*Usman Ahmed, Thorsten Beck,*
*Christine McDaniel, and Simon Schropp*

# Filling the Gap
## How Technology Enables Access to Finance for Small- and Medium-Sized Enterprises

Small- and medium-sized enterprises (SMEs) account for more than one-half of the world's GDP and employ two-thirds of the global workforce.[1] The number one barrier to growth faced by SMEs around the globe is access to financing.[2] This is not a new issue, as the onerous information, administration, and collateral requirements associated with traditional loans have inhibited SMEs from seeking or securing financing.

The 2008 financial crisis only exacerbated the problem, as many local retail banks (often the primary providers of SME financing) closed their doors and the appetite for taking on high-risk SME loans was quelled. The International Finance Corporation estimated that SMEs faced a $2 trillion global credit gap in 2010.[3]

Online business lending may be stepping in to fill this gap by resolving many of the barriers associated with traditional SME financing. It does so by leveraging new business methods and targeted data analysis generated from past transactions, social interaction data, and back-end financial data (taxes, receivables, etc.). Big data analysis enables modern lenders to better understand the credit risk of an individual SME and provide it with targeted funding in a timely manner with a flexible repayment schedule, and it often can do so without requiring collateral.

Online business lending comprises a number of different models. This paper analyzes data from PayPal Inc., a company best known for its global online payment system, and from Kiva, a crowdsourcing platform. Our objective is to understand how technology is impacting SMEs' ability to access financing. PayPal Working Capital (PPWC) launched in late 2013; it is a product that enables SMEs to apply for and obtain short-term credit. PayPal Working Capital loans are fund-

*Usman Ahmed is the Head of Global Public Policy at PayPal Inc. and an adjunct professor of law at Georgetown University.*

*Thorsten Beck is professor of banking and finance at Cass Business School in London.*

*Christine McDaniel is a Senior Economist at Sidley Austin LLP.*

*Simon Schropp is a Managing Economist at Sidley Austin LLP.*

ed by a state-chartered industrial bank. In October 2015, PayPal announced that the product had reached $1 billion in funding to entrepreneurs in the U.S., UK, and EU.[4] The dataset we analyze here consists of 60,000 PPWC loans disbursed to more than 18,000 SME owners in the United States between October 2014 and March 2015. Kiva, which was launched in 2005, enables people to lend money to entrepreneurs through an easy-to-use Internet platform. A marketplace that connects lenders and borrowers, Kiva has loaned nearly $800 million since it was launched, and the company boasts a community of more than 1 million lenders and nearly 1.8 million borrowers.[5] One of Kiva's cofounders is a former PayPal employee, and Kiva maintains a close partnership with PayPal. The Kiva dataset we analyze comes from Kiva Zip, a program through which lenders make loans with zero-percent interest directly to borrowers in the U.S.[6]

Key findings from our analysis of these two online business lending services include the following:

- Online business loans seem to have stepped in to fill the SME funding gap left in the wake of the 2008 financial crisis. A high proportion of PPWC loans are disbursed in zip codes that have experienced a relatively steep decline in the number of traditional retail banks, nearly 25 percent of PPWC loans were disbursed in the 3 percent of counties that have lost ten or more banks since the 2008 financial crisis.
- Young and minority-owned businesses with low and moderate income benefit particularly from online business loans. Nearly 35 percent of PPWC loans go to low- and moderate-income businesses, compared to 21 percent of retail bank loans, while 61 percent of PPWC loans go to entrepreneurs and young firms that have been in business for less than five years. More than half (53 percent) of Kiva Zip's loans go to women-owned businesses and 63 percent to minority-owned businesses; this compares to 36 percent and 14.6 percent, respectively, of traditional retail bank loans.
- Online business loans can boost the growth of SMEs in underserved counties. PPWC recipients in counties that have lost ten or more bank branches since the 2008 financial crisis saw their PayPal sales soar by 22.4 percent from one year to the next, while comparable retail businesses in the U.S. grew by only 1.72 percent over the same period.[7]
- Online loan products have potentially significant economic benefits. Based on increased sales of businesses that have received PPWC loans, we estimate that programs like this have the potential to boost economic activity in the U.S. by $697.95 billion, or 3.98 percent of the country's 2015 GDP.

