |         |         |         |         |         | (0.033) | (0.037) | (0.033) |
| Log of GDP per capita | 0.250   | 0.443   | 0.547   | 0.215   | -0.012  | 0.706   | (0.958) | (0.852) | (0.871) |
| Log of openness | -0.007  | 0.002   | -0.002  | -0.007  | 0.005   | -0.003  | (0.004) | (0.005) | (0.004) |
| Log of broadband | 1.659** | 0.440   | 0.648   | 1.677** | 0.649   | 0.566   | (0.690) | (0.690) | (0.629) |
| Log of broadband |         |         |         |         |         |         | (0.690) | (0.690) | (0.629) |
| Regulatory score | -0.239  | 0.036   | -0.073  | -0.238  | 0.042   | -0.078  | (0.446) | (0.396) | (0.375) |
| New business density | 0.142** | 0.163** | 0.023   | 0.143** | 0.172** | 0.021   | (0.060) | (0.077) | (0.057) |
| Leader dummy    | Yes     | Yes     | Yes     | Yes     | Yes     | Yes     | (0.061) | (0.077) | (0.058) |
| Developed dummy | No      | No      | No      | Yes     | Yes     | Yes     |         |         |         |
| R-squared       | 0.725   | 0.499   | 0.549   | 0.725   | 0.518   | 0.551   |         |         |         |
| Observations    | 39      | 45      | 46      | 39      | 45      | 46      |         |         |         |

**Note:** GDP = gross domestic product, literacy is financial literacy, and FD is financial development. This table reports cross-section estimation results for each year, 2015–2017. Numbers in parentheses are ordinary least squares standard errors. ***, **, and * represent 1%, 5%, and 10% significance, respectively. The dependent variable is log of peer-to-peer loan volume per capita. Financial development is an aggregate of financial access, efficiency, and depth. Log of broadband is log of fixed broadband subscriptions per 100 people. All regressions include dummies for the P2P lending leading countries (People’s Republic of China, United Kingdom, and United States). In columns 4–6, the developed economy indicators are included. All variables are defined in Appendix Table A.2.
Figures

Figure 1  Financial Environment and the Expansion of Peer-to-Peer Lending

Source: Author’s compilation
## Appendix

| Asia                        | America          | Europe          |
|-----------------------------|------------------|-----------------|
| Australia                   | A                | Austria         |
| Cambodia                    | E/D              | A               |
| China, People’s Republic of | E/D              | Belgium         |
| Georgia                     | E/D              | Bulgaria        |
| Hong Kong, China            | E/D              | Czech Republic  |
| India                       | E/D              | Denmark         |
| Indonesia                   | E/D              | Estonia         |
| Japan                       | E/D              | Finland         |
| Korea, Republic of          | E/D              | France          |
| Malaysia                    | E/D              | Germany         |
| Mongolia                    | E/D              | Ireland         |
| New Zealand                 | A                | Italy           |
| Pakistan                    | E/D              | Latvia          |
| Philippines                 | E/D              | Lithuania       |
| Singapore                   | E/D              | Netherlands     |
| Taipei, China               | E/D              | Norway          |
| Thailand                    | E/D              | Poland          |
| Viet Nam                    | E/D              | Portugal        |
|                             |                  | United Kingdom  |

| Asia                        | America          | Europe          |
|-----------------------------|------------------|-----------------|
| Australia                   | A                | Austria         |
| Cambodia                    | E/D              | A               |
| China, People’s Republic of | E/D              | Belgium         |
| Georgia                     | E/D              | Bulgaria        |
| Hong Kong, China            | E/D              | Czech Republic  |
| India                       | E/D              | Denmark         |
| Indonesia                   | E/D              | Estonia         |
| Japan                       | E/D              | Finland         |
| Korea, Republic of          | E/D              | France          |
| Malaysia                    | E/D              | Germany         |
| Mongolia                    | E/D              | Ireland         |
| New Zealand                 | A                | Italy           |
| Pakistan                    | E/D              | Latvia          |
| Philippines                 | E/D              | Lithuania       |
| Singapore                   | E/D              | Netherlands     |
| Taipei, China               | E/D              | Norway          |
| Thailand                    | E/D              | Poland          |
| Viet Nam                    | E/D              | Portugal        |
|                             |                  | United Kingdom  |

