Volume Title: Measuring Entrepreneurial Businesses: Current Knowledge and Challenges

Volume Author/Editor: John Haltiwanger, Erik Hurst, Javier Miranda, and Antoinette Schoar, editors

Volume Publisher: University of Chicago Press

Volume ISBNs: 978-0-226-45407-8 (cloth); 978-0-226-45410-8 (e-ISBN)

Volume URL: http://www.nber.org/books/halt14-1

Conference Date: December 16-17, 2014

Publication Date: September 2017

Chapter Title: Small Businesses and Small Business Finance during the Financial Crisis and the Great Recession: New Evidence from the Survey of Consumer Finances

Chapter Author(s): Arthur B. Kennickell, Myron L. Kwast, Jonathan Pogach

Chapter URL: http://www.nber.org/chapters/c13496

Chapter pages in book: (p. 291 – 349)

7

Small Businesses and Small Business Finance during the Financial Crisis and the Great Recession

New Evidence from the Survey of Consumer Finances

Arthur B. Kennickell, Myron L. Kwast, and Jonathan Pogach

It is widely understood that small businesses, small business formation, and the successful financing of both are critical components of the US economy and vital to strong and sustainable economic growth.[1] In addition, it is generally believed that small businesses are, after their start-up phase, relatively dependent on depository institutions, and especially their "relationships" with commercial banks, for credit and other financial services.[2] Thus, the fates of both established and new small businesses during the recent financial crisis and the ensuing recession have been of intense interest to policymakers, practitioners, academics, and the general public.[3]

Arthur B. Kennickell is assistant director in the Division of Research and Statistics at the Board of Governors of the Federal Reserve System and a board member of the National Bureau of Economic Research. Myron L. Kwast is the CFR Senior Fellow in Residence in the Division of Insurance and Research at the Federal Deposit Insurance Corporation. Jonathan Pogach is chief of the Financial Modeling and Research Section at the Center for Financial Research, Federal Deposit Insurance Corporation.

The authors thank Alicia Robb, our conference discussant, the conference volume editors, and Yan Lee, Philip Ostromogolsky, and Robin Prager for very helpful comments and suggestions and Cody Hyman for excellent research assistance. All errors are the sole responsibility of the authors. The views expressed are those of the authors and do not necessarily reflect those of the Board of Governors or its staff, or of the FDIC or its staff. For acknowledgments, sources of research support, and disclosure of the authors' material financial relationships, if any, please see http://www.nber.org/chapters/c13496.ack.

1. Recent papers supporting this view, but in some cases expressing concerns for the future, include Decker et al. (2014), Haltiwanger, Jarmin, and Miranda (2013), and Neumark, Wall, and Zhang (2011).

2. For a review of the literature supporting this view, see Udell (2008).

3. Thus, virtually at the peak of the crisis Congress demanded testimony by Federal Reserve and other officials regarding the crisis's effects on small businesses (see Kroszner 2008). Of course, policymakers' interest in and concern for small business is far from new—the Small Business Administration was created in 1953.

This chapter uses data from the Federal Reserve Board's Survey of Consumer Finances (SCF) in 2007, 2009, and 2010 to examine the experiences of established and new small businesses owned and actively managed by households during these years. In addition, we distinguish small businesses without employees from those with employees. We believe this is the first chapter to present a comprehensive analysis of small businesses during this period, and the first to use these SCF data on small businesses. Although the SCF has been used by many researchers since its inception in 1983 to study household finances, we know of only one other study that has used its information on small businesses owned and actively managed by households, and the data used in that study ended with the 1995 SCF.[4]

The combination of the three surveys provides a new, unique, and logically consistent data set to examine a wide variety of factors that affected small businesses and their owner's households before, during, and just after one of the most important periods in US economic history.

The analysis of the surveys used here has at least four important advantages over previous work. First, because the SCFs survey households with a focus on wealth and the sources and uses of income, they are well suited to evaluate interactions between small business and household finances. Such interactions have long been considered central to understanding entrepreneurial activity. Moreover, the SCF allows comparisons of households that have a small business with those that do not own a small business. Second, the timing of the surveys allows us to observe small businesses and their owners just before, during the heart of, and just after the financial crisis and the Great Recession. Third, the 2009 survey was a reinterview with participants in the 2007 SCF. This panel structure allows us to study directly how a set of small businesses and their owners were affected in the heart of the financial crisis and Great Recession. Fourth, the information on personal businesses collected in the SCF was expanded considerably in the 2010 survey, and some of that additional information is also available in the 2009 survey. This allows testing a number of findings of precrisis studies and provides a benchmark for future research.

In addition to describing and analyzing small businesses over the crisis and its aftermath, this chapter contributes to four areas of the small business literature:

1. Distinctions between established and new small businesses,
2. interdependencies and other interactions between the finances of small businesses and those of their owner's household,
3. the importance of "relationship finance" for small businesses, and
4. determinants of the probability of success, failure, and creation of a small business.

4. See Avery, Bostic, and Samolyk (1998).

By way of preview, we summarize briefly our key findings. The financial crisis and the Great Recession severely affected the vast majority of both established and new small businesses. This includes the fact that many firms faced severe credit supply constraints. While the weak economy was cited as a reason for the actual or expected denial of credit, causes more internal to the firm, such as credit history and a poor balance sheet, were cited much more frequently. We find that the interdependencies and other interconnections between the finances of small businesses and their owner-manager households are numerous and complex. We identify a variety of measures of small business-household interconnections. Some, such as a household's net worth, are common to the literature. Others, such as indications of a more complicated role of housing assets in small business finance, are new. Our results indicate that relatively well-educated households and workers who lost their jobs during the Great Recession responded in part by starting their own small business. Factors correlated with the survival of a small business during the crisis and the Great Recession are, with the exception of a household's ex ante net worth, problematic to identify. Our results strongly reinforce the importance of relationship finance to small businesses and the primary role played by commercial banks in such relationships. The key deposit services for small businesses are business checking and savings accounts, and the core credit services are business lines of credit, business loans, and possibly credit cards. Local banking offices are highly important for small businesses. Comparisons of results found using cross-section data with those found using panel data indicate that both types of information are highly valuable for researching the topics this chapter addresses. Thus, both cross-section and panel data are needed to advance our knowledge about household and small business economics.

The chapter proceeds as follows: The next section reviews the extensive small business literature to distinguish our study and place our work within its context. Section 7.2 describes the SCF small business data, including important differences across the three waves of the survey we use, discusses limitations of the SCF data, and compares SCF small businesses to those found in US Census reports. This section sets the stage for our substantive analysis, which proceeds in four parts. Section 7.3 uses variables available on both the 2007 and 2010 SCFs to compare small businesses and the households that own and actively manage them before and after the financial crisis and the Great Recession. In addition, households that own and actively manage a small business are compared with households that do not own a small business. Section 7.4 uses the 2007 cross-section survey and its 2009 panel reinterview to examine differences between small businesses (and their owner-manager households) that survived and those that failed during the crisis and recession. This section also identifies the key characteristics of households that started a small business during this period. Section 7.5 employs the expanded small business data collected on the 2010 SCF and the

more limited new data collected on the 2009 panel (but not the 2007 SCF) to investigate a wide range of small business finance topics during these years. Section 7.6 summarizes the key findings from the previous three sections to provide a unified narrative of the experiences of small businesses owned and actively managed by households over the period covered by the three surveys. The section ends with recommendations for future research and improved data collection.[5]

7.1 Literature Review

While the academic literature on small business is huge, virtually all of it predates the recent financial crisis and the Great Recession. That being said, the literature identified a number of interrelated issues and principles that help our work. First, small business research generally distinguishes between new and established small businesses because the two groups exhibit important differences. These differences derive in part from the skills required of entrepreneurs versus those needed by the managers of a going concern. But the differences are also believed to result from a "life cycle" of small business finance and the likelihood that a business will grow from a start-up to a successful larger firm. Second, the interdependencies and other interactions between small business and household finance at both established and new small businesses are typically seen as important but are still poorly understood. Third, for both groups, the relationships between the firm and its sources of finance, especially commercial banks, are viewed as critical to the success of a small business. Indeed, previous research indicates that the importance of relationship finance is a fundamental difference between small businesses and larger firms that have access to broader capital markets. Last, the probabilities that a small business will succeed, fail, or be created at all derive from the interactions of many characteristics of the founding entrepreneur or current owner, the firm itself, the industry the firm is a part of, and the financial and economic environment in which the firm operates. Each of these topics is discussed below.[6]

7.1.1 The Life Cycle of Small Business Finance

Berger and Udell (1998) reviewed and described the life cycle of small business finance. Initially a new firm is not only young and small, but its risk characteristics are typically opaque to outside investors. Very young firms frequently rely on "inside finance" from the founding entrepreneur

5. Appendix A defines the variables used in this study, and appendix B provides univariate results that form the basis for the multivariate correlations discussed in the main text.