This paper will begin by describing the challenges SMEs have traditionally faced in securing access to financing. It will then provide an analysis of the data that have led us to our conclusion about online business lending stepping in to fill the gap. The paper will then analyze the demography of the businesses securing online business loans and the economic opportunity online business lending pres-

ents. The paper concludes with a discussion of the policy issues associated with online lending products.

## ASSESSING THE SME FINANCING GAP

Financial institutions have traditionally been the primary source of SME financing around the world. In the U.S., for example, the overwhelming majority of SMEs report that commercial retail banks (regional or community) are their primary financial institutions.[8] SMEs in Europe obtain 85 percent of their loans from retail banks.[9]

In 2014, SME lending by the ten largest U.S. banks was down 38 percent from its peak in 2006.[10] The number of bank branches in the U.S. decreased from 97,274 in 2007 to 94,725 in 2014, and some regions were disproportionately affected by this shake-out.[11] The global market for SME financing has yet to fully recover from the crisis; in 2013, outstanding SME loans and the number of new loans issued remained low in much of the developed world.[12]

SMEs have far more difficulty with access to finance than larger firms. They often face higher interest rates, shorter maturity, and more stringent collateral requirements.[13] The smaller a firm, the more difficulty it has obtaining financing.[14] A survey of European businesses found that large SMEs (50+ employees) are more likely than micro-SMEs (1-9 employees) to apply for bank loans and less likely to be concerned about rejection.[15] A Federal Reserve Bank study confirmed this trend in the U.S., noting that financial institutions have traditionally viewed micro-SMEs as high-risk and expensive to do business with (i.e., high transaction costs and low returns).[16] The study also found that 20 percent of all SMEs are discouraged from applying for loans in the first place, due to prohibitive application costs and low loan prospects. Therefore, it is not surprising that SMEs no longer look to traditional bank loans as a likely credit source.[17]

Research has provided a number of explanations for why SMEs have traditionally struggled to obtain capital, including:

- Poor record-keeping
- High risk and turnover in the sector
- Overreliance on internal financing
- Weak management
- Lack of assets to use for collateral
- Lack of a track record
- Lack of connections in the financial system
- Poor knowledge of financing options
- The high cost of finding a loan product that fits their needs[18]

Furthermore, lenders often lack access to third-party information regarding SME borrowers' credit profiles and histories. SME financing was further constrained in the wake of the financial crisis, as brick-and-mortar financial institutions were increasingly reluctant to engage in high-risk and relatively low-yield SME loans.[19] Many workers who lost their jobs in the course of the crisis launched

businesses to make ends meet, and they faced tremendous credit constraints because they lacked the track record required to secure financing.[20] Existing SMEs were left vulnerable during the credit crisis, as shocks to their companies could not be absorbed due to the lack of access to short-term financing.[21]

## ONLINE LENDING MAY FILL THE FINANCIAL GAP

The Internet is an interconnected global network that enables a seamless transfer of information among its more than three billion global users. In the last few years, this global communications network, combined with advanced analytics, has been leveraged to resolve some common barriers associated with SME lending. As we demonstrate below, technological developments in data capture, data analysis, and reporting have unleashed the potential for online lending to fill the SME financing gap.[22]

New technologies can be applied to SME lending in a number of ways: SMEs can be assessed using new sources of first- and third-party financial information; forms can be simplified and accessed online; credit assessments can be conducted in short order, using objective criteria; funding can be disbursed in real time; and repayment schemes can be adjusted to the individual SME borrower's situation. Moreover, online loans can be tailored to the needs of SMEs. These businesses typically do not have large cash reserves, so small working-capital loans can address the cash-flow problems they commonly experience.[23] Jesse Hagen, a former vice president of the U.S. Bank Small Business Division, stated that 82 percent of businesses fail due to poor cash-flow practices.[24] In the United States, microloans ($100,000 and under) account for 90 percent of SME loans.[25] Indeed, the need for small working-capital loans, which a traditional retail bank often considers too risky or low profit, can be filled by an online lender that can leverage technology and scale to overcome these difficulties.[26]

Many firms that obtain financing online report having faced borrowing constraints that precluded them from obtaining traditional bank loan financing.[27] A survey by the National Endowment for Science, Technology and the Arts found that 33 percent of online borrowers said they likely would not have gotten funds through traditional bank loans.[28]

