Small-Business Financing after the Financial Crisis

Lessons from the Literature

Stephen Matteo Miller, Adam Hoffer, and David Wille

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Abstract

We survey the literature on how small businesses in the United States finance themselves. Our results demonstrate the important role that the financial services industry, particularly bank credit, plays in the capital structure of small firms. The results also reinforce the importance of owner equity as a primary source of financing. In addition, we find that small firms have been seeking and obtaining less capital since the 2008 financial crisis. Our findings about the main sources of small-business financing will be informative when formulating financial regulation. The available evidence suggests that new regulation of the financial services industry may be restricting access to products that small-business owners rely on and may adversely affect small banks.

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Author Affiliations and Contact Information

Stephen Matteo Miller
Senior Research Fellow
Mercatus Center at George Mason University
smiller@mercatus.gmu.edu

Adam Hoffer
Assistant Professor of Economics
University of Wisconsin-La Crosse
ahoffer@uwlax.edu

David Wille
MA Fellow
Mercatus Center at George Mason University
dlwille@gmail.com

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1. Introduction

We survey the literature on how small businesses in the United States finance themselves. In addition, we survey research on changes to small-business financing over time, as well as the major factors that may be driving those changes. Knowing how businesses finance themselves, as well as how the sources of funding have changed over time, will be informative when formulating financial regulation.

The conventional view of small-business financing was that a firm's access to external capital would be limited by informational opacity. This would force small-business owners to rely on their own assets and on financing from friends and family during start-up and initial operations. But recent research into the capital structure decisions of small firms shows that, while owner equity is indeed an important source of capital, small firms also rely heavily on credit from the traditional financial services industry as a source of financing for both start-up and ongoing operations. We present recent survey data that reinforce these earlier findings.

The convention in the literature is to use the US Small Business Administration's definition of a small business as one that has fewer than 500 employees, less than $7.5 million in annual revenue, or both, and we use this definition in our presentation of survey data (SBA 2014). As of 2013, there were 23 million nonemployer businesses in the United States and nearly 6 million establishments with fewer than 500 employees, according to the US Census Bureau's Statistics of US Businesses.[1] This represents well over 99 percent of all private-sector businesses

[1] These data are available from the Census Bureau's website: http://www.census.gov/econ/susb/.

in the United States. Small firms also employed about 50 percent of the country's workforce and paid about 50 percent of all wages in 2013.

Given that small businesses employ a substantial share of the US workforce, a significant amount of academic research is devoted to studying the role that small businesses play in job creation. For instance, Neumark, Wall, and Zhang (2011, 22) analyze data from the National Establishment Time-Series Database and find an inverse relationship between firm size and net job creation—the smallest firms "generate a disproportionate share of gross job creation." Haltiwanger, Jarmin, and Miranda (2013) confirm this finding with data from the Census Bureau's Business Dynamics Statistics and Longitudinal Business Database. However, after controlling for firm age, these authors find no relationship between firm size and job creation. Instead, it is new firms (which tend to be small) that drive job creation, emphasizing the importance of business start-ups in employment.

1.1. Summary of Findings from the Literature on Small-Business Financing

The primary lessons we draw from this literature review are the following:

- Research into the capital structure of small businesses confirms the important role of external credit for financing and thus the important role of the financial services industry.
- The available data indicate that small-firm financing remains weak, a trend that is linked to the persistently low level of small-business lending since the 2008 financial crisis.
- Empirical research appears to show that changes in bank regulation beginning in the late 1970s that facilitated consolidation in the financial services industry did not lead to a reduction in small-business lending, thanks in large part to the widespread adoption of new small-business credit scoring technology.

- Debt financing tends to be used for more conventional capital formation, whereas equity financing tends to be used for innovation because ideas cannot generally be used as collateral. Well-functioning debt and equity markets help small firms.
- New regulation of the financial services industry since the 2008 financial crisis may be restricting access to financial products that small-business owners rely on and may adversely affect small and community banks, which generate about half of all small-business lending in the United States.

1.2. Data Sources on Small-Business Financing in the United States

As Berger and Udell (1998, 3) write in their overview of the sources of data on small-business financing: "The feature of small business finance that makes it the most interesting to study, informational opacity, also has made it one of the most difficult fields in which to conduct empirical research." This statement remains largely true today, even with the growth of interest in small businesses and their impact on the US economy. The studies reviewed here generally rely on data from one of three surveys: the Survey of Small Business Finances (SSBF), the Kauffman Firm Survey (KFS), or the Survey of Consumer Finances (SCF).

The SSBF is a nationally representative, cross-sectional survey of US for-profit, nongovernmental, nonfinancial, nonagricultural businesses with fewer than 500 employees.[2] The Federal Reserve Board conducted the SSBF every five years between 1987 and 2003, collecting data on firm characteristics, income and balance sheet information, and use of financial services. Unfortunately for researchers, the SSBF was terminated after 2003. For more detail, see Cole (2013, 787).

[2] The data from the 1987–2003 surveys are available at the Federal Reserve Board's website: http://www.federalreserve.gov/pubs/oss/oss3/nssbftoc.htm.

The KFS, collected by the Kauffman Foundation, surveys a panel of 4,928 firms that began operations in 2004.[3] The cohort is surveyed annually to address such topics as firm performance, strategy, and financing. This includes a detailed breakdown of firms' equity and debt used both at start-up and over time. The KFS data oversample high-tech firms, although analyses of these data generally adjust the sample to be representative of the universe of US firms that began operations in 2004. The final year of data collection was 2011. For more detail, see Robb and Robinson (2014).

The SCF is a triennial survey of US households sponsored by the Federal Reserve Board and the US Department of the Treasury and conducted by the University of Chicago.[4] The SCF collects detailed information on Americans' wealth, including closely held businesses owned by American households, making this survey well suited for studying interactions between small business and household finances. An important limitation is that the survey is meant to provide a representative sample of American household finances. As such, it is not representative of the population of businesses and thus does not describe the full universe of closely held businesses. For more detail, see Kennickell, Kwast, and Pogach (2015).

This review also relies on a number of other sources of data on small-business financing. These sources are primarily surveys conducted by an industry association or a third party with ties to the industry. Surveys described in this review include those by the National Federation of Independent Business, the National Small Business Association (NSBA), Wells Fargo, and the Milken Institute. Surveys by these organizations are generally conducted on a monthly, quarterly, or biannual basis and address a variety of topics related to firm performance, expectations, and

[3] The data from the 2004–11 surveys are available from the Kauffman Foundation: http://www1.kauffman.org/kfs/.
[4] The data from the 1983–2013 surveys are available from the Federal Reserve Board's website: http://www.federalreserve.gov/econresdata/scf/scfindex.htm.

financing. Interviewees may be members or nonmembers of a given association, but the surveys are not constructed to be representative or to be subjected to rigorous statistical analysis. As such, we caution that these data should be considered only rough estimates, and we infer conclusions only about the firms surveyed. We include discussions of these secondary survey data throughout this review to reinforce lessons from the SSBF, KFS, and SCF.

An additional data source with the potential to be useful for researchers on this subject is the forthcoming Annual Survey of Entrepreneurs, a supplement to Census Bureau's Survey of Business Owners and Self-Employed Persons. Conducted in partnership with the Kauffman Foundation and the Minority Business Development Agency, the Annual Survey of Entrepreneurs collects data from a representative sample of US nonfarm businesses and provides information on the firms' start-up, operations, and financing, among other topics. The survey is designed to provide researchers and policymakers with more frequent and timely information on entrepreneurship. The first wave of data collection began in 2015, with a tentative release date of summer 2016. For more detail, see Foster and Norman (2015).

2. How Small Firms Structure Their Capital

We begin our literature survey by reviewing a key theoretical contribution on small-business financing, as well as the empirical evidence. The literature on small-business (especially new business) financing generally finds that restrictions in access to external credit markets are not as severe as theory might suggest. Instead, credit appears to be an important source of capital for small businesses, suggesting that formal financial institutions are able to overcome information asymmetries.