6. There are other core small business issues that we do not address. These include the effects of financial (and especially bank) market structure on small businesses' access to funds, the macroeconomic importance of small businesses, including their role in job creation and the transmission of monetary policy, and the roles of gender and race in small business formation and success. For discussions of the first topic, see Kerr and Nanda (2009), Black and Strahan (2002), and Petersen and Rajan (1995); for the second, see Decker et al. (2014), Haltiwanger,

and possibly friends and family members. As the firm grows and begins to show potential for success, angel and venture capital may become available. Eventually the business may come to rely heavily on "outside finance" as commercial banks and other financial institutions become willing to grant lines of credit and loans, public bonds may be floated, and perhaps public equity markets tapped. Along the way, other financial instruments such as trade credit, commercial paper, and private placements of debt or equity may be used. The fact that the life-cycle paradigm has considerable empirical support means that it provides a useful guide to researching small business finances.

Still, Berger and Udell emphasize that the life-cycle paradigm does not fit all small businesses and should only be used as a rough approximation. A recent paper by Robb and Robinson (2012) reinforces their point.[7] Robb and Robinson find that "in spite of the fact that these firms are at their very beginning of life, they rely to a surprising degree on bank debt."[8] However, more consistent with the life-cycle paradigm, Robb and Robinson find that much of this debt is tied directly to the entrepreneur through a sole proprietorship or personnel assets used as collateral.

Our study contributes to this debate in several important ways. First, we adopt the life-cycle paradigm as an organizing principle and test for differences between established and new firms and for the importance of firm size. Second, we are able to estimate a firm's probability of survival over the crisis, controlling for life-cycle characteristics and other household and firm characteristics. Last, we use the augmented data on small businesses available on the 2010 SCF to investigate whether some of the key findings of the precrisis literature are supported by postcrisis data.

7.1.2 Interdependencies between Small Business and Household Finance

The importance of interdependencies and other interactions between small business and household finance has long been recognized. However, the vast majority of studies have focused only on the relationship between household wealth and the probability of starting a new business. Positive correlations are typically interpreted as supporting the view that liquidity constraints are binding for many start-up businesses, and thus reinforce the importance of inside finance for small businesses.[9]

More recent research has challenged the strength of the wealth/small business formation relationship. In two papers, Hurst and Lusardi (2008 and

Jarmin, and Miranda (2013), and Udell (2008); for the roles of gender and race, see Robb and Robinson (2012) and Hurst and Lusardi (2008).

7. These authors use the Kauffman Firm Survey of businesses founded in 2004 to study the capital structure decisions of small businesses in their initial year of operation. The Kauffman Firm Survey is described in Robb and Robinson (2012) and Robb and Reedy (2011).

8. Robb and Robinson (2012, 25).

9. Evans and Jovanovic (1989) were among the first to find a positive relationship between individual wealth and entrepreneurial activity. Holtz-Eakin, Joulfaian, and Rosen (1994) found

2004) find that "Over most of the distribution of wealth, there is no discernible difference in the propensity to become a business owner. It is only at the very top of the wealth distribution (top 5 percent) that a positive relationship between wealth and business entry can be found."[10] These authors also "find that both past and future inheritances predict current business entry, showing that inheritances capture more than simply liquidity."[11]

In (to our knowledge) the only study of its kind to date, Avery, Bostic, and Samolyk (1998) document that the relationship between small business and household finances is highly complex.[12] For example, in partial support of Hurst and Lusardi, Avery, Bostic, and Samolyk (1998) find "no consistent relationship" between an owner's wealth and the use of personal commitments (personal guarantees and pledges of personal collateral) when a small business seeks credit.[13] Consistent with Robb and Robinson (2012), they find that personal commitments are important credit enhancement tools for those small businesses "that rely heavily on loan financing," and that "loans with personal commitments comprise a majority of small business loans, measured in numbers or dollar amounts."[14] Last, Avery, Bostic, and Samolyk (1998) "find strong evidence that personal commitments are substitutes for business collateral, at least for lines of credit."[15]

Our study expands and updates our knowledge in these areas, both during the crisis and as the economy began to recover. For example, we test the interdependence between household wealth and the probability not only of starting but also of *continuing to run* a small business. Unlike previous studies, we are able to separate the effects of wealth based on home ownership and wealth that is independent of home ownership. Other variables that give insight into small business/household interactions include the business owner's age, education, partnership status, risk preferences, and method of acquiring the small business, and we examine the importance of credit relationships running from the household to the small business.

7.1.3 The Importance of Relationship Finance

The third core issue to which our chapter contributes is the importance of "relationship finance."[16] Relationship lending relies primarily on "soft

a positive correlation between the probability of starting a business and receiving a recent inheritance. Schmalz, Sraer, and Thesmar (2013), using French data from before the crisis, found a positive correlation between increases in house prices and the probability of starting a small business.

10. Hurst and Lusardi (2008, 1–2).

11. Hurst and Lusardi (2004, 319).

12. These authors use data from both the National Survey of Small Business Finances and the Survey of Consumer Finances from the late 1980s through the mid-1990s.

13. Avery, Bostic, and Samolyk (1998, 1058).

14. Ibid.

15. Ibid., 1059.

16. Udell (2008) reviews the large body of theoretical and empirical research on relationship banking as it applies to small business lending. A short and clearly selective list of other

information" about a borrower, acquired over time by a lender who often has multiple interactions across a variety of financial services with its customer. Soft information is difficult to transmit both within and across organizations and, in the case of small business lending, typically includes deep knowledge of the business's local market. Indeed, Udell (2008) emphasizes "there is considerable evidence that relationship lending may be best delivered by community banks, where soft information does not have to be communicated across locations or hierarchical structures."[17]

While the importance of relationship finance appears well established, the importance of local banking offices to small businesses remains controversial. Using data from 1993, Petersen and Rajan (2002) argued that technological change altered small business lending markets, weakening the importance of local offices of credit suppliers and increasing the physical distance between small businesses and their sources of credit. Papers that use more recent data challenge this view, albeit with a number of important subtleties. Using data from 1997 through 2001, Brevoort and Hannan (2006) find that rather short distances between borrower and lender (two to five miles) still matter for small business lending, though more so for small banks than for larger organizations. DeYoung, Glennon, and Nigro (2008), using data from 1984 through 2001, find that greater lender/small business borrower distances increase the probability of loan default. And, using data through 2003, Brevoort, Holmes, and Wolken (2009) find that while some distances have increased for some financial products (e.g., asset-backed loans) and some small businesses (higher credit quality or more established firms), "distance increases for relationships involving lines of credit or multiple credit product types (bundles) were effectively zero" from 1993 to 2003.[18]

In contrast to relationship lending, most other lending technologies, often called transactions-based lending, rely more on "hard information." According to Udell (2008), hard information, such as financial statements and credit bureau reports, "is easily quantifiable and easily transmitted within the hierarchy of a large banking organization."[19] Examples of transactions-based lending technologies include financial statement lending, asset-based lending, leasing, and credit scoring. It is notable that Udell's list illustrates that in the real world of commercial lending, there is not a sharp distinction between the lending technologies available to community, medium-sized and very large banks. Community banks may have a comparative advantage in relationship lending, but they also use transactions-based technologies, and vice versa for larger banks.

---

important papers in the relationship banking literature includes Schenone (2010), Berger and Udell (1995, 1998, 2006), Berger et al. (2005), Elyasiani and Goldberg (2004), and Petersen and Rajan (1994).

17. Udell (2008, 94). Black and Strahan (2002) present evidence that challenges this view.
18. Brevoort, Holmes, and Wolken (2009, 26).
19. Udell (2008, 94).