Traditional loans often require the potential borrowers to provide secure collateral before obtaining financing, which can be difficult for smaller businesses, particularly those engaged in intangible products.[29] Thirty percent of businesses that responded to a recent survey by the Federal Reserve Bank of New York reported having insufficient collateral as the reason they were unable to obtain funding.[30] Lifting collateral requirements has been shown to increase access to credit, which has led to increased hiring and aggregate fixed assets for the businesses that receive financing.[31] Traditional brick-and-mortar financial institutions continue to be extremely reluctant to lift collateral requirements, but not so online products. A significant percentage of online business loans are unsecured, meaning they do not require collateral.

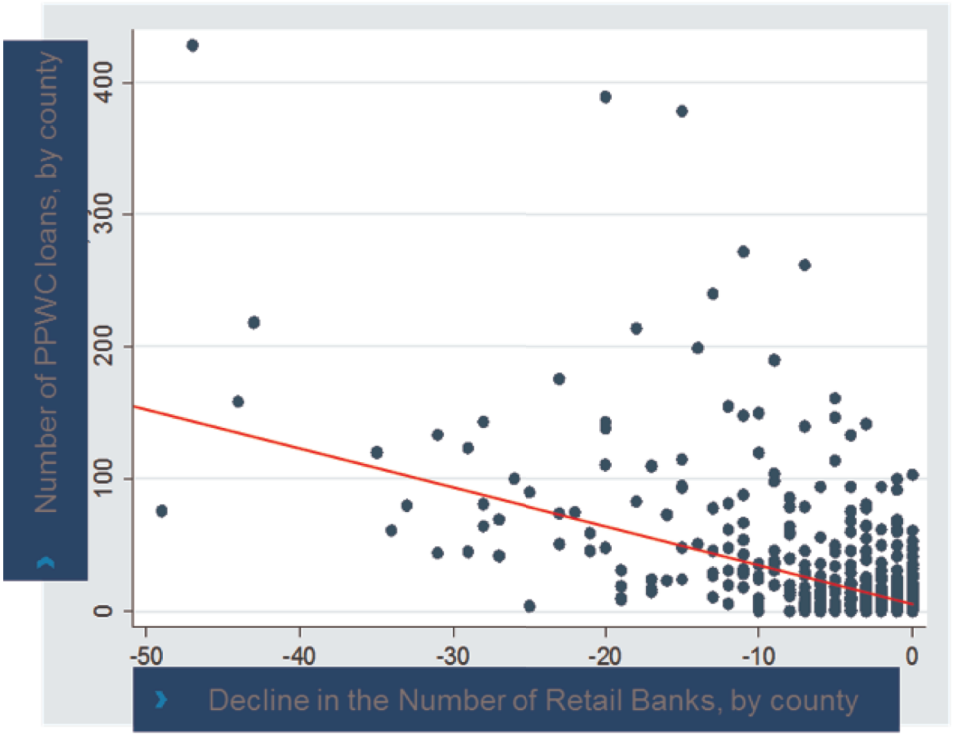


**Figure 1.** Online borrowing and bank departures

*Source:* PayPal data, Federal Deposit Insurance Corporation

Lifting the traditional barriers associated with SME financing may lead to positive developments in lending. Figure 1 plots two sets of data: the change in the number of U.S. bank branches between 2007 and 2014, by county (horizontal axis), and the number of PPWC loans made in the U.S. in 2014, by county (vertical axis). The red line reveals the relationship between the two data series, which is negative, with a correlation coefficient of -0.23. This relationship indicates that a higher proportion of PPWC loans are being disbursed in counties that lost the highest percentage of their traditional retail banks. The data also reveal that nearly 25 percent of PPWC loans were disbursed in the 3 percent of the counties that have lost ten or more banks since the 2008 financial crisis.