2.1. The Primary Sources of Start-Up Capital

Berger and Udell (1998) provide a key theory of how small businesses finance themselves, arguing that informational opacity is the distinguishing feature of small firms. To obtain this finding, the authors present a model of the "financial growth cycle" of small business, in which new firms initially seek insider finance from the start-up team, family, and friends before and at the firm's inception. As firms grow, they gain access to finance on both the equity and debt sides, and eventually they may gain access to public equity and debt markets.

However, Berger and Udell's review of the empirical research suggests that informational opacity does not make it as difficult for young firms to obtain external financing as the theory predicts. The authors' description of data from the 1993 SSBF shows that, whereas small businesses depend on equity and debt about equally in terms of aggregate dollar amounts, the most common sources of capital are the principal owner, commercial banks, and trade credit, which occurs when suppliers do not collect payment immediately after the receipt of goods or services. These sources account for about 70 percent of funding on average. Berger and Udell's observation largely holds across firm size and age segments. Their review suggests that guarantees and pledges of an owner's personal assets as collateral may help explain why financial institutions are willing to extend credit to young firms.

More recent research confirms the importance of external financing, especially bank credit, as a source of capital for new firms. Using data from the 2004 KFS, Robb and Robinson (2014) find that outside borrowing was the second most common source of start-up capital: nearly 40 percent of start-ups reported obtaining external credit (e.g., personal bank loan, business loan, business credit card), and they borrowed more than $120,000 on average. The

most common source of start-up financing in 2004 was owner equity, with nearly 80 percent of business owners saying they contributed equity to their business. Those who used owner equity reported injecting an average of $40,000 into their firms. Trade credit was the third most common source of start-up financing in 2004; about 21 percent of firms surveyed said they obtained credit from another business, at an average amount of more than $93,000. The finding that bank debt, personal equity, and trade credit were the top three sources of financing for most start-ups is consistent with the findings of Berger and Udell (1998).

Coleman, Cotei, and Farhat (2014) also use data from the 2004 KFS to make a number of observations about which owner and firm characteristics explain the type of capital that firms use at start-up, as well as the amount of personal and business debt used. Their analysis excludes firms with more than two owners because the KFS does not provide individual-level information about personal debt obtained by owners beyond the first respondent. These authors find that high-growth firms—those with intellectual property rights and active in research and development (R&D) activities—and firms with high–net worth owners use less debt than equity, which is consistent with the literature identifying the link between funding type and innovation (see section 2.4).[5]

Although outsider equity is rarely used as a source of start-up capital—only 5 percent of business owners in the 2004 KFS reported receiving venture capital, angel financing, or other external equity—it was an extremely important source of financing for those who did receive it: more than $350,000 on average (see Robb and Robinson 2014). A small firm's decision to use outsider equity appears to depend on whether the firm is engaged in innovative activities, such as R&D. Such firms tend to rely heavily on equity financing, as opposed to credit, because R&D

[5] Similarly, if they do use debt, high–net worth owners rely less on business debt and more on loans from friends and family.

investments are intangible and offer little collateral value to creditors (except when patents may be involved), as we discuss in section 2.4.

2.2. How Small Firms Make Additional Capital Injections

As small firms survive and grow, access to sources of external debt, such as bank credit, continues to be an important source of financing. Analyzing data from the 1998 and 2003 SSBFs, Mach and Wolken (2006) find that more than 60 percent of small-business owners had outstanding credit from a credit line, loan, or capital lease in 2003, an increase from 55 percent in 1998. The share of firms with credit lines increased from 28 percent in 1998 to 34 percent in 2003, and the share with vehicle loans rose from 21 to 26 percent. Trade credit was used by 60 percent of small businesses in 2003 and by 62 percent in 1998. Mach and Wolken note that the smallest businesses were the least likely to report having a loan in 2003.

Cole (2010) uses SSBF data from the 1993, 1998, and 2003 surveys to analyze how small businesses divide leverage between bank credit and trade credit. Cole finds that 20 percent of small firms used no credit, about 20 percent used trade credit only, 20 percent used bank credit only, and about 40 percent used both bank and trade credit. The author argues that these findings represent evidence that trade credit is a complement, not a substitute, for bank credit. Cole claims that this is not surprising because trade credit is primarily short term, whereas bank credit is typically longer term. These results are largely consistent across the 1993, 1998, and 2003 surveys.

Blanchflower and Evans (2004) investigate the growing importance of credit cards for small-business financing, especially personal credit cards. Using data from the SCFs for 1970–2001, the authors find that the percentage of households headed by a self-employed worker who

had at least one credit card increased from 26 percent in 1970 to 86 percent in 2001.[6] The average outstanding credit card balances for self-employed households also increased from $261 in 1970 to $2,412 in 2001. After controlling for important demographic differences, the authors find that the average self-employed household in 2001 had nearly one more credit card and $2,667 more in outstanding balances than the average wage-working household.

Mach and Wolken (2006) show that, while the use of personal credit cards for business purposes in the 2003 SSBF remained largely the same as in the 1998 survey (47 percent), the use of business credit cards increased substantially, from 34 to 48 percent. Personal credit card use was highest among the smallest firms in the survey (about half of all firms surveyed), whereas business credit cards were used mostly by larger firms (about three-fifths of firms).

Robb et al. (2010) analyze data from the 2008 follow-up to the KFS and find that, of the firms in the panel that remained in business by 2008 or were confirmed as going out of business between 2004 and 2008, the majority of those that sought additional financing obtained credit, either through outsider debt such as business loans or through owner debt. Owner equity remained an important source for new capital injections, but fewer firms relied on equity after start-up.

The amount of external debt increased in 2008, with the largest increases coming from credit lines (Robb et al. 2010). Forty-two percent of firms said they obtained external credit in 2008, and the average amount borrowed was again $120,000. An additional 23 percent of owners said they contributed owner debt, such as from a personal credit card, for an average of more than $19,000. Thirty percent of business owners injected new owner equity, with an average of

[6] From 1946 through 1971, the Survey of Consumer Finances was conducted annually by the University of Michigan. Surveys were also conducted by investigators at the University of Michigan and the Federal Reserve in the years 1977, 1983, 1986, and 1989. The National Opinion Research Center at the University of Chicago conducted the next SCF survey in 1992 and every three years thereafter. For more information, see the Inter-University Consortium for Political and Social Research website: https://www.icpsr.umich.edu/icpsrweb/DSDR/series/00055.

more than $34,000 for those firms. Sources of outsider equity, such as venture capital and angel financing, remained an uncommon source of new capital injections (just 2 percent of owners) but continued to be an important source of capital for those that used it: Firms received more than $350,000 on average in 2008.

The importance of external debt for the ongoing financing of small businesses is reinforced by data collected for the NSBA's biannual Economic Reports,[7] which provide a more frequent but less detailed picture of how firms finance their ongoing operations. Whereas the two surveys are not directly comparable, the results for the period from the 2011 midyear report to the 2015 midyear report tell a story consistent with the KFS data discussed above: The most common source of new capital injections was credit, either from bank loans or credit cards (NSBA 2015).

The National Center for the Middle Market and the Milken Institute (2015) conducted a survey of 636 small- and middle-market business owners and executives in 2015 to understand how businesses access capital.[8] The findings, although they include observations for businesses larger than those examined by studies reviewed thus far, are largely consistent with the findings discussed in the section above. When asked what sources of financing their companies used in the past three years, the most common answer was "none of the above" (32 percent of firms), followed by "loan from bank" (also 32 percent) and "loan via a nonbank lender" (about 9 percent). Another 9 percent said that they operated on retained funds.