The data on small businesses in the 2010 SCF allow us to examine relationship banking issues at the small business level. We can investigate whether some of the findings of precrisis research on relationship banking have held up over this period and establish benchmarks for future research. Moreover, relationship banking and small business finance issues not only are important for better understanding the nature of relationship finance, they also lie at the core of the methodology used by the US Department of Justice and the federal banking agencies for evaluating the potential competitive effects of proposed bank mergers and acquisitions.[20] Specifically, we contribute to the discussion of three fundamental concepts. First, because we can identify the type of financial institution a small business considers its "primary" financial institution, we can assess the continuing importance of commercial banks, other types of insured depositories, and other classes of financial institutions to small businesses. Second, while we cannot tell the size of a small business's primary financial institution, we do know the distance between a small business and the nearest office of its primary financial institution. Thus, we provide an update on the importance of local bank offices and the local offices of other financial institutions. Third, we can evaluate the continuing importance of credit, deposit, and payments financial services to a small business and the extent to which firms tend to cluster, or bundle, their use of financial services at their primary financial institution.

7.1.4 Small Business Survival, Failure, and Creation

The final issue to which our study contributes is the empirical analysis of small business survival, failure, and creation. This literature is voluminous, dates to at least the 1930s, contains both quantitative and qualitative studies, and extends across many countries.[21] Studies have identified four broad categories of relevant factors: characteristics of the founding entrepreneur or current owner, characteristics of the firm itself, characteristics of the industry in which the firm competes, and the financial and economic environment in which the firm operates.

Characteristics of the firm's founder and/or owner that have been found to be important are that person's age, education, financial endowment, management experience, attitude toward risk, access to credit and credit quality, previous experience in starting a new firm, gender, and race. Firm characteristics found to be important include financial ratios, age, size, access to credit and credit quality, organizational form, and geographic location. Industry characteristics that are often considered are broad categories of the type of

20. Many of the concepts used in this methodology have been controversial for years. See Kwast, Starr-McCluer, and Wolken (1997).

21. While we cannot review this entire literature here, we do want to place our work within its context. Recent reviews appear in Mach and Wolken (2012) and Balcaen and Ooghe (2006). Other interesting and relatively recent work includes Cole and Sokolyk (2013, 2014), Hunter (2011), Liao, Welsch, and Moutray (2008), Ooghe and de Prijcker (2008), Strotmann (2007), Cressy (2006), Headd (2003), Honjo (2000), and Everett and Watson (1998).

industry (e.g., retail, manufacturing, and service), overall growth rates in the industry, the degree of competition, and the size of the industry.

While each of these factors has been considered in one or more studies, no study has considered all of the factors. Ours is no exception. However, unlike most previous work, we are able to include variables in each of the first three categories in our examination of the probability that a small business survived the crisis. For example, we include the owner's age, education, net worth, and attitude toward risk, as well as a variety of firm and industry characteristics.

7.2 Small Businesses in the Surveys of Consumer Finances

This chapter uses information from the cross-sectional SCFs in 2007 and 2010 and from the panel reinterview in 2009 with participants in the 2007 survey.[22] The SCF is distinguished from other US household surveys by its focus on wealth measurement and inclusion of an oversample to provide adequate coverage of very wealthy households. These characteristics have special utility for this chapter. The SCF collects detailed information on all aspects of wealth, including the closely held businesses that are the subject of this chapter, along with supporting information on sources and uses of income, use of financial services, and other demographic and attitudinal characteristics. This information allows us not only to examine important details of businesses, but also to look closely at the relationship between some key dynamics of businesses and important aspects of the financial situation of the business owners.

The high-wealth oversample helps to provide a better representation of some of the more financially successful business owners. For example, in 2010, 13.3 percent of households overall had some type of closely held business investment, while the corresponding figure for the wealthiest 1 percent of households was 75.3 percent. For households outside the wealthiest 1 percent, the share of business wealth in total household net worth was 12.1 percent, while among the wealthiest 1 percent the figure was 37.7 percent. Thus, inadequate coverage of the wealthiest households would be likely to have adverse effects on the ability to analyze personal businesses.

7.2.1 Limitations of the SCF Small Business Data

While the SCF is a rich source of information, its design imposes limitations on our analysis. For example, the 2007 and 2010 surveys used a lengthy questionnaire to cover the affairs of each sample household at a relatively fine level of detail. However, a variety of concerns required shortening the length of the 2009 reinterview. Consequently, much of the detail

22. For additional background on these surveys, see Bucks et al. (2009), Bricker et al. (2011), and Bricker et al. (2012).

in the regular cross-sectional surveys was suppressed, while the higher-level architecture framing the questions was retained. For the section of the survey covering businesses, this meant collapsing the information on all actively managed businesses to a total of the values of the businesses and the loans of the businesses to, from, or sponsored by the household. We offset this limitation of the 2009 survey somewhat by adding new elements to the panel questionnaire to obtain information relevant to understanding the effects of the financial crisis. For example, whenever a business had been reported in the 2007 survey and the 2009 respondent no longer reported a business, the respondent was asked what had become of the business. Thus, we can study factors that affected the survival or failure of these businesses. Conversely, we can identify when a business appears on the 2009 survey but not on the 2007 SCF. Thus, we can study factors that affected a household's decision to create a small business during this period. In addition, questions were added in 2009 on recent credit experiences and expectations of credit availability. The 2010 SCF incorporated these credit-related questions and added more detailed questions on the use of financial services by businesses.

The survey design also affects the scope of entities that can be considered in our analysis. First, not all assets treated as businesses for tax purposes may be reported by SCF respondents as a business. The only nonnegligible exception of this sort in the SCF is investment real estate. Because some households appear to report such assets as businesses and some do not, researchers sometimes combine such information to produce a more uniform measure of businesses. However, because the information collected in the survey for real estate investments differs in important ways from that collected for businesses in the SCF, we do not include such real estate holdings in our analysis.

Households reporting that they own one or more businesses may have an active interest in running their business or a passive one. It is a reasonable assumption that the active owner would be more knowledgeable about the operations of its business. As a result, the SCF collects more detailed information on businesses in which the household has an active management role. To take advantage of this information, we focus on the set of actively managed businesses and their owners. In 2010, 12.5 percent of households had at least one business with an active management role and 1.3 percent had at least one with a more passive management role (0.5 percent had both).

There is often not a clear distinction between self-employment and business ownership. Some types of self-employment may not be associated with assets or liabilities that survey respondents would consider a business. In both the 2007 and 2010 surveys, when respondents who did not report a personal business answered later in the interview that they were self-employed, they were asked whether their self-employment was associated with a business with any net value. This follow-up captures some additional businesses, but it does not address business structures that have no significant net value.

Moreover, the check on the data is not symmetric in that there may be businesses reported directly that have no significant net value. In 2007, 74.3 percent of households that reported self-employment activity by the household head or that person's spouse or partner also reported owning a personal business; in 2010, the proportion dropped to 70.6 percent.

In principle, the 2007 SCF collected detailed information on up to three actively managed businesses and the 2010 survey collected such information for as many as two; any remaining actively managed businesses were recorded as summary information. In practice, it appears that it was common in both surveys for respondents to combine multiple businesses effectively operated as a single business but that retained a degree of legal separation for tax or other reasons. The interview questionnaire instructions allow this way of reporting. The advantage of this approach is that the business as reported is more likely to reflect the business in a functional sense; the disadvantage is that the business described may not be a single legal entity. It is impossible to give a precise estimate of the extent to which multiple businesses might be combined in this way in the SCFs.

Some closely held businesses are large, sometimes as large as well-known publicly traded firms. Such large firms almost surely look and behave differently from smaller and more entrepreneurial firms. To avoid potential biases and sharpen the focus of this study, we restrict the set of businesses considered to those with fewer than 500 employees. In the 2010 SCF, only 0.8 percent of primary businesses were larger than this size.

We adopt one other restriction on the set of businesses considered. The SCF includes farm businesses along with other types of businesses, but when a farmer also lives on some part of the property farmed, which is often the case, the information available is less straightforward to use than is the case for other types of business. For example, separating the value of land farmed from the associated residence and its mortgages or loans typically requires strong assumptions about what should be attributed to services purely related to housing. An even more difficult problem is the proper treatment of financing options and government incentives that apply entirely or largely to farmers. Our view is that combining farms with other types of businesses in the SCF would risk substantially reducing the clarity of our results. We therefore do not include as a business any farm that is also the primary residence of the household. In 2010, 0.8 percent of the SCF households had a farm business on a property where they lived.