Technology companies and startups are not the only firms innovating in an effort to fill the SME financing gap. Wells Fargo, a retail bank with more than 6,000 retail branches in the U.S., for example, revamped its previously miniscule SME lending product to become the second largest SME lender in the country. As a result, 70 percent of Wells Fargo's revised data-enabled loan product went to businesses that employ five or fewer people, with an average loan size of just $15,000.[32] Moreover, collaborations between banks and technology companies are rapidly developing, which could lead to tremendous efficiencies in reaching underserved SMEs.[33]


**Figure 2.** Loans made to low- and moderate-income firms

*Source:* PayPal data, Federal Deposit Insurance Corporation

| Type of business | All firms | Startup | Grower | Mature |
|---|---|---|---|---|
| | | (<5 years in business) | (profitable and increasing revenues) | (>5 years in business; 10+ employees; holds debt) |
| Credit demand and credit outcomes | | | | |
| Discouraged from applying | 20% | 22% | 4% | 4% |
| Approval rate of those that applied for loan | 54% | 38% | 74% | 93% |

Source: Joint Small Business Credit Survey Report, 2014, Federal Reserve Banks of New York, Atlanta, Cleveland and Philadelphia, Feb. 2015.


**Figure 3.** Lending to young firms

*Source:* PayPal, Kiva Zip

## THE DEMOGRAPHY OF ONLINE BORROWERS

SME borrowers that use online channels to access financing come from nearly every sector and experience level. There are, however, some interesting characteristics unique to the SMEs that use online lending services. Online business loans disproportionately serve low-income, young, women-owned, and minority-owned firms.

Data from the Federal Deposit Insurance Commission indicate that approximately 21 percent of the retail bank loans under $100,000 are taken out by low- and moderate-income businesses in the United States, compared to 33.7 percent of PPWC loans of the comparable amount. Low- and moderate-income businesses are rarely eligible for traditional loan products, due to the collateral and administrative requirements of traditional bank loans. A recent working paper by the National Bureau of Economic Research demonstrates that the credit expansion created by governments and financial institutions in the wake of the 2008 financial crisis did not serve borrowers with low-FICO scores (often low-income borrowers) effectively, but they did benefit those with high FICO scores (often high-income borrowers).[34] Figure 2 compares the U.S. loan activity by county between low-income businesses and traditional brick-and-mortar banks, and between these businesses and the PPWC product. The darker areas indicates that more loans were made to low-income borrowers.

Over the last decade, traditional bank financing has been more available for large established firms than small young firms, which has left the latter harder hit by the credit gap.[35] A recent survey by the Federal Reserve shows that the majority of small firms (less than $1 million in revenues) and startups (fewer than five years in operation) in the U.S. are unable to secure credit.[36] Newer and younger firms were three times more likely than established firms to be fully or partially denied funding, and this discrepancy is not unique to the United States.[37] As a result,

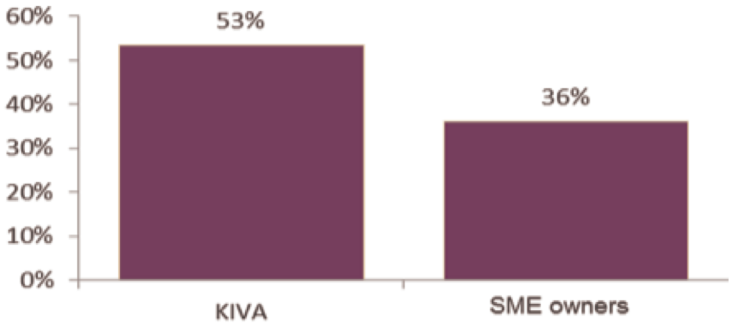


**Figure 4.** Women-owned businesses

*Source:* Kiva Zip data (2014) and Small Business Administration (2012)

younger firms that have struggled to secure financing now prefer to pursue the online alternatives. Figure 3 presents official U.S. data demonstrating the difficulty young firms face when trying to secure financing—only 38 percent are approved for loans. It also shows that 61 percent of PPWC loans and 84 percent of Kiva Zip loans go to young firms.

Women around the globe consistently have less access to financial resources than men.[38] Using U.S. Census Bureau data, the Economics and Statistics Administration reports that women are half as likely to start or acquire a firm using a business loan acquired from a traditional financial institution.[39] Meanwhile, women entrepreneurs are disproportionately represented among Kiva Zip borrowers: 36 percent of SMEs are female-owned, whereas 53 percent of Kiva Zip borrowers are women (see figure 4).

In the United States, women-owned firms grow at more than double the rate of other firms, and they are expected to create more than half of the new jobs in the U.S. in 2018.[40] If the financing issues of women-owned businesses are resolved, these numbers could be even greater.