Note: A=Advanced Economy; E/D=Emerging or Developing Economy. For Asia, developing member countries of the Asian Development Bank are defined as emerging or developing economies, whereas for economies outside of Asia we follow Rau (2019). Source: Authors’ compilation.
| Variables                  | Description                                                                                                                                       | Source                                                                                   | Data Source                                      |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------|
| P2P loans                 | Logarithm of P2P volume per capita by economy                                                                                                    | Source: Cambridge Centre for Alternative Finance.                                          |                                                 |
| Financial development index | An aggregate of the Financial Institutions Access Index, Financial Institutions Efficiency Index, and Financial Institutions Depth Index.     | Source: International Monetary Fund (IMF) Data– Financial Development.                    | *data.imf.org* (accessed July 2019).            |
| Financial depth index     | A composite measure of bank credit to the private sector in percent of gross domestic product (GDP), pension fund assets to GDP, mutual fund assets to GDP, and insurance premiums, life and nonlife to GDP | Source: IMF Data–Financial Development.                                                   | *data.imf.org* (accessed July 2019).            |
| Financial access index    | A composite measure of bank branches per 100,000 adults and ATMS per 100,000 adults                                                                 | Source: IMF Data–Financial Development.                                                   | *data.imf.org* (accessed July 2019).            |
| Financial efficiency index | A composite measure of banking sector net interest margin, lending–deposit spread, noninterest income to total income, overhead costs to total assets, return on assets and return on equity | Source: IMF Data–Financial Development.                                                   | *data.imf.org* (accessed July 2019).            |
| Financial literacy        | A composite measure of four basic financial concepts: risk diversification, inflation, numeracy, and interest compounding                    | Source: Standard & Poor’s Ratings Services Global Financial Literacy Survey.               | *gflec.org* (accessed July 2019).              |
| GDP per capita            | Logarithm of GDP at purchaser’s prices divided by total population                                                                             | Source: World Bank Data.                                                                 | *data.worldbank.org* (accessed July 2019).     |
| Trade openness            | Trade openness is the sum of exports and imports of goods and services measured as a share of GDP                                               | Source: World Bank Data.                                                                 | *data.worldbank.org* (accessed July 2019).     |
| Broadband                 | Logarithm of fixed broadband subscriptions (per 100 people)                                                                                     | Source: World Bank Data.                                                                 | *data.worldbank.org* (accessed July 2019).     |
| Regulatory score          | A composite measure of transparency around proposed regulations, consultation on their content, the use of regulatory impact assessments, and the access to enacted laws | Source: World Bank Data.                                                                 | *data.worldbank.org* (accessed July 2019).     |
| New business density      | New business registration per 1,000 people, ages 15–64                                                                                         | Source: World Bank Entrepreneurship Survey Data.                                          | *https://www.doingbusiness.org/en/data/exploretopics/entrepreneurship* (accessed July 2019). |
|                | P2P loans | FD   | Depth | Access | Efficiency | Literacy | GDP    | Openness | Broadband | Regulatory score | New business |
|----------------|-----------|------|-------|--------|------------|----------|--------|----------|-----------|------------------|--------------|
| P2P loans      | 1         |      |       |        |            |          |        |          |           |                  |              |
| FD             | 0.0348    | 1    |       |        |            |          |        |          |           |                  |              |
| Depth          | 0.0263    | 0.8603 | 1    |        |            |          |        |          |           |                  |              |
| Access         | -0.0075   | 0.723 | 0.3141 | 1      |            |          |        |          |           |                  |              |
| Efficiency     | 0.1109    | 0.5589 | 0.4479 | 0.1659 | 1          |          |        |          |           |                  |              |
| Literacy       | -0.0831   | 0.6781 | 0.7051 | 0.2781 | 0.4983     | 1        |        |          |           |                  |              |
| GDP            | -0.0485   | 0.7679 | 0.8314 | 0.345  | 0.427      | 0.8225   | 1      |          |           |                  |              |
| Openness       | -0.1278   | 0.1379 | 0.2328 | -0.1195 | 0.2694     | 0.1973   | 0.2735 | 1        |           |                  |              |
| Broadband      | 0.0296    | 0.7925 | 0.7372 | 0.4762 | 0.5126     | 0.8173   | 0.8228 | 0.2475   | 1          |                  |              |
| Regulatory score | -0.1547  | 0.7003 | 0.574  | 0.5301 | 0.4195     | 0.5889   | 0.5301 | 0.2232   | 0.6461     | 1                |              |
| New business   | 0.2696    | 0.3136 | 0.3567 | 0.0898 | 0.1795     | 0.3929   | 0.3533 | 0.531    | 0.3997     | 0.3028           | 1            |

*Note: This table presents the pairwise correlation coefficients among all variables. The figures in bold indicate a correlation coefficient’s significance at the 10% level or better. FD is financial development, depth is financial depth, access if financial access, efficiency is financial efficiency, literacy is financial literacy, GDP is GDP per capita, New business is New business density.*