Perhaps the most important limitation of the SCF for business analysis is that while the survey is designed to gather data on the businesses owned by households, it is not designed to be representative of the population of businesses. Only in the case of ownership of a sole proprietorship or other business with no owners outside the survey household do the household and business units coincide statistically. To realign the survey to represent the universe of privately held businesses, it would be necessary to adjust the

household weight associated with each business owner, accounting for the business ownership share. In addition, this adjustment would need to be performed separately for each business a household owned. Unfortunately, such an adjustment is not possible for the SCF, because ownership shares are only collected for the set of actively managed businesses and only on the first three (two) businesses for which detailed information was collected in 2007 (2010). To address this limitation, this study focuses on the first actively managed business reported by respondents in the 2007 and 2010 surveys, which should be the largest or most important one for the household. Among this set of "primary businesses," 80.2 percent were fully owned by the household and 7.2 percent were half-owned. In addition, our set of primary businesses includes 72.4 percent of the total value of small businesses in the 2007 SCF, and 68.9 percent of the total value in 2010.

For all these reasons, the results reported here do not describe the full universe of closely held businesses, but rather the universe of primary, actively managed, nonfarm business interests, weighted by the population of owners. However, as is discussed below, the available data suggest that this more limited approach should be highly representative of the larger universe.

7.2.2 Comparing SCF and US Census Data

Estimates of the US Bureau of the Census reported in the Statistics of US Businesses (SUSB) and a series on nonemployer businesses provide some basis for examining the degree of coverage of the universe of all small businesses using the definition of small businesses we have developed from the SCF for this chapter. According to the census, there were about 27.8 million nonemployer (no employee) businesses in 2007. Estimates based on our definition derived from the principal business owned by the household indicate that there were only about 5.5 million such businesses because of our more narrowly focused approach.

Several factors may explain the large difference. First, as noted earlier, many self-employed people do not report in the SCF that they own a business. If all households with a self-employed head or spouse/partner and no reported business are treated as having a nonemployer business, the SCF estimate rises to about 10.8 million. Second, as noted earlier, some households have real estate holdings that are formally organized as a business, but reported as directly owned real estate in the SCF. Including all of the properties from which the household is known to have received any income as nonemployer businesses raises the total to about 18.8 million. However, this augmentation with real estate holdings almost surely overstates the possible number of unreported nonemployer businesses in the SCF, not least because ownership of income-producing real estate is often shared and thus may be double counted. Third, and possibly most important, the census estimate of nonemployer businesses is based on business tax returns filed at any point during the year. If there is significant flux in the existence of this smallest

category of business, the wider window of the census estimate would capture more short-lived businesses than the SCF, which is based on the state of the household's assets as of the time of the interview.

The SUSB estimates of the number of employer (one or more employees) businesses are made using the Census Business Registry, which purports to be a list of all existing US businesses with employees. The census estimates that there were about 6 million employer businesses with fewer than 500 employees in 2007. Estimates with our definition indicate that there were about 8.1 million households with such businesses as their primary business. Part of the difference in these estimates may be the result of the inclusion of more than one household member among the total number of people working for the business. Assuming that any household head or spouse/partner who works in the household's business is not an employee, the SCF estimate of the total number of employer businesses with fewer than 500 employees falls to about 6.9 million. Adjusting the SCF estimate for the share of the business that each household owns reduces the number of household businesses with fewer than 500 employees to about 6.1 million.

On balance, these comparisons indicate that while—for a variety of logical reasons—the SCF and census data do not match well for no-employee small businesses, the two data sources compare closely with respect to numbers of employer firms. For this reason, much of our analysis separates no-employee small businesses from firms with at least one employee.

Tables 7B.7 and 7B.8 in appendix B further compare the distribution of SCF employer businesses by our definition with SUSB data by industrial sector and by firm size for 2007. Given the small sample size of the SCF, there are some differences in the patterns shown by the two sources. Overall, however, the distributions are similar.

7.2.3 Adjustments for Statistical Concerns

Like any survey, the SCF is subject to potential error because of the small sample of the population interviewed. In addition, some households selected into the survey do not participate, making it possible that the characteristics of participants might differ from those of nonrespondents in ways that induce bias in the statistics we report. The SCF addresses these problems through weighting. Nonresponse adjustments tailored to the survey help to mitigate the effects of nonresponse. A replication method is used to estimate variability caused by sampling; many pseudo-samples are selected from the set of completed cases, and the full set of weighting adjustments is made for each such pseudo-sample. The variability of estimates across calculations using each of the replicate weights serves as an estimate of the range of variability of estimates as a result of sampling.

In addition to the nonrespondents, some respondents fail to give answers to all the questions asked. The SCF uses a multiple imputation to estimate the distribution of the missing data. Under this method, multiple values

for a missing item are randomly drawn from the distribution of the value, conditional on the observed information. Variability of estimates across different sets of such draws represents the added uncertainty as a result of having missing information.

7.3 Small Businesses in 2007 and 2010

This section uses variables available on the 2007 and 2010 SCFs to examine small businesses and the households that own and actively manage them before and just after the financial crisis and the Great Recession. In addition to analyzing separately 2007 and 2010, we follow the literature's convention of distinguishing established from new small businesses.[23] As noted in the previous section, we also distinguish firms with no employees from those with at least one employee.[24] While we only report and analyze multivariate results here, appendix B (Univariate Analysis) provides our univariate results. This section also describes some key characteristics of SCF small businesses not discussed in section 7.2.

7.3.1 Households that Own and Actively Manage a Small Business

Tables 7.1A and 7.1B provide the results of multivariate logit regressions that estimate the probability that a household owns and actively manages a small business.[25] Table 7.1A separates households into those with an established small business (left panels) and those with a new small business (right panels) in a given year, 2007 and 2010. Table 7.1B separates households into those whose small business had no employees (left panel) from those with at least one employee (right panel), again by 2007 and 2010. The right-hand-side variables in the regressions reported in the (1) columns of both tables are the same as those in our univariate analysis, with three exceptions. Only income including that from the small business and net worth including small business equity are included. In addition, the ratio of home equity to total net worth, which also proxies for home ownership, is included.[26] The additional specifications presented in the (2) columns will be discussed shortly. In all cases, the reported coefficients are marginal effects.

23. Established businesses are defined as small businesses that are more than three years old or that were acquired by the household more than three years previously. While there is no standard definition of a new small business, many studies use between two and four years, and thus our choice of three years seemed reasonable (see Everett and Watson 1998). Moreover, the triannual nature of the SCF means that there is negligible overlap in the population of our new small businesses. In 2007, in our sample of 1,137 small businesses, 82 percent of the SCF's small businesses met this definition of established and 18 percent were new; in 2010, of a total sample of 1,536 small businesses, the percentages were 85 percent and 15 percent, respectively.

24. Sample size limits prevent us from combining the two concepts.

25. All data analyses in this study use SCF analysis weights as described in section 7.2.3.

26. Inclusion of both this ratio and a home ownership indicator variable led to substantial multicollinearity. All dollar values enter in log form in these and subsequent regressions. As explained in more detail in appendix B, all dollar values are in 2007 dollars.

Table 7.1A **Probability of owning and actively managing a small business (SB)**

	Established versus no small business				New versus no small business			
	2007		2010		2007		2010	
Variable	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Log(HH income)	–0.093	–0.068	–0.136***	–0.146***	–0.086	–0.192**	–0.064	–0.055
	(0.064)	(0.072)	(0.037)	(0.037)	(0.105)	(0.079)	(0.100)	(0.114)
HH age	–0.024***	–0.025***	–0.004	–0.003	–0.034***	–0.033***	–0.032***	–0.038***
	(0.005)	(0.006)	(0.005)	(0.005)	(0.007)	(0.009)	(0.006)	(0.008)
HH educ.	–0.061**	–0.064**	–0.015	0.001	0.157***	0.125**	0.144***	0.101**
	(0.029)	(0.032)	(0.026)	(0.027)	(0.049)	(0.055)	(0.042)	(0.049)
Log(HH net worth)	0.698***	1.033***	0.437***	0.469***	0.112*	0.079	0.084**	0.097
	(0.068)	(0.112)	(0.068)	(0.145)	(0.064)	(0.106)	(0.038)	(0.061)
Home to net worth	–1.153***		–1.157***		–0.328		–0.322	
	(0.111)		(0.196)		(0.310)		(0.275)	
Log(house)		–0.448***		0.154		0.151		0.049
		(0.127)		(0.162)		(0.187)		(0.173)
Log(mortgage)		0.059***		0.044***		0.094**		0.027
		(0.019)		(0.016)		(0.047)		(0.031)
HH partnered	0.393**	0.614***	0.664***	0.725***	1.054***	0.766**	0.791***	0.574**
	(0.159)	(0.197)	(0.131)	(0.152)	(0.271)	(0.300)	(0.220)	(0.272)
HH cred. access	0.264**	0.105	0.685***	0.429***	0.637***	0.131	0.263	0.046
	(0.135)	(0.176)	(0.112)	(0.151)	(0.235)	(0.299)	(0.192)	(0.299)
Riskpref	–0.117	–0.159	–0.106	–0.080	–0.268**	–0.279**	–0.404***	–0.380***
	(0.094)	(0.104)	(0.071)	(0.079)	(0.114)	(0.129)	(0.095)	(0.122)
Pseudo R^2	0.28	0.25	0.24	0.20	0.15	0.14	0.12	0.11
N	4,073	4,073	6,106	6,106	3,334	3,334	5,261	5,261