[7] Data for the 2015 midyear report were collected online between June 25 and July 14, 2015, from 625 small-business owners, both members and nonmembers of NSBA. The data do not include information about equity financing.
[8] The online survey was conducted by RTI International between January 22 and February 6, 2015.

2.3. Small-Business Financing Slow to Recover after the 2008 Financial Crisis

Surveys of small-business owners indicate that, since the end of the Great Recession, firms were less likely to make additional capital injections to finance their ongoing operations. Robb and Farhat (2013) review results from the 2011 follow-up round of the KFS and find that fewer firms made new investments in their businesses from debt or equity financing in 2011 (43 percent and 25 percent, respectively) than in 2008 (53 percent and 44 percent, respectively). And while this decrease may simply reflect the financial life cycle of the firms, we see a similar trend in the SCF data discussed in section 3.

While the primary sources of survey data are not yet available to assess small-business owners' most recent financing behaviors, industry surveys present a mixed picture of their demand for additional financing. The August 2015 Small Business Economic Trends report[9] from the National Federation of Independent Business (NFIB) showed that 51 percent of small business owners said they would seek more credit in 2015, three percentage points higher than in the August 2014 report (Dunkelberg and Wade 2015). And the Q3 2015 Small Business Survey[10] conducted by Wells Fargo found that 14 percent of owners surveyed said they planned to apply for a new credit product for their business in the next 12 months, up from 12 percent in Q3 2014 (Wells Fargo 2015).

But according to the 2015 Midyear Economic Report published by the NSBA, the percentage of small-business owners reporting that they used no financing in a given year increased from 23 percent in the first half of 2011 to 25 percent in the first half of 2015 (NSBA

[9] The August 2015 report contains data collected from 656 small-business owners, both members and nonmembers of NFIB.
[10] The Q3 2015 report contains data collected from telephone surveys of 600 small-business owners between July 6 and July 10, 2015.

2015). This coincided with a decrease in the percentage of owners saying they sought different forms of capital between the 2011 and 2015 midyear reports. The sharpest declines were in bank loans (down from 49 to 42 percent), business earnings (down from 43 to 37 percent), and vendor credit (down from 25 to 18 percent) between July 2011 and July 2015.

Industry surveys appear to show that a majority of small-business owners are satisfied with their current financing. The 2015 Midyear Economic Report published by the NSBA reported that 69 percent of business owners surveyed said that they have adequate financing, an increase from 66 percent in the 2012 midyear report (NSBA 2015). Although a majority of respondents said that capital availability was not a problem or had no effect on their business, approximately one-third of those unable to obtain adequate financing cited a lack of capital as affecting their ability to grow and expand their business.

Similarly, the 2015 survey of small- and middle-market business owners conducted by the National Center for the Middle Market at Ohio State University and the Milken Institute found that, for 54 percent of firms, changes to the cost of capital would not change the firms' expansion plans. This is likely owing to the fact that the majority of firms planned to fund business expansion through cash on hand. Of small- and midsized-business owners, 40 percent said they did not intend to raise additional capital to fund expansion plans, and 32 percent said that they would borrow (Milken Institute 2015). However, 28 percent of small and midsized firms said they would slow or reduce expansion plans because of the cost of capital, and 18 percent said they would drastically change their plans.

2.4. Small Firms and the Link between Finance, Innovation, and Growth

Some studies focus on how access to capital affects individual firms' R&D investment, a proxy for innovation. By demonstrating the effect of finance on innovation, these studies confirm finance's important role in driving economic growth.

One of the key findings of this literature is the importance of relatively small, relatively young firms in innovation. Whereas comparatively few small firms engage in innovation—just 12 percent of firms reported spending on R&D in the 2011 follow-up to the KFS (see Robb and Farhat 2013)—they play an outsized role in driving innovation and thus economic growth. These firms tend to rely on equity financing, as opposed to credit, because R&D investments are intangible and offer little collateral value to creditors. Larger, more mature firms are able to fund R&D through cash on hand, whereas smaller and younger firms often have negative internal cash flow and are therefore unable to do so.

Brown and Petersen (2010) demonstrate the link between public equity financing and new firms' R&D activities. The authors use data on initial public offerings in six high-tech industries (accounting for about 30 percent of R&D activity in the US economy) between 1970 and 2004. They find a strong link between public stock issues and the R&D activities of relatively new firms for the first 15 years following the initial public offering of those firms. Brown and Petersen further note that the median firm that made an initial public offering was in business 6 years, and the median number of employees was 80. The authors find that the relationship grew stronger for each successive cohort of entrants, thereby confirming the increasing importance of public equity over time. Brown and Petersen also show the importance of relatively new public entrants, and thus the importance of public equity financing, on creative destruction in high-tech industries.

Brown and Floros (2012) provide additional evidence that access to financial markets, in this case private equity finance, has an important effect on the R&D activities of small, high-tech firms. These authors define a firm as small if it has less than $1 million in sales, which should generally be consistent with the Small Business Administration's definition. Using a panel of firms that raised external equity via private placements between 1995 and 2008, Brown and Floros find that access to financing had a significant effect on investment in R&D and in cash reserves, which are used to fund R&D in future periods. Those findings complement the work discussed above: Private equity is important because debt finance does not help with a volatile investment like R&D and because R&D does not offer the collateral that debt financing requires.

Although a lack of collateral may help explain why many firms may turn to equity, one exception might be patents, which can be used as collateral for debt. In their survey of research on financing innovation, Kerr and Nanda (2015) find evidence that both the rate and the nature of innovation are affected by the availability and cost of credit, especially when patents are involved.[11]

In their analysis of KFS data, Robb and Robinson (2014) find that, even for the relatively small share of firms that received outsider equity as a source of financing, these firms also held a large amount of outside debt. For instance, firms that said they received venture capital financing also had an average of $628,398 in debt, mostly in the form of personal and business loans. And firms that said they received angel financing also had an average of $164,891 in debt.

[11] That said, patents cover inventions rather than innovations. Moreover, patents have historically played a much less significant role in generating a return to innovation, as firms in most industries use a combination of secrecy, first-mover advantage, and complementary assets instead (Moser 2005).

3. Preliminary Evidence from the 2010 and 2013 Surveys of Consumer Finances

The following section describes data on small-business owners collected from the SCF. The 2010 sample comprised 6,492 households, and the 2013 sample comprised 6,026 households.[12] For the purposes of this paper, we examine a subsample of SCF households that indicated they owned a business. In 2010, 1,583 households reported owning a business; in 2013, 1,469 households reported owning a business. In 2010, 1,520 of the surveyed businesses were "small businesses," according to the Small Business Administration's definition adopted for this paper (i.e., under 500 employees, under $7.5 million in annual revenue, or both). In 2013, the number of household-owned small businesses was 1,400. From this point on, we use the term "household" exclusively for households that said they owned a small business.

SCF participants who said they owned a business were asked a variety of questions about the financing of their business. These data were further segmented to exclude business owners who said they did not actively manage the business. Those who fell into this category were not asked about the financing of their business and thus were not included in the sample. We examine the surveyed owners' responses to questions about financing the start-up and ongoing operations of those businesses below. Table 1 summarizes our findings.

[12] For more detail on survey design and methodology, see Bricker et al. (2014, 31-40).

Table 1. Sources of Start-Up and Ongoing Financing for Small Businesses by Year

	2010 (%)	2013 (%)
Sources of financing used for start-up		
Owner savings or assets	77	76
Personal loan	14	15
Business loan	13	13
Personal or business credit card	7	7
Sold equity	1	1
None	8	10
Sources of financing used for ongoing operations in the past year		
Owner savings or assets	28	24
Personal loan	6	5
Business loan	14	14
Personal or business credit card	7	6
Sold equity	1	1
None	52	57

Note: N = 1,520 (2010); 1,400 (2013).