Firms operated and/or owned by minorities have traditionally struggled to secure financing, and they tend to be younger and smaller than the average business. This puts them at an immediate disadvantage when accessing financing.[41] Census Bureau data indicate that minorities are denied loans at 2.5 times the rate of non-minorities.[42] Black, Asian, and Hispanic businesses have also struggled to secure loans since the 2008 financial crisis, particularly loans backed by the Small Business Administration, which has traditionally catered to minority-owned firms.[43] The Small Business Administration reports that only 14.6 percent of SMEs are minority owned, whereas 63 percent of the Kiva Zip loans go to minority-owned businesses (see figure 5).

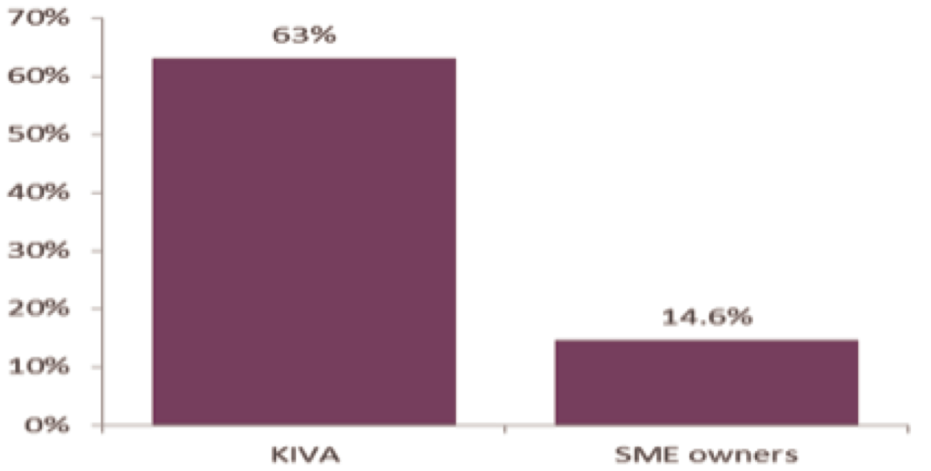


**Figure 5.** Minority-owned firms

*Source:* Kiva Zip data (2014) and Small Business Administration (2012)

## THE ECONOMIC IMPACT

The World Economic Forum's 2015 Inclusive Growth and Development Report finds that access to financing is a key link between economic opportunity and outcomes.[44] Financing provided by the private sector can be powerful. A doubling of the amount of private-sector credit is associated with a two percentage point increase in the rate of GDP growth.[45]

SMEs' access to online lending has resulted in strong growth trends for the participating companies. Research demonstrates that the most favorable growth rates result from having access to financing. One study finds that a 10 percent increase in funds is associated with a 14.68 percent increase in firm growth for a financially constrained firm, but only 3.82 percent for a financially unconstrained firm.[46] We analyzed the growth of firms receiving PPWC loans, which originated in the 3 percent of U.S. counties that have lost ten or more banks since the 2008 financial crisis. We found that sales by these businesses grew 22.4 percent between 2014 and 2015. The U.S. Census Bureau reports that similarly situated retail businesses across the U.S. only grew 1.72 percent in that same timeframe.[47] If the jump in sales spurred by an online business loan were extended to every underserved SME in the U.S., the nation's economic activity could increase by as much as $697.95 billion, or 3.98 percent of 2015 GDP. We arrive at that number by taking a jump in sales following receipt of an online loan (20.68 percent) and multiplying it by the total sales generated by U.S. SMEs in 2015 ($11.38 trillion). We only

looked at SMEs the Federal Reserve Bank found were too discouraged to apply for traditional funding or had already been rejected (29.6 percent). To arrive at that last percentage, we consulted a recent Federal Reserve survey, which shows that 22 percent of SMEs applied for credit and 44 percent of them were not able to secure funding.[48] Moreover, 20 percent of SMEs are too discouraged to even apply. Together this suggests that 29.7 percent of SMEs (22% of 44% = 9.7%, plus the 20% just mentioned) are either rejected for a loan or too discouraged to apply for one. We note further that online lending not only results in economic growth for SMEs, it benefits consumers through, for example, increased product selection and lower costs.