Note: Marginal effects of logistic regressions of a 2007 and 2010 SB ownership dummy on contemporaneous HH variables. Variables may be endogenous to SB ownership and should be interpreted as conditional correlations only. Standard errors in parentheses.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

Table 7.1B **Probability of owning and actively managing a small business (SB)**

	No employee versus no small business				Employee versus no small business			
	2007		2010		2007		2010	
Variable	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Log(HH income)	0.041	–0.076	–0.163***	–0.180***	–0.106	–0.094	–0.105**	–0.115***
	(0.125)	(0.089)	(0.048)	(0.049)	(0.068)	(0.068)	(0.041)	(0.040)
HH age	–0.012*	–0.013*	–0.004	–0.005	–0.035***	–0.040***	–0.013**	–0.015**
	(0.006)	(0.007)	(0.004)	(0.005)	(0.006)	(0.007)	(0.006)	(0.006)
HH educ.	0.115***	0.102**	0.064**	0.035	–0.074**	–0.100***	0.013	0.015
	(0.040)	(0.042)	(0.032)	(0.037)	(0.037)	(0.035)	(0.031)	(0.031)
Log(HH net worth)	0.152**	0.037	0.136***	0.122**	0.728***	1.300***	0.435***	0.572***
	(0.066)	(0.075)	(0.040)	(0.056)	(0.106)	(0.109)	(0.081)	(0.172)
Home to net worth	–0.134		–0.608***		–1.473***		–1.107***	
	(0.266)		(0.218)		(0.297)		(0.237)	
Log(house)		0.297**		0.238*		–0.674***		0.037
		(0.140)		(0.129)		(0.125)		(0.183)
Log(mortgage)		0.009		0.052**		0.092***		0.036*
		(0.025)		(0.022)		(0.022)		(0.019)
HH partnered	0.480**	0.562**	0.554***	0.513***	0.697***	0.743***	0.882***	0.845***
	(0.207)	(0.237)	(0.158)	(0.185)	(0.184)	(0.223)	(0.156)	(0.183)
HH cred. access	0.059	–0.042	0.748***	0.426**	0.615***	0.244	0.445***	0.268
	(0.164)	(0.218)	(0.154)	(0.210)	(0.163)	(0.214)	(0.125)	(0.175)
Riskpref	–0.221*	–0.311**	–0.210**	–0.189*	–0.123	–0.104	–0.215***	–0.137
	(0.114)	(0.126)	(0.084)	(0.098)	(0.091)	(0.104)	(0.077)	(0.089)
Pseudo R^2	0.09	0.09	0.10	0.09	0.31	0.30	0.24	0.21
N	3,402	3,402	5,389	5,389	4,005	4,005	5,979	5,979

Note: Marginal effects of logistic regressions of a 2007 and 2010 SB ownership dummy on contemporaneous HH variables. Variables may be endogenous to SB ownership and should be interpreted as conditional correlations only. Standard errors in parentheses.

***Significance at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

We use the conventional definition of a marginal effect: the impact of a unit change in a right-hand-side variable on the estimated probability when all right-hand-side variables are measured at their mean.

Looking first at the (1) columns for households with an established small business (versus those with no small business) in 2007, all but two of the right-hand-side variables are statistically significant at the 5 percent level or better. Interestingly, neither the household's income nor its risk preference variable is significant.

The results for 2010 are similar but not quite the same. In 2010 a household's age, education, and risk preference were insignificant, but now its income was significantly negative. Thus, ceteris paribus, in both years a household was more likely to have an established small business if it had higher net worth, if less of its net worth were in home equity, if it were partnered, and if it had access to credit.[27] In 2007, younger and less educated households were more likely to own and actively manage an established small business, but these variables were not significant in 2010.

Results for households with a new small business (right panel of table 7.1A) are similar to, but also differ in interesting ways, from those for households with an established small business. Thus, ceteris paribus, and as was the case for households with an established small business, in both years a household was more likely to have a new small business if it had higher net worth, if it were partnered, and if it had access to credit (although the level of significance in 2010 is a very weak 12 percent). However, in contrast to households with an established firm, in both years a household was more likely to have a new small business if it were younger, more educated, and if it were less risk averse. On balance, these results support our and the literature's emphasis on separating established and new small businesses. It is interesting that in both years the household's income and the ratio of its home equity to total net worth were not correlated with the probability of owning and actively managing a new small business.

Turning to table 7.1B, we again focus initially on results in the (1) columns. Overall, the logits that separate households into those firms that have no employees versus those that have some employees are much more consistent across the two groups and across both years than were the regressions that separated households with established versus new firms. Thus, ceteris paribus, in both groups and both years, a household was significantly more likely to have either a small business with no or some employees if it were younger, had greater net worth, a smaller ratio of home equity to net worth (except no-employee households in 2007), were partnered, had access to credit (again except no-employee households in 2007), and if it were less risk averse (except employee households in 2007). As was true in table 7.1A, a

27. We use a conservative definition of credit access. The household must have a loan from an insured depository other than a credit card or an educational loan.

household's income was either negatively correlated or uncorrelated with the probability that it has a small business. Interestingly, the fact that all of the negative correlations with income in both tables occur in 2010 may suggest some causal impact of the recession, a topic we will discuss in more detail. In addition, the disparate correlations of education with the probability of owning a small business suggest an important distinction. More education increased the probability of owning a new small business or a firm with no employees, but it was either unrelated or negatively correlated with the probability of owning an established small business or a firm with employees.

On balance, the results of the two tables suggest that while separating households into those with established versus new firms is generally critical for researchers (and policymakers), distinguishing households whose firms have no employees versus some employees may be less critical.

The statistically negative or zero correlation of household income with the probability of having an established or a new small business or one with no or some employees is unexpected and inconsistent with our univariate results. A straightforward interpretation is that once we control for other important factors, such as net worth, income fades in importance for understanding which households own and actively manage a small business.[28] Alternatively, it may be that a household that started a small business had relatively unstable income. It may also be that important conceptual differences between the income of households with no small businesses (e.g., relatively more wages) and the income of those with a small business (e.g., relatively more unrealized capital gains) confuse the interpretation of the income coefficient. In addition, Slemrod (2007) provides strong evidence that underreporting of business income for tax purposes is substantial among households that own small businesses.[29] Thus, our multivariate results for household income may in part reflect the underreporting of income by survey households. On balance, while all these factors probably play some role, we lean toward emphasizing the effects of the Great Recession, subject to the caveat that our income results seem worthy of additional research.

The generally negative correlation of a household's ratio of its home equity to total net worth with the probability that it owns and actively manages a small business is interesting and provocative, especially because previous studies have been unable to construct such a variable. On the one hand, our results may merely reflect the conventional wisdom that households with a small business tend to use home equity as collateral for mortgage loans that support their business, thereby driving down their ratio of home equity to net worth. On the other hand, our results may also suggest the new and perhaps provocative suggestion that, ceteris paribus, a dollar of net worth

28. The negative coefficient on income is robust to a variety of model specifications.
29. Households are encouraged to use tax records to assist their responses to the SCF.

in home equity may be less valuable to a household that has a small business than is a dollar in other, possibly more liquid, forms of net worth.