Sources: Board of Governors of the Federal Reserve System (2014a), "2010 Survey of Consumer Finances," http://www.federalreserve.gov/econresdata/scf/scf_2010.htm; Board of Governors of the Federal Reserve System (2014b), "2013 Survey of Consumer Finances," http://www.federalreserve.gov/econresdata/scf/scfindex.htm.

3.1. Sources of Start-Up Financing

When asked what sources of funding were used by small businesses to start or acquire their business, the most common response in both 2010 and 2013 was household's personal savings and assets.[13] This is consistent with the findings of Robb and Robinson (2014) from the KFS data on start-ups, although the two surveys are not directly comparable. In the 2010 SCF survey, 77 percent of households said that personal savings or assets were used to finance start-ups; in 2013, the number was 76 percent.

The SCF data also emphasize the importance of bank credit in financing new small businesses. In 2010, 14 percent of business-owning respondents said they used a personal loan to finance a start-up, and 13 percent used a business loan. In 2013, the share using a personal loan

[13] The information collected concerns the financing that a small-business owner used at the time of start-up or acquisition, regardless of when it occurred. The results thus reflect firms that may have been established at different times, not necessarily in 2010 or 2013.

was 15 percent, and 13 percent used a business loan. Including personal and business credit cards, 34 percent of SCF respondents in 2010 sought external credit of some type to finance their new business; in 2013, the number was 35 percent.

Also consistent with Robb and Robinson (2014), the SCF data show that relatively few new small businesses sought financing from external equity investors. Less than 1 percent of business-owning households said they used outside investors in 2010 and 2013. Lastly, the proportion of small-business-owning households that said they did not use any source of funding to finance the start-up of their new business increased from 8 percent in 2010 to 10 percent in 2013.

3.2. Sources of Ongoing Financing

When asked what sources of funding were used to finance the ongoing operation of or improvement to their business during the past year, the most common response was that no additional funding was needed—52 percent in 2010 and 57 percent in 2013, an increase of 5 percentage points. Together, personal savings and assets continued to be the most important source of financing for ongoing operations—28 percent in 2010 and 24 percent in 2013, a decline of 4 percentage points. These findings are consistent with the analysis of Robb et al. (2010).

External credit remained important for the ongoing financing of small businesses. In 2010, 6 percent of households said they used a personal loan in the past year, and 14 percent said they used a business loan. In 2013, 5 percent of business owners used personal loans, and 14 percent used business loans. These findings are consistent with those of Robb et al. (2010). Including personal and business credit cards, 27 percent of small-business-owning households sought external credit in 2010; the number decreased to 25 percent in 2013.

Seven percent of SCF respondents reported using personal and business credit cards to finance start-up in both 2010 and 2013, and the percentage of respondents who reported using credit cards to fund ongoing operations in the past year was about 7 percent in 2010 and 6 percent in 2013. These magnitudes are inconsistent with the findings of Robb et al. (2010), who report that at least 29 percent of KFS respondents said they used a credit card to finance start-up in 2004, and at least 22 percent used credit cards to make additional capital injections in 2008. However, the two surveys are not directly comparable.[14]

The decreases we observe in the percentage of SCF respondents who used both equity and credit to finance ongoing operations, and the corresponding increase in the percentage who used no new financing, is consistent with the industry-wide trend discussed in section 2.3. Looking at a separate question posed in the SCF, households that reported owning a small business were asked whether their business applied for any type of credit or loan in the past five years. In 2010, 33 percent of business owners said they applied for credit in the past five years; in 2013, the number was 29 percent, a decline of 4 percentage points.

Once again, external equity investment played a relatively minor role in financing the ongoing operations of small businesses, according to both 2010 and 2013 SCF respondents. For both years, less than 1 percent of business-owning respondents said they used outside equity investors to finance ongoing operations.

[14] This inconsistency may be explained, according to Blanchflower and Evans (2004, 79), because the SCF data understate credit card loans considerably. Respondents tend to underestimate how much debt they have, and separate data provided by MasterCard and Visa showed that "members report between two and three times the credit card balances reported in the SCF" (2004, 85).

4. Challenges to Small-Business Financing

Given the important role that bank lending plays in the creation and ongoing financing of small businesses, there is significant interest in how changes to the US economy affect the availability of credit for small firms. This section reviews research on the state of small businesses after the 2008 financial crisis, the state of small-business lending, the state of small and community banks, and the effect of post–financial crisis regulation on small businesses.

Small businesses were hit hard by the Great Recession following the 2008 financial crisis. Fort et al. (2013) observe substantial declines in employment growth during the recession, based on the Census Bureau's Business Dynamics Statistics dataset for the years 1981–2010. These authors find that the business failure and employment effects during this period were much greater for businesses that were both young and small than for mature and large firms. They argue that the collapse of housing prices during the Great Recession was a major factor in the decline of these businesses.

Small businesses continue to underperform compared with their pre–financial crisis trend. Strongin et al. (2015) use Census Bureau data to estimate that there would have been 600,000 more small businesses in the United States in 2012 had the financial crisis not occurred and had new business creation maintained its 1977–2007 trend during the 2009–11 period. There were 23 million sole proprietorships in 2012, an increase of 5 percent since the end of the Great Recession, compared with a 15 percent increase over the comparable time frame during the recovery from the 2001 recession.

Employment by small businesses is also below trend (Strongin et al. 2015). Historically, the cumulative change in employment at firms with fewer than 500 employees outpaced that for

larger firms. In recent years, the rise in employment at smaller firms has been significantly below the increase at larger firms. Strongin et al. also find that revenue at small businesses grew only 2 percent from 2009 to 2011, compared with 8 percent revenue growth for large firms, according to data from the IRS. The authors partly attribute the slower recovery of small businesses to the cumulative effects of newly enacted post–financial crisis regulation, discussed in more detail in section 4.5.

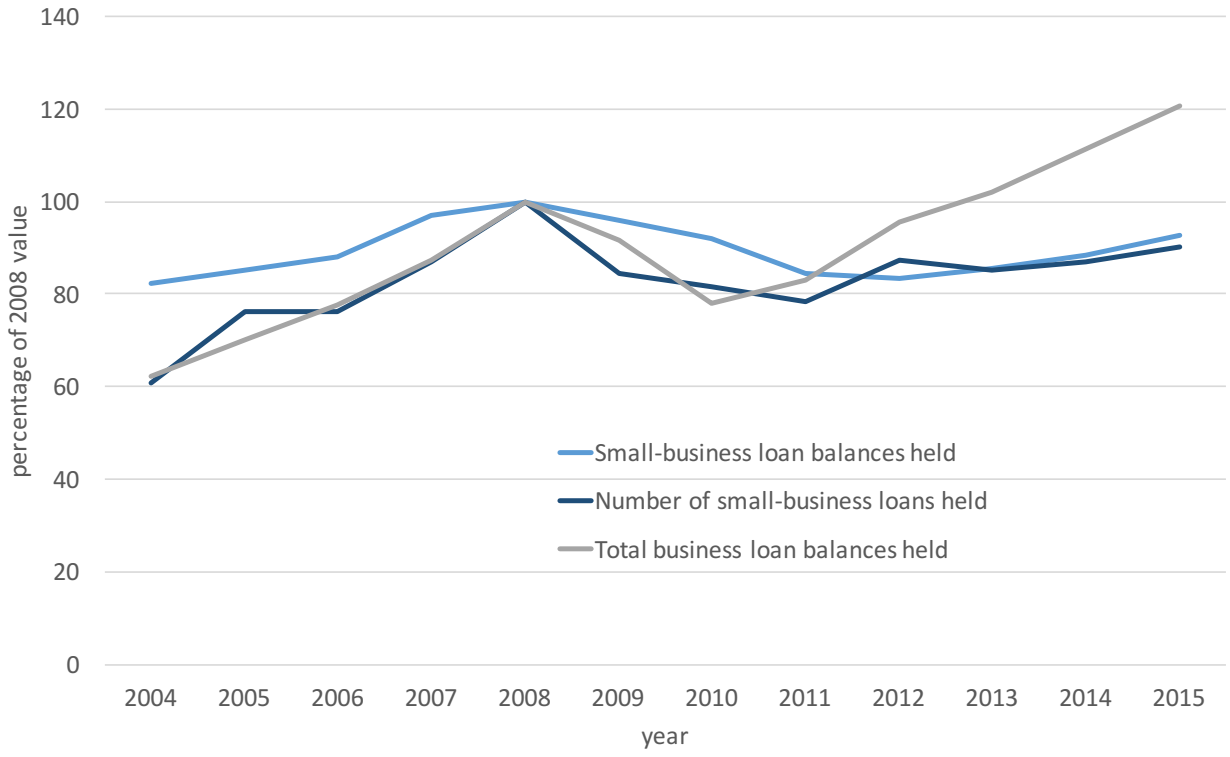
Recent industry surveys of small-business owners show a mixed trend in their outlook for the future. The Small Business Optimism Index, constructed by the National Federation of Independent Business, fell to 95.9 in August 2015 after returning to its long-run average of 98.0 in the February 2015 report (Dunkelberg and Wade 2015). Similarly, Wells Fargo's Small Business Index optimism score decreased significantly, to 59 in Q3 2015 from 71 in Q1 2015, which was its highest level since reaching 83 in Q1 2008 (Wells Fargo 2015). The 2015 Midyear Economic Report of the NSBA finds that nearly three-quarters of small-business owners surveyed were confident about their firms' futures—a finding that is unchanged from the 2014 midyear report (NSBA 2015).