Online lending also provides economic value to SMEs by bringing competition to the market for corporate lending, a sector that was sorely in need of new entrants, particularly in the wake of the financial crisis. Through consolidation and closings, the number of community banks in the United States has declined from 14,000 in the mid-1980s to just 7,000 today, and only three new commercial banks have opened in the United States since 2010.[49] Before the financial crisis, SMEs traditionally secured financing from community banks and thus have been disproportionately affected by these changes.[50]

Information asymmetry has traditionally plagued SME financing. The lack of public information about the performance of SMEs can make it difficult to assess their creditworthiness. Increased competition among lenders could help to promote innovative solutions to information asymmetry, as well as to alleviate financial constraints for the SME sector.[51] Because the lending market has traditionally failed to meet demand, governments around the world have stepped in to provide SME financing, particularly during financial crises, when constraints on borrowing are exacerbated.[52] The benefits of increased competition brought on by online financing might obviate the need for these government programs, which tend to operate at less than optimal efficiency.[53]

Finally, competition from online lending may reduce systemic risk. The Organization for Economic Cooperation and Development has found that firms that solely have access to capital through traditional bank loans are more vulnerable during crises.[54] SMEs have largely been tied financially to a select group of institutions—namely, community banks—and when these banks started to disappear, SMEs were greatly affected. Online lending provides more diversified lending options, which can reduce borrowers' exposure while also spreading the risk across a broader ecosystem.

Online business lending is still in its infancy; most providers started within the past decade. Nevertheless, recent Federal Reserve Bank studies have found that 20 percent of SMEs have attempted to secure credit from an online lender.[55] A Greenwich Associates survey of 218 SMEs found that nearly 25 percent of respondents had obtained credit from an online provider in the past 18 months. The economic impact of online business lending is likely to grow in the future.

## POLICY ISSUES

Policymakers must recognize that a multitude of business models are being employed in the online business lending space, some of which warrant more scrutiny than others. If the interests of a lender and a borrowing business are aligned and the lender is invested in a borrower's success, then there may be less need for government scrutiny.[56] Moreover, risk assessment and collection practices differ across the online business lending industry. Models that assess risk without sound data and collection practices should be scrutinized, since they contain inefficiencies and hence result in higher fees. Many of the new types of financial services have links with existing regulated financial institutions. Therefore, to the extent that regulators look to propose additional rules for new financial services, it is essential to understand the existing landscape and avoid redundant and inefficient regulations.

It is also worth noting that a host of regulations already govern the online business space. In the U.S., for example, online lenders are subject to Section 5 of the Federal Trade Commission Act (prohibiting unfair or deceptive practices) and the Equal Credit Opportunity Act (prohibiting lenders from issuing credit based on race, sex, age, religion, etc.).[57] Moreover, a significant portion of online business loans are originated by traditional financial institutions, which are already subject to a host of regulations.

Policymakers must understand the difference between online business lending products and traditional lending products. Online SME loans are often short-term financial products, and the total cost of the loan can be calculated using an annualized percentage rate (APR) or a fee-based model (the loan amount includes additional fixed costs). Policies regulating traditional loan products often center around APRs, but this annualized measure often makes no sense for a product that might have a term of three months. Therefore, an SME may understand the actual costs of the fixed-fee better than an APR. Policymakers should analyze the differences between online loan offerings to determine which may be harmful to SMEs.

Finally, although this paper focuses largely on the U.S., the global nature of the Internet means that online business loans can be made across international borders. However, the differing regulations between countries, and even within countries, temper the wide reach of these online platforms. In the U.S., divergent state banking rules on licensing, interest rates, consumer protection, and due diligence threaten the ability of online business lenders to provide a uniform experience.[58] Policymakers should work to harmonize online business lending rules across intra- and inter-country boundaries.

## CONCLUSION

Traditional financial services are rapidly being reformed by technology. An estimated $20 billion in venture capital was expected to be invested in financial technology businesses in 2015, a 66 percent increase over the previous year.[59] Startups,

large financial institutions, and technology companies are adapting to these changes and creating new financial services solutions that have the potential to fill the gap in SME financing that developed in the wake of the 2008 financial crisis. Moreover, the impact these new products could have for the broader economy, in particular for financially underserved firms, is noteworthy. Policy interventions that affect new SME financing products must be carefully considered.

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