To test these possibilities, we estimated logit models, reported in the (2) columns of tables 7.1A and 7.1B, that substitute two new right-hand-side variables for the ratio of home equity to net worth. "House" is the log dollar value of a household's housing assets, and "mortgage" is the log dollar value of any mortgages for which those housing assets are the collateral. The column (2) results for these variables are generally strongest for households with established firms and those whose small business has some employees. These estimations suggest that (a) conditional on having housing assets, tapping into home equity via any type of mortgage is positively associated with the probability of having a small business; but that (b) conditional on the amount of those mortgages, holding a larger proportion of total net worth in housing may be either a negative or neutral signal of small business ownership.[30] The first result is consistent with the conventional wisdom that many small business owners use their home as collateral for loans that support their business. However, the second result is consistent with our new conjecture that other forms of net worth at the margin may be more valuable to the small business owner. In either case, we believe these results warrant further research on the interdependencies and interconnections between home ownership and small business finance.

7.3.2 Key Characteristics of SCF Small Businesses

Turning to the small businesses themselves, tables 7.2A and 7.2B display six key characteristics of small businesses owned and actively managed by households in 2007 and 2010. Table 7.2A separates established from new firms, while table 7.2B distinguishes between small businesses with no employees and those with a least one employee. Because it is clear that the means of the variables are often strongly affected by observations in the upper tail of a given distribution, most of our discussion will focus on the median of a given variable.

Each of the four measures of size in table 7.2A suggests that the established small businesses in the SCF are quite small. In both years, the median number of employees is only one and even the 90th percentile is a modest fourteen employees. Median annual income (profits) in 2007 is only $41,000 based on median sales (revenues) of $119, 000, and the median value of the firm is just $110,000. In addition, it is clear that the Great Recession had a substantial effect, with median real income (business income) falling 51 percent and median total revenues (business sales) by 33 percent between 2007 and 2010.

Except for the median number of employees (one), the size measures of

30. This interpretation is supported by all of the results except those for households in 2007 and 2010 whose small businesses have no employees.

Table 7.2A **Key characteristics of primary SBs actively managed by HHs**

	2007				2010			
	Mean	Median	P25	P90	Mean	Median	P25	P90
Established SB								
No. employees	8.3	1	0	14	8.6	1	0	14
Bus. income	523	41	13	500	417	20	2	300
Bus. sales	2,029	119	31	2,000	6,294	80	23	2,100
Bus. value	2,841	110	15	3,846	2,267	72	10	2,433
HH bus. loan	0.131				0.129			
Amt. (% of sales)	1.28[a]	0.145	0.03	2.24	6.38	0.227	0.067	5.4
New SB								
No. employees	5.3[a]	1	0	9	1.5[b]	1	0	4
Bus. income	124[b]	3.5	0	100	41[b]	0.5	0	65
Bus. sales	968	15	1	406	217	7	0	200
Bus. value	623[b]	22	2	699	659[b]	21	1	391
HH bus. loan	0.217[b]				0.193[b]			
Amt. (% of sales)	2.10[a,b]	0.6	0.210	5.21	172.7[b]	0.5	0.30	4.5

[a]Mean significantly different from 2010 at 5 percent or greater.

[b]Mean significantly different from HHs with established SB at 5 percent or greater.

Table 7.2B **Key characteristics of primary SBs actively managed by HHs**

	2007				2010			
	Mean	Median	P25	P90	Mean	Median	P25	P90
No emp. SB								
Age	10.2	7	2	24	10.6	9	3	28
Bus. income	244	11	2	90	269	10	0	70
Bus. sales	497	119	31	2,000	8,124	24	3	160
Bus. value	162	8	0	250	124	19	3	190
HH bus. loan	0.119[a]				0.053			
Amt. (% of sales)	3.64[a]	0.586	0.076	4.81	20.8	0.481	0.143	18.8
Emp. SB								
Age	11.9[a,b]	9	3	28	13.4	10	4	31
Bus. income	505	52	9	700	356	17	0	400
Bus. sales	2,523[b]	167	45	2,880	2,449	112	24	266
Bus. value	949[a,b]	122	34	2,000	730[b]	95	19	1,283
HH bus. loan	0.185[b]				0.209[b]			
Amt. (% of sales)	0.822[a,b]	0.250	0.033	2.00	44.2	0.302	0.077	4

[a]Mean significantly different from 2010 at 5 percent or greater.

[b]Mean significantly different from HHs with no employee SB at 5 percent or greater.

new businesses are, as expected, much smaller than those of established firms. In 2007, median profits at new small businesses were a mere $3,500, median total revenues (business sales) only $15,000, and the median value of the firm (business value) was only $22,000. The first two numbers decline to a tiny $500 and $7,000 in 2010, although reported median firm value holds fairly steady at $21,000. Moreover, while the numbers of employees at the 25th and 50th percentiles were unchanged across the two years, the number of employees at the 90th percentile declined by 56 percent. Taken together, these patterns indicate that the recession produced a shift toward smaller firms among new small businesses, a pattern not so evident among the established firms, where the number of employee measures remained unchanged. This result for new firms is consistent with the view that many workers who lost their jobs during the recession formed their own small businesses, a hypothesis we investigate more deeply in section 7.4.

The last two rows of each panel of table 7.2A provide our first glimpse of the interdependencies between small business and household finance. In both years, the indicator for whether a household has either made or guaranteed a loan to its small business is significantly smaller at the established small businesses than at the new firms. Moreover, the percentages are stable across the two years at both sets of small businesses. On average across both years, about 13 percent of established small businesses had either a loan from or a loan guaranteed by the owner-household, while about 20 percent of new small businesses had such a loan or guarantee. In another sign of the recession's effects (here lower sales for most of the distribution), the ratio of the value of this loan or guarantee, when one existed, to the firm's total sales rose substantially from 2007 to 2010 across all four measures of this ratio's distribution at the established small businesses.

The data in table 7.2B reinforce the impressions provided in table 7.2A. The three size measures continue to show that the small businesses in the SCF are typically small, and the declines in median income and sales between 2007 and 2010 were mostly severe. In both years, firms with some employees were significantly more likely to have a loan or a loan guarantee from their owner-manager household. This likelihood remained constant from 2007 to 2010 at the small businesses with employees, but fell significantly at the firms with no employees. Last, all of the firm age measures remained stable across the two years, indicating that, at least along this dimension, the two cross sections were similar.

Table 7.3 categorizes established and new small businesses (top panel) and firms with no employees versus some employees (bottom panel) into six broad industry classifications. This and the subsequent tables in this section separate firms into three groups based on the number of employees. The boundaries of the groups were defined to reflect substantive differences in the sample (e.g., the large proportion of businesses with no employees) and to ensure a substantial number of firms in each employee group.

Table 7.3 Industry classifications (percent primary SBs actively managed by HHs)

	2007		2010	
	Established	New	Established	New
Agricultural	7.7	2.2	7.0	5.8
Mining	21.5	11.6	14.2	11.5
Manufacturing	7.1	6.4	5.8	8.9
Wholesale/retail	11.6	20.8	15.3	14.3
Lower-tech service	13.5	19.8	17.2	11.8
Prof. services	38.7	39.2	40.6	47.7

	2007			2010		
	No employee	Employee = 1,2	Employee ≥ 3	No employee	Employee = 1,2	Employee ≥ 3
Agricultural	7.0	4.1	6.2	7.7	7.5	8.4
Mining	16.5	21.9	18.1	13.7	14.2	9.0
Manufacturing	6.7	5.9	7.8	7.0	6.0	4.9
Wholesale/retail	13.8	16.1	14.0	14.1	14.0	14.0
Lower-tech service	14.1	16.5	16.2	13.3	19.2	12.8
Prof. services	42.0	35.5	37.69	44.2	39.1	50.8

It is clear that for both established and new small businesses, for all three size classes and for both years, the "professional services" category dominates with between 36 percent and 51 percent of the firms. Indeed, among all five categories of firms, the sum of the "professional services" and the "lower technical services" categories is over 50 percent of the firms in all of the ten possible cells. Thus, service industries dominate the sample. Still, there are substantial percentages in all of the industrial classifications, including the heavier industries of mining and manufacturing. Put differently, the SCF samples represent a broad cross section of American small businesses. Overall, the data suggest a move toward professional services from 2007 to 2010. This perhaps reflects in part the relatively high rate of job loss by certain white-collar workers during the recession, a suggestion we investigate more deeply in section 7.4.[31]

Table 7.4 categorizes the small businesses by ownership structure, using the same panel structure as table 7.3. In both years, sole proprietorships dominate all categories except the largest firms in 2010, where Subchapter S is the most oft-chosen organizational structure. Sole proprietorships are especially prevalent among smaller firms and their percentage is about the

31. Autor (2010, 2) documents that job losses during the Great Recession "have been far more severe in the middle-skilled white- and blue-collar jobs than in either high-skill, white-collar jobs or in low-skill service occupations."