4.1. Small-Business Lending after the Financial Crisis

Cole (2012) analyzes data from Federal Financial Institutions Examination Council call reports and finds that the decline in bank lending during the financial crisis affected small firms much more than large firms. Lending to small firms fell almost 18 percent from its peak of $659 billion in June 2008 to $543 billion in June 2011. Using data from the Federal Deposit Insurance Corporation (FDIC), Williams (2014) shows that both the volume and the rate of small-business lending dropped during the crisis and remained negative until December 2013.

The FDIC's most recent data from depository institutions show that loans to small businesses are still below their pre–financial crisis peak (FDIC 2016). Collected through the first half of 2015, the data show that annual loan balances for small-business loans (defined as commercial and industrial loans of less than $1 million), as well as total commercial and industrial balances for loans of any size, fell more than 20 percent after the financial crisis. The number of outstanding small-business loans fell less drastically but still bottomed out at nearly 20 percent below the 2008 peak. The data are graphed in figure 1.

Figure 1. Number of Outstanding Small-Business Loans, Small-Business Loan Balances, and Total Business Loan Balances for US Businesses as a Percentage of 2008 Values, June 30, 2004–June 30, 2015



Note: Figure shows all outstanding commercial and industrial loans of less than $1 million to US small businesses held by US depository institutions, as well as the total amount of outstanding commercial and industrial loans of any size, normalized around June 30, 2008, for comparison.

Source: Federal Deposit Insurance Corporation (2016), "Statistics on Depository Institutions," accessed August 10, https://www5.fdic.gov/sdi/main.asp?formname=compare.

Since the end of the Great Recession, small-business loan balances and the number of outstanding small-business loans have gradually increased but are still about 10 percent lower than during their pre–financial crisis peak. Meanwhile, total commercial and industrial loans of any size fully recovered by 2013—and by 2015 stood at more than 20 percent above their peak in 2008. This reflects a strong rebound in lending to larger businesses, despite the persistently lower level of lending to small businesses.

Mills and McCarthy (2014) review the state of small-business lending after the financial crisis and point to a set of cyclical and structural factors that may account for the persistently low post–financial crisis loan volume to small businesses. Cyclical factors included (a) falling sales, which undermined loan demand; (b) devalued collateral, especially real estate owned by small-business owners, which potentially made small businesses less creditworthy; (c) more risk aversion by banks; (d) the failure of many community banks during the financial crisis; and (e) increased regulatory burdens. Structural factors included (a) decades-long consolidation in the banking industry, (b) the high costs of acquiring information for both borrowers and lenders, and (c) the inherently risky nature of small-business loans—especially the smallest loans.

4.2. Credit Market Experiences

Whereas there will always be business owners who seek credit but are unable to obtain it, the data suggest that the proportion of firms that were rejected for credit peaked after the financial crisis and remains persistently higher today.Using the 2011 KFS results, Robb and Farhat (2013) show that, of firms that did seek new credit or renewal of existing credit lines, the number of business owners who reported that they were always denied credit peaked in 2010 at 23 percent. By 2011 the rejection rate fell to 19 percent, but it remained higher than the 2008 rejection rate

of about 15 percent. In contrast, 68 percent of small-business owners reported always being approved for the new financing they sought.

The observation that a shrinking but still substantial proportion of small-business owners are rejected for credit is reflected in the 2010 and 2013 SCF data. Households that owned small businesses were asked if, in the past five years, a lender or creditor turned down an application for credit or did not give the business as much credit as requested. In 2010, 25 percent of those who applied for credit in the past five years said they were rejected; in 2013, 17 percent were rejected. The percentage of those who applied for credit in the past five years and reported receiving less than they had requested was 7 percent in both 2010 and 2013. Of those business owners who said they were initially turned down for credit, 40 percent reported eventually receiving the funds in 2010, and 39 percent eventually received the funds in 2013.

Also worth noting is a question posed in both the KFS and the SCF about whether a small-business owner decided not to apply for a loan because he or she expected to be denied. Robb and Farhat (2013) note that, in 2008, 18 percent of small businesses surveyed reported not applying for credit for fear of being denied, and in 2009 the number increased to 21 percent. In our analysis of the 2010 and 2013 SCF data, the percentage saying they did not apply for a loan because they expected to be denied was a constant 7 percent in both surveys.

Cole and Sokolyk (2015b) examine this group of "discouraged borrowers" using SSBF data from 1993 to 2003 and observe that many more small-business owners failed to apply for credit because they feared being rejected (between 9 and 15 percent) than actually were rejected (between 4 and 7 percent). The authors compare firms that did receive credit with those that said they were too discouraged to apply, and they estimate that between one-third and two-thirds of discouraged business owners would have obtained a loan if they had applied.

According to the Q3 2015 Small Business Survey conducted by Wells Fargo, about one-third of respondents said obtaining credit was somewhat or very easy over the past 12 months, a slight increase from 32 percent the year before and 14 percentage points higher than at its lowest point in Q4 2011 (Wells Fargo 2015). The percentage reporting that obtaining credit was somewhat or very difficult in Q3 2015 was about 22 percent, also down from a peak of 37 percent in Q1 2010 but still higher than the 13 percent reported in Q1 2008.

On the supply side, the August 2015 Small Business Lending Index[15] constructed by Biz2Credit.com reports that loan approval rates by big banks and institutional lenders continued to improve in 2015 and were at a postrecession high (Biz2Credit 2015). Big banks (those with assets of $10 billion or more) approved 22 percent of small-business loan requests in August 2015, and institutional lenders approved 62 percent of requests. Approval rates by small banks declined to 49 percent in August 2015 after reaching a post–financial crisis high of 52 percent in May 2014. Approval rates at alternative lenders, such as cash advance companies and nonbank institutions, dropped to 61 percent in August 2015 from a high of 64 percent in February 2014. Credit unions reported a loan approval rate of 43 percent in August 2015.

4.3. Role of Small Banks in Small-Business Lending

Peirce, Robinson, and Stratmann (2014) provide an overview of the key role played by small banks (those with less than $10 billion in assets) in serving small-business borrowers. Small banks provided nearly half of all small-business loans issued by US banks as of 2010. Similarly,

[15] Biz2Credit.com is an online lending platform that connects business borrowers with lenders. The Small Business Lending Index is calculated monthly from a sample of 1,000 loan applications submitted online each month. Loan applications must fall within the sample range of $25,000 to $3 million and must be submitted by firms that have been in business more than two years and have a credit score above 680. The index is not meant to be representative of the universe of small-business lenders.