Table 7.4 **SB ownership structure (percent of primary SBs actively managed by a HH)**

	2007		2010	
	Established	New	Established	New
Sole proprietor	46.7	50.1	49.7	50.0
Subchapter S	17.4	12.2	17.0	5.2
LLC/LLP	13.8	23.9	19.4	14.9
Partnership	12.7	8.6	6.5	29.9
Other	9.4	5.2	7.5	4.0

	2007			2010		
	No employee	Employee = 1,2	Employee ≥ 3	No employee	Employee = 1,2	Employee ≥ 3
Sole proprietor	68.6	46.9	23.2	72.9	46.5	19.1
Subchapter S	11.2	13.0	23.7	5.6	11.5	29.4
LLC/LLP	14.9	16.1	19.8	16.1	26.5	25.8
Partnership	2.5	17.9	17.4	1.8	11.5	10.7
Other	2.9	4.5	15.9	3.2	3.6	15.0

same in both years across new and established small businesses. As firms grow but not necessarily become more established, corporate and partnership structures become more common. Despite these broad patterns, it is clear that small businesses chose a variety of ownership structures.

7.3.3 How Households Acquire Their Small Business

The final table in this section describes small businesses owned and actively managed by households according to how they were acquired by the household. The data in table 7.5 indicate that the vast majority of small businesses, typically over 75 percent, were started de novo by the household. However, substantial percentages of small businesses, especially those with three or more employees, were purchased by the household. Relatively few—typically less than 5 percent—were inherited.

Given the interest in the role of inheritances in the small business literature, we looked closely at the characteristics of households (and their small business) that inherited their established small business versus households that acquired their established business in another way.[32] On average, households that inherited their business had greater net worth (including equity in the small business), higher income (including business income), a smaller percent of their total net worth in home equity, and a higher level of risk aversion. In addition, small businesses that were inherited tended to be larger and less likely to have a loan that came from or was guaranteed by

32. These results are not shown in a table, but are available on request from the authors.

Table 7.5 Methods of acquiring a SB (percent of primary SBs actively managed by a HH)

	2007		2010	
	Established	New	Established	New
Bought/invest	14.5	17.5	14.6	11.1
Started	73.7	75.8	76.3	81.8
Inherited	5.9	2.5	4.0	3.2
Join/promote	5.9	4.2	5.2	3.9

	2007			2010		
	No employee	Employee = 1,2	Employee ≥ 3	No employee	Employee = 1,2	Employee ≥ 3
Bought/invest	6.3	15.0	26.9	8.8	11.2	23.8
Started	86.9	80.0	54.7	86.8	80.6	60.6
Inherited	4.7	0.8	8.2	2.6	4.2	4.9
Join/promote	2.1	4.3	10.2	1.7	3.9	10.5

its owner-household. While most of these differences between the two sets of households and the two sets of small businesses seem unsurprising and reasonable, they suggest that the role of inheritances remains an interesting area for future research.

7.4 Small Business Survival, Failure, and Creation from 2007 through 2009

This section uses the 2007 SCF and its 2009 panel reinterview to examine differences between small businesses that survived and those that failed during the financial crisis and the subsequent Great Recession and to attempt to identify the key characteristics of households that started a small business during this period. As was the case in section 7.3, we present and analyze multivariate tests here; supporting univariate tables and discussion are given in appendix B.

7.4.1 Survival and Failure

The definition of small business failure is not straightforward. According to Everett and Watson (1998), the literature has used five basic measures: (a) discontinuance of ownership of the business, (b) discontinuance of the business itself, (c) bankruptcy, (d) businesses that were sold or liquidated to prevent further losses, and (e) businesses that simply could not "made a go of it."[33] The 2009 SCF asks a household if its small business "went out of business" between 2007 and the survey and the reinterview date. In

33. Everett and Watson (1998, 374).

addition, the survey allows us to exclude from this definition businesses that were sold, went public, or were transferred to another family member. Thus, our definition of failure most closely resembles the idea of failure as discontinuance of the business, not simply a change of ownership or limited only to bankruptcy.[34]

7.4.2 The Probability of Survival

Table 7.6 presents logit regression results that estimate the marginal effects of a wide array of right-hand-side variables on the probability that a firm would survive from 2007 to 2009. The independent variables are based on factors identified in the literature (see section 7.1) and discussed in appendix B. The table reports separate regressions for the pooled sample of all small businesses, and for established, new, no-employee, and firms with at least one employee. In each case, the logits estimate the relationship of variables whose values were observed in 2007 with the probability that a small business would have continued to survive in 2009.

Our primary conclusion from table 7.6 is that the factors correlated with the probability of small business survival are at best poorly understood, at least for the recent crisis and the Great Recession.[35] Very few of the marginal effects are statistically significant, even in the regressions with the largest number of observations. On balance, these results are a challenge to several conventional views of what determines small business survival or failure and thus strongly suggest that this is an area that warrants additional research.

That being said, clues to where research is most needed, and where it is less so, can be gleaned from an attempt to extract patterns from the results for this period. A household's net worth is the variable most consistently correlated with the probability of a firm's survival. As in previous studies, ceteris paribus, higher net worth was generally correlated with an increased probability of survival. Older owner-managers were sometimes associated with increased chances of survival, although the under thirty-five years of age indicator variable has the strongest positive marginal effect of the three age indicators that are significant. There is evidence that a partnered household was helpful, especially for new firms. Ceteris paribus, larger businesses appear to have had a greater chance of survival, although the distinction between no-employee and some employees firms does not seem to be important in this regard. Established firms with a loan or a loan guarantee from the household may have had a higher probability of survival (again reinforcing the importance of household and small business finance interdependencies), as did a firm with employees that was over five years old. And, new businesses and firms with employees that were not part of either the "profes-

34. Of the total number of business terminations in the 2009 SCF, 83 percent met our definition, 15 percent were sold or went public, and 2 percent disappeared for other reasons such as a divorce settlement.

35. In contrast, the univariate comparisons in appendix B suggested stronger conclusions.

Table 7.6 Probability of survival 2007–2009

Variable	Pooled	Established	New	No employee	Employee
Log(HH income)	–0.085	0.027	–0.870**	–0.321**	0.030
	(0.072)	*(0.072)*	*(0.401)*	*(0.130)*	*(0.081)*
Log(HHnetworth)	0.106**	0.064	0.320***	0.109	0.173***
	(0.044)	*(0.062)*	*(0.104)*	*(0.071)*	*(0.064)*
Homeowner	–0.008	0.382	0.553	0.104	0.794
	(0.442)	*(0.831)*	*(1.086)*	*(0.715)*	*(1.421)*
Age1	–0.225	14.973***	–1.167	–0.073	0.445
	(0.442)	*(0.835)*	*(0.896)*	*(0.699)*	*(0.859)*
Age2	0.513	0.994**	0.693	1.068**	0.161
	(0.337)	*(0.450)*	*(0.713)*	*(0.461)*	*(0.577)*
Educ.	–0.031	–0.108	0.157	0.076	–0.059
	(0.083)	*(0.112)*	*(0.150)*	*(0.105)*	*(0.141)*
HHpartner	0.720*	0.445	1.754**	0.583	0.401
	(0.434)	*(0.593)*	*(0.870)*	*(0.613)*	*(0.977)*
HHcredaccess	–0.235	–0.388	0.486	–0.164	0.112
	(0.595)	*(0.638)*	*(1.470)*	*(0.672)*	*(1.041)*
Riskpref	–0.210	0.093	–0.744	0.026	–0.778*
	(0.257)	*(0.354)*	*(0.634)*	*(0.324)*	*(0.422)*
Log(busincome)	0.039	0.104*	–0.009	0.085	–0.019
	(0.036)	*(0.062)*	*(0.071)*	*(0.052)*	*(0.070)*
Log(busvalue)	0.052	0.102*	–0.019	0.053	0.094
	(0.035)	*(0.058)*	*(0.061)*	*(0.046)*	*(0.089)*
Emp.	0.944**	0.960	1.215		
	(0.451)	*(0.795)*	*(0.913)*		
HHbusloan	0.314	1.296*	0.178	0.817	0.185
	(0.396)	*(0.782)*	*(0.807)*	*(0.543)*	*(0.593)*
Corp	0.306	0.730	–0.024	0.188	0.311
	(0.348)	*(0.632)*	*(0.648)*	*(0.522)*	*(0.536)*
Busage5	–0.351			0.146	–1.328**
	(0.372)			*(0.468)*	*(0.545)*
Industry dummies	Y	Y	Y***	Y	Y*
Pseudo R^2	*0.26*	*0.28*	*0.54*	*0.36*	*0.27*
N	1,018	835	183	239	777