Williams (2014) uses FDIC data to show that, by 2013, 51 percent of small-business loan balances were held by banks with assets of less than $10 billion, although those banks originated just under 18 percent of small-business loans. This suggests that, whereas larger banks made more total loans to small businesses than banks with less than $10 billion in assets, the dollar amount per loan was higher from the small banks.

Beginning in the late 1970s, states began altering regulations on bank mergers, acquisitions, and expansions across state lines, culminating with the Riegle-Neal Interstate Banking and Branching Efficiency Act of 1994. This change in the law, combined with small-bank failures brought on by the savings and loan crisis of 1986–1995 and the 2008 financial crisis, led to a wave of consolidations in the financial services industry.

The effect on small banks was dramatic. Peirce, Robinson, and Stratmann (2014) show that the number of small banks declined from more than 11,000 in 1993 to just over 6,000 in 2013. And whereas small banks still made up more than 98 percent of the banking industry in 2013, they held less than 19 percent of total assets. Meanwhile, because of industry consolidation, just 98 large banks held more than 81 percent of total assets in the United States.

Previous research into the relationship between bank size and small-business lending emphasizes two stylized facts: (a) the financing of informationally opaque small businesses could only be provided by relationship lending, and (b) large banks were ill equipped to provide relationship lending (Berger, Rosen, and Udell 2007). Given this conventional wisdom, it was a natural concern that consolidation in the banking industry would negatively affect small businesses' access to credit.

Empirical research emphasizes the relationship between small businesses' access to bank credit—in particular the monitoring role played by those lenders—and firm performance. Using

data from the SSBF and the National Establishment Time-Series, Mach and Wolken (2011) show that the best predictor of whether a firm went out of business between 2004 and 2008 was the firm's credit score, even after controlling for other important attributes of the firm and its owner. Cole and Sokolyk (2015a) use KFS data to argue that lenders provide an important monitoring role to firms that receive business loans. To isolate this monitoring effect from the bank selection effect, these authors use a matching strategy that compares firms that are otherwise similar, except that some received business loans to finance their start-up and others used personal loans. The authors show that the firms that received business credit grew faster and survived longer than the firms that received only personal credit.

However, the consensus appears to be that changes in the law during the 1990s and the consolidation of the banking industry did not negatively affect small businesses' access to credit. Specifically, there appears to be strong evidence that the industry consolidation of the 1990s did not significantly affect total small-business lending even though the number of small banks decreased (see Vera and Onji 2010; Erel 2011; Strahan and Weston 1998). Berger et al. (1998) write that, whereas mergers and acquisitions led to decreased lending at specific firms, significant offsetting effects occurred because of changes in the local markets as other lenders stepped up to extend small-business loans. Consolidation also did not appear to negatively affect either the rate of new business creation or the creative activities of small businesses (Black and Strahan 2002; Chava et al. 2013).

Researchers are not unanimous on this topic. Nguyen (2014) uses FDIC data for 1999–2012 to examine the effect of postmerger bank branch closings on small-business lending at the census tract level. Nguyen finds a significant negative effect. The closing of a bank branch was associated with a 13 percent annual decrease in new small-business loans that persisted for

several years in the affected area. The author attributes this decline to the destruction of "soft" information at the local level as a result of branch closure.

4.4. Role of New Technologies in Supporting Small-Business Lending

The conventional paradigm in small-business lending research holds that small banks have a comparative advantage over large banks in lending to small businesses owing to small banks' ability to overcome informational opacity. Small banks can use relationship lending, which relies on "soft" information, whereas large banks use "hard" information technologies that are ill suited to serving small businesses (see Berger and Black 2011).

There is some empirical evidence that, before the mid- to late 1990s, the conventional paradigm accurately described the way that banks served their business customers. Using data from the 1993 SSBF, Berger et al. (2005) find that large banks lend primarily to larger firms with good accounting records, whereas small banks lend to smaller, more "opaque" firms. Using the same dataset, Cole, Goldberg, and White (2004) find that large banks applied standardized quantitative lending criteria and small banks relied on qualitative criteria based on loan officers' personal interactions with and assessments of applicants.

But more recent research suggests that small banks have lost their comparative advantage in serving small businesses (Berger, Rosen, and Udell 2007). The widespread introduction of small-business credit scoring (SBCS) technology,[16] as well as the regulatory changes discussed above, may have made it easier for larger banks to lend to small businesses without maintaining costly personal relationships (Berger, Goulding, and Rice 2014). There appears to be strong

[16] According to Berger and Frame (2007, 6), "SBCS involves analyzing consumer data about the owner of [a] firm and combining it with relatively limited data about the firm itself using statistical methods to predict future credit performance."

evidence that a bank's use of SBCS technology is associated with higher amounts of small-business lending (DeYoung et al. 2011; Berger et al. 2011; Berger and Frame 2007; Berger, Frame, and Miller 2002; Frame, Srinivasan, and Woosley 2001). Thanks to this technology, which reduces the information asymmetry problem between borrowers and lenders, the value of traditional relationship lending has declined. This is one explanation for why consolidation in the banking industry after deregulation did not lead to a decline in small-business lending.

The use of credit scoring is not limited to large banks. Berger, Cowan, and Frame (2011) demonstrate that the use of consumer credit scoring (CCS) by small and community banks to evaluate small-business owners is now common. And just like with the use of SBCS by large banks, the use of CCS by small banks is associated with an increase in small-business lending without a significant change in the quality of banks' loan portfolios.

4.5. Financial Industry Regulation: The Real Culprit?

If consolidation in the banking industry did not have a clear negative effect on small-business lending and credit availability, what explains the persistently low level of small-business lending since the financial crisis? Part of this trend may be explained by demand-side factors. For example, fewer small-business owners are borrowing or say they plan to borrow than before the crisis. But a growing body of evidence suggests that the increased regulatory burden imposed by the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 (hereafter Dodd-Frank) and other post–financial crisis interventions are having a negative effect on banks' ability to lend to small businesses.

Mills and McCarthy (2014) argue that increased scrutiny, mandatory changes to banks' capital structure, and regulatory uncertainty caused banks to become more risk averse and

contributed to the lending slowdown after the financial crisis. Bassett, Lee, and Spiller (2012) examine variation in regulators' CAMELS ratings[17] from 1991 to 2011 and find that the degree of stringency in the ratings is associated with significant changes in banks' lending standards and practices and that the effect persists for several years.

Post–financial crisis regulations may also be affecting the number of new banks entering the industry. McCord and Prescott (2014) find that the number of newly created banks established since the crisis is at its lowest level in 50 years. These authors argue that the collapse of new entries accounts for almost two-thirds of the decline in the number of banks in the United States since the crisis. They explain that this trend may be attributable to poor economic conditions and regulatory burdens that increase the costs of entry. Adams and Gramlich (2014) investigate the decline in new bank creation and estimate that 65–85 percent of the decline can be attributed to nonregulatory factors.

There is evidence that new financial regulations restrict access to the consumer financial products commonly used by small-business owners. Batkins, Milloy, and Varas (2016) analyze data from the Federal Reserve Bank of St. Louis for the years 2005–14 and find that Dodd-Frank is associated with a significant decrease in outstanding revolving credit. Similarly, Strongin et al. (2014) find that, in the markets that were most exposed to recent regulatory changes, the costs of credit rose most significantly over their pre–financial crisis average. For example, interest rate spreads on consumer credit cards in 2013 were at least 200 basis points wider than their 2000–07 average, even for prime borrowers. Spreads on home equity lines of credit were 102 basis points wider than the pre–financial crisis average.