Notes: Logistic regressions of a 2007–2009 survival dummy on 2007 household and business variables. Industry dummies are deemed significant if at least one of the industry dummies is significantly different at the indicated level from the professional services industry (excluded dummy). Survival is defined as the continued ownership of the business by the household. Failed is defined as a termination of the business itself: "went out of business" to P09502 in the 2009 SCF. Marginal effects reported. Standard errors in parentheses.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

sional services" or the "mining and construction" industry appeared more likely to survive. Higher-income households were associated with a lower probability of survival at new and no-employee small businesses. This curious result reinforces our earlier suggestion that the role of household income in understanding small business finance deserves further research.

Perhaps the variables that are never correlated with the probability of survival are as interesting as those that are correlated sometimes. Home ownership, education, access to credit, and organizational form are never significant. In addition, a household's degree of risk preference is only significant in the employee regression, where lower risk aversion is associated with an increased probability of survival. All of these results challenge either the conventional wisdom or the existing literature.

7.4.3 Creation

Our discussion of some of the characteristics of small businesses in the SCF conjectured that workers who lost their jobs during the recession may have responded in part by starting their own small business. We now pursue this hypothesis more deeply using the 2007 SCF and its 2009 panel reinterview. Using the two surveys, we can identify households that did not have a business in 2007 but started a business between these two years that survived at least until 2009. We compare their characteristics with those of households that neither started nor owned a business during the same period.

The Probability of Creation

Table 7.7 presents the results of two sets of logit regressions. The first set, contained in the "panel" column, relates the probability that a household would start a new small business between 2007 and 2009 to the variables in univariate table 7B.6. With the exception of the "Unemp. 12 mo. 2009" variable, all of the right-hand-side variables are 2007 values of a given variable. Thus, this logit is "forward looking" in that it estimates the relationship between the current values of the right-hand-side variables and *future business creation* by the household. The second set, contained in the next two columns, replicates as well as we can the cross-section regressions for new small businesses reported in the (1) columns of table 7.1A. Thus, these logits are "backward looking" in that they estimate the relationship between the current values of the right-hand-side variables and *past business creation* by the household. Put differently, both sets of regressions investigate what household characteristics are associated with the probability that a household will start a small business, but each approaches the issue from a different direction.

Looking first at the forward-looking panel regression, households were, ceteris paribus, more likely to start a small business during the heart of the crisis and the Great Recession if in 2007 they were more educated, had higher income, had access to credit, and if the head of the household had

Table 7.7 Probability of starting new small business during crisis (given no SB in 2007)

Variable	Panel	Cross section 2009	Cross section 2007
HH educ.	0.285**	0.475***	0.229***
	(0.128)	*(0.158)*	*(0.089)*
Log(HH income)	0.946**	0.219	–0.039
	(0.368)	*(0.434)*	*(0.208)*
Age	–0.006	–0.046**	–0.053***
	(0.021)	*(0.020)*	*(0.012)*
Riskpref	–0.558	–0.820**	–0.333*
	(0.348)	*(0.370)*	*(0.194)*
HH partner	0.503	2.038***	1.675***
	(0.610)	*(0.768)*	*(0.470)*
Log(networth)	–0.029	0.255**	0.268
	(0.097)	*(0.120)*	*(0.163)*
Home to networth	0.027	–1.649*	–0.812
	(0.928)	*(0.965)*	*(0.588)*
HH cred. access	1.577*		
	(0.881)		
Unemp. 12 mo. 2007	–0.361	–0.223	0.578
	(0.824)	*(0.992)*	*(0.499)*
Unemp. 12 mo. 2009	2.241***	1.679**	
	(0.627)	*(0.826)*	
Pseudo R^2	*0.10*	*0.11*	*0.14*
N	2,712	2,919	3,284

Notes: The first column reports the results of a logistic regression of a 2007–2009 SB creation dummy on 2007 household characteristics and a 2009 dummy for unemployment for the HH in the previous twelve months from the time of the 2009 interview. Sample is limited to only those HHs that did not own a SB in 2007. The second column reports the results of a logistic regression of 2009 ownership of a new SB on contemporaneous 2009 household characteristics. In this case SB = 1 if the household owns a SB two years or younger and SB = 0 if the household does not own a SB in 2009. Due to data limitations, HH Cred Access cannot be constructed in 2009. The third column reports a regression comparable to the second column using 2007 variables. In percentage probability terms, not decimal. Standard errors in parentheses.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

been unemployed at any time in the twelve months before the 2009 SCF. However, none of the other right-hand-side variables are statistically significant, including, perhaps most notably, a household's net worth.

Turning to the backward-looking cross-section regressions, our first observation is that, using the 2009 reinterview data, we cannot replicate the regressions reported in table 7.1A. This is because, as was discussed in section 7.2, the 2009 SCF did not collect all of the data collected in 2007 and 2010. However, we can come close: the first seven right-hand-side variables given in table 7.7 also appear in table 7.1A.

Of the fourteen coefficients listed for these variables in the two cross-section regressions, twelve are both the same sign and statistically significant

as in table 7.2A. Thus, the cross-section regressions in table 7.13 tell essentially the same story as the cross-section regressions of table 7.2A.

When we compare the panel and cross-section results, the consistency between the two approaches is seen to be problematic. Of the seven variables common to all three regressions, only education is the same sign (positive) and statistically significant in all three.

A household's income is positive and significant in the panel regression of table 7.7, but insignificant in both cross sections. On the one hand, this asymmetry may reflect the logical possibility that ex ante households with more income are more likely to start a small business because they have the cash flow to do so, but realized income is irrelevant for households that have started a small business in the previous two or three years. On the other hand, the asymmetry may merely reflect tax avoidance or the fact that we do not understand the interrelationships between a household's income and its willingness to start a small business. Given the difficulty we have had in this study interpreting the role of income, we think these results deserve more research in this area.

Perhaps the most interesting new results in table 7.7 are those for the unemployment history variables. Unemployment by the head of household in the twelve months before the crisis (2007) is uncorrelated with the probability that the household will start a small business in all three regressions. However, a household head's unemployment status in the twelve months prior to the 2009 SCF is, ceteris paribus, positively correlated with its probability of starting a small business in both the panel and the 2009 cross-section regressions. Thus, both sets of regressions support our conjecture that unemployment during the crisis and the Great Recession prompted some households to start a small business. The fact that unemployment prior to the crisis is irrelevant in the 2007 cross section suggests that the role of unemployment in small business creation may have been unusually strong during the crisis and the Great Recession. However, before reaching this conclusion, more research is warranted.

Our comparisons of these two sets of model results lead us to one more conclusion: both cross-section and panel data are highly valuable for analyzing these types of issues and other topics in household and small business economics. The 2009 panel SCF was collected as a result of a financial crisis and the ensuing Great Recession, but we believe the analyses presented here have more than proved that panel data should be collected on a more regular basis. Only panel data offer a reasonable hope of distinguishing changes as a result of changed circumstances from changes caused by composition effects or shifts within groups.

7.5 Small Business Finance in 2009 and 2010

This section uses the expanded small business data collected on the 2010 SCF and the smaller number of equivalent items included in the 2009 rein-

terview to investigate small business finance topics during these years. We begin by discussing small business access to credit in 2009 and 2010, and conclude by describing the types of financial institutions and broader financial services used by small businesses using data available only in 2010.

7.5.1 Access to Credit

Table 7.8 characterizes established and new (top panel) and no-employee and some employees (bottom panel) small businesses according to a broad definition of their access to credit in 2009 and 2010. Each panel contains five measures of credit availability. The first row gives the percent of small businesses that applied for credit, and the second the percent of these firms either fully or partly denied credit. The combination of these rows provides a conventional view of credit availability. The third row provides a less conventional perspective by