[17] A bank's CAMELS rating is one of several supervisory standards used by financial regulators to assess a bank's overall condition. It is a composite rating on a scale from one (strongest) to five (weakest) based on a financial institution's performance in six areas: capital adequacy, assets, management capability, earnings, liquidity, and sensitivity. For more detail see Lopez (1999).

The evidence on this particular effect of new financial regulation is not undisputed. Agarwal et al. (2014) use a differences-in-differences model to estimate the effects of the Credit Card Accountability Responsibility and Disclosure Act of 2009. Using panel data from the eight largest US banks for 2008–12, these authors find no increase in interest rates in response to the fee income lost as a result of the act's restrictions. However, Durkin, Elliehausen, and Zywicki (2014) argue that the act's regulations merely codified existing practices that were prompted by Federal Reserve Board regulations promulgated in 2008. Zywicki (2016) argues that expanding the study period to include the 2008 regulations negates the findings of Agarwal et al. (2015).

Given the important role that small financial institutions play in providing small-business financing, researchers are concerned with the potential negative effect of Dodd-Frank on small and community banks. In their review of studies on the effect of Dodd-Frank on community banks (defined as those with assets of less than $1 billion), Lux and Greene (2015) conclude that the new regulations are driving increased consolidation in the industry. Cyree (2015) investigates the effect of crisis-based regulatory interventions, including Dodd-Frank, on costs and productivity at small and community banks from 1991 to 2014 using data from Federal Reserve Board reports for bank holding companies in the United States. Cyree finds that pretax return on assets (ROA), loans per employee, and technology and fixed-asset expenditures were significantly lower for community banks during the rulemaking period for Dodd-Frank.

Although Dodd-Frank attempts to shield banks with less than $10 billion in assets from many of the effects of the act, the evidence suggests that small banks are still spending more on compliance than before the act became law. According to a 2015 Federal Reserve Board survey of small banks, nearly 50 percent of respondents reported that compliance costs increased 10–30

percent in the past three years (Federal Reserve and the Conference of State Bank Supervisors 2015).[18] More than 10 percent of respondents reported increases of more than 90 percent.

Similarly, in their survey of more than 200 small-bank executives and employees, Peirce, Robinson, and Stratmann (2014) find that more than 80 percent of respondents saw compliance costs rise by more than 5 percent since 2010.[19] This rise was driven in part by staffing costs. The median number of compliance staff members increased from one to two, and more than one-quarter of respondents said they planned to hire another compliance officer.

Feldman, Schmidt, and Heinecke (2013) attempt to quantify the costs of this increased regulatory burden, in particular the costs of hiring new or additional regulatory officers, on banks with less than $1 billion in assets. These authors estimate that the additional staff would decrease ROA by about 30 basis points for banks with less than $50 million in assets and by about 4 basis points for banks with $500 million to $1 billion in assets.

5. Emergence of Alternative Sources for Small-Business Financing

In the face of declining bank lending, stricter regulation, and general distrust of the financial services industry after the financial crisis, some small-business owners sought new sources of start-up and ongoing financing, and entrepreneurs emerged to serve their needs. One source of innovation in this vein is financing that is enabled by new digital intermediaries, commonly known as FinTech, or financial technology, companies. (For contemporary overviews of the US

[18] The survey was conducted in early 2015 by state bank commissioners in 39 states with 974 community bankers. Although the survey was not designed to be representative of all community banks, its authors note that "observed differences, however, do not appear to be conspicuous" (Federal Reserve and the Conference of State Bank Supervisors 2015,14).

[19] The survey was conducted by the Mercatus Center at George Mason University between July and September 2013. Solicitations were made by email. Whereas the sample should not be considered representative of the universe of small banks, Peirce, Robinson, and Stratmann (2014, 18) write that "the findings from the sample may be viewed as suggestive of the broad trends across the small bank segment of the banking industry." More information is available at the Mercatus Center website: http://mercatus.org/publication/how-are-small-banks-faring-under-dodd-frank.

and international industries, see Moldow 2014 and Ventura et al. 2015, respectively). This section reviews recent research into this emerging industry.

The FinTech industry facilitates financing in two ways. The first is through so-called marketplace lending, also called peer-to-peer lending, which uses Internet platforms to connect borrowers and lenders. Some of these websites and apps allow borrowers to shop for a loan from an array of offers by both traditional and digital lenders, an experience similar to online retailers such as Amazon. A second and related method of FinTech financing is crowdfunding, which occurs when an individual issues a request for capital from one or more investors, typically over the Internet. As Wright (2010) has shown, corporations prior to 1860 effectively engaged in crowdfunding through so-called direct public offerings of shares at fixed prices. Today, crowdfunding platforms do not generally make a one-to-one match between investors and projects but rather match multiple investors to fund a single project.

Belleflamme, Omrani, and Peitz (2015) describe three types of crowdfunding. The first is investment based, in which fundraisers seek capital in exchange for equity shares, for a fraction of revenues or profits, or as a loan. The second type is rewards based, in which fundraisers promise a final product to those who fund the project. The third is donations based, in which funders provide capital with either no interest rate or no expectation of repayment.

Bachmann et al. (2011) explain how the economics of marketplace lending and crowdfunding do not differ greatly from more traditional forms of financing. Financiers seek opportunities to invest with a given level of risk, borrowers with different default risks seek liquidity, and the digital platforms bring the two together. The primary challenge for those seeking and investing capital remains the informational opacity of the new and small businesses,

and those involved take many of the same steps to mitigate information asymmetries as they do in more traditional settings.

"Hard" information remains the main indicator of creditworthiness on these platforms. In their summary of the empirical research on the FinTech industry, Belleflamme, Omrani, and Peitz (2015) conclude that a borrower's credit score remains the most important determinant of the interest rate on its loan. Bachmann et al. (2011) also find that borrowers with weak credit ratings are unlikely to acquire financing through crowdfunding.

Nonfinancial information may increase the chances of a borrower receiving a loan and getting a lower interest rate on these platforms, especially for those with poorer credit ratings. Moritz and Block (2014) explain that the extent of a borrower's social networks appears to reduce information asymmetries and increase the probability of funding. FinTech firms also claim to use other sources of information to assess the creditworthiness of a prospective borrower, such as data pulled from social media and online reviews from websites such as Amazon and eBay (see table 2 for examples of these information sources). It is unclear how decisive a role this nontraditional information plays in the probability that a borrower receives financing.

The marketplace lending industry generated an estimated $8.8 billion of loan volume in the United States in 2014 (Moldow 2014). The largest firms in this industry made about $24 billion in consumer and small-business loans since the first companies were founded in the late 1990s. (See table 2 for a detailed breakdown of some of the largest peer-to-peer lenders in the United States.) This amount is only a small fraction of the more than $300 billion in small-business loan balances outstanding at traditional financial institutions as of 2014.

Table 2. Largest Peer-to-Peer Small-Business Lending Platforms in the United States as of July 2015

Firm name	Year founded	Loans to date	Borrowing limits	Loan terms	Rates and fees	Sources of information used for funding and rate decisions
Lending Club[(a)]	2006	$7 billion	Up to $300,000	1–5 years	5.9–25.9%	Credit score
CAN Capital[(b)]	1998	$5 billion	$2,500– $150,000	4–24 months	9.9–30%	Credit score, business performance
Prosper Marketplace[(c)]	2005	$4 billion	$2,000– $35,000	3 or 5 years	5.99–36%	Credit score, "Prosper Rating" (measure of risk)
Social Finance[(d)]	2011	$3 billion	$5,000– $100,000	3, 5, or 7 years	5.50–9.99%	Credit score
OnDeck[(e)]	2007	$2 billion	$5,000– $250,000	3–24 months	15% average	"OnDeck Score" (measure of the health of a business)
Biz2Credit[(f)]	2007	$1 billion	$5,000–$1 million	Unknown	11–17%, with $250–$400 underwriting fee	Merchant payment processing services, company's financial history
Funding Circle[(g)]	2010	$1 billion	$25,000– $500,000	1–5 years	5.49–22.79%	A number of factors, from real-time cash flow and credit score to online customer reviews
Kabbage[(h)]	2009	$550 million	$2,000– $100,000	6 or 12 months	1.5–12%	Data such as online sales, bidding histories on eBay, interactions with customers on Facebook, and shipping information from United Postal Service
Bond Street[(i)]	2013	$100 million	$50,000– $500,000	1–3 years	8–25%	Data including recent business financials, personal credit data, and other information from the Internet

Sources: (a) Miles Weiss, Hugh Son, and Noah Buhayar (2016), "LendingClub Founder Turned to Mack for Emergency Loan Help," *Bloomberg*, May 27; Jeffrey Riecke (2016), "The Lending Club Scandal and What It Means for Marketplace Lending," *Center for Financial Inclusion*, May 12; Steve Nicastro (2016), "Lending Club Business Loans Review: Good-Credit Choice," *Nerdwallet*, June 30; LendingClub (2016a), "Business Loans"; LendingClub (2016b), "Learn About Your Credit Scores."
(b) CAN Capital (2015), "CAN Capital Hits $5 Billion Milestone," news release, May 7; Chad Brooks (2016), "Best Alternative Small Business Loans 2016," *Business News Daily*, May 17; Nicole Narea (2015), "Alternative Lenders Offer Franchises Fast Funding but at a Price," *Forbes*, June 17; Erin Millard, (2015), "CAN Capital Small Business Loan Review," *MagnifyMoney*, August 3.
(c) Ari Levy (2014), "Prosper Said to Get $650 Million Valuation after Funding," *Bloomberg*, May 5; Prosper (2015), "Prosper Reaches New Milestones—$4 Billion in Loans Following Another Record Quarter," news release, July 9; Amrita Jayakumar (2015), "Prosper Review: Personal Loans from Your Peers," *Nerdwallet*, November 24; Warren Lee (2015), "How to Get Loans Approved with Prosper & Lending Club," *Lending Mag*, January 17; Prosper (2016), "Prosper Ratings."
(d) Crunchbase (2016), "SoFi"; SoFi (2016), "Personal Loans"; SoFi (2015), "Leading Marketplace Lender SoFi Announces $3 Billion Funding Milestone," news release, June 26; Ashley Dull (2016), "Grads Can Save Nearly $19K with SoFi: The First Marketplace Lender to Offer Student Loan Refinancing," *Cardrates.com,* February 25; Amrita Jayakumar (2016), "SoFi Review: Personal Loans for High Earners," *Nerdwallet*, January 25.
(e) J. D. Alois (2015), "OnDeck Reports Loan Origination of $369 Million for Q4; $1.2 Billion for 2014," *Crowdfund Insider*, February 25; OnDeck (2016), "Frequently Asked Questions"; Miranda Eifler (2015), "The OnDeck Score: Making Targeted Small Business Lending Decisions in Real Time," *OnDeck Blog*, October 20.
(f) Biz2Credit (2013), "Biz2Credit Reaches $1 Billion in Financing Deals," news release, August 28; Biz2Credit (2016b), "Small Business Loan"; Peter Renton (2015), "Podcast 30: Rohit Arora of Biz2Credit on Small Business Lending," *Lend Academy*, January 7; PYMNTS (2015), "Lending Marketplace Biz2Credit Adds Fortis as a Payment Partner," February 3; Biz2Credit (2016a), "Frequently Asked Questions."
(g) Funding Circle (2015), "Investors Pass £1 Billion Lending Milestone to Small Businesses through Funding Circle," news release, December 29; Lydia Roth (2015), "Funding Circle vs. StreetShares: Term Loan Lenders for Small Business," *Nav*, September 9; Funding Circle (2016), "Frequently Asked Questions."
(h) David Penn (2015), "The Next FinTech Unicorn? Rumored $150 Million Heading to Kabbage," *Finovate*, July 27; Kabbage (2016), "How It Works"; Paul Davidson (2012), "Small Businesses Turn to Alternative Lenders," *CNBC,* November 14.
(i) Zoe Henry (2016), "Why Bond Street Is Offering Fast Capital and Software Services to Startups," *Inc*., February 9; Bond Street (2016b), "How It Works"; Bond Street (2016a), "Frequently Asked Questions."

But whereas there may be an opportunity for alternative lenders to gain market share from the estimated $70 billion in annual small-business loans, the FinTech industry must overcome limited demand for these services. In its 2015 survey of small- and midsized-business owners, the National Center for the Middle Market and the Milken Institute (2015) find that just 10 percent of respondents said that they obtained a loan from a nonbank lender in the past three years, and fewer than 25 percent of respondents said they were even aware that peer-to-peer lending was an alternative source of capital.

Unlike peer-to-peer lending, securities-based crowdfunding is largely impossible for most businesses in the United States because it is thought to violate the Securities Act of 1933, which requires companies and investors to comply with complex and costly regulations (Stemler 2013). This situation began to change in 2012 with the Jumpstart Our Business Startups Act (or JOBS Act), which has the goal of easing restrictions on businesses that want to solicit capital from investors in exchange for debt securities or equity shares (SEC 2013).

Stemler (2013) describes how the provision of the JOBS Act that deals specifically with crowdfunding exempts businesses that raise up to $1 million a year from filing with the Securities and Exchange Commission. It also allows any investor, accredited or not, to invest in any business by using the crowdfunding exemption. Individual crowdfunding investors with an income or a net worth of less than $100,000 are permitted to invest up to $2,000 or 5 percent of their income or net worth per year, whichever is greater. Individuals with more than $100,000 may invest up to 10 percent annually. The Securities and Exchange Commission announced the final rules for equity crowdfunding in October 2015 (SEC 2015), which took effect on May 16, 2016.

6. Conclusion

The conventional view of small-business financing is that a firm's access to external capital is limited by informational opacity. This limitation forces small-business owners to rely on their own assets and financing from friends and family during start-up and initial operations. But recent research into the capital structure decisions of small firms shows that, whereas owner equity is indeed an important source of capital, small firms also rely heavily on credit from the traditional financial services industry as a source of financing for both a firm's start-up and its ongoing operations. We present recent survey data that reinforce these earlier findings.

Small-business financing, although no longer in a crisis, remains weak. Fewer small-business owners appear to be making or plan to make additional capital injections into their businesses. Lending to small businesses is still below its pre–financial crisis peak. And those who do seek credit are still being rejected at higher rates than before the crisis. This persistent weakness in financing parallels a weakness in the performance of small businesses since the financial crisis. New firm creation, revenue, and employment growth at small firms all remain below their pre–financial crisis trend.

Researchers and policymakers may worry that the decline in the number of small banks might explain the weakness in small-business financing and performance described above. Regulatory changes in the past 25 years led to swift consolidation in the financial services industry and a rapid decrease in the number of small and community banks. There was also a wave of small-bank failures following the 2008 financial crisis. But the emergence of new credit scoring technologies at larger banks appears to have softened the blow to small-business lending that was anticipated because of the decline in small banks with their comparative advantage in

relationship lending. The consensus appears to be that consolidation in the banking industry did not have a significant negative effect on lending to small businesses.

More recent research suggests that new financial regulations such as Dodd-Frank may restrict access to many of the financial products on which small businesses rely. The financial services industry plays an important role in financing small businesses, so any regulatory interventions that increase the price of or restrict access to financial products will likely affect small firms.

As traditional financial providers de-emphasize small businesses, new technology-enabled providers have emerged to take their place. These web-based start-ups face many of the same information asymmetries as traditional providers when serving small businesses, and they use many of the same coping mechanisms. Pending regulation of this new industry will dictate how much of a role it will play in small-business financing in the future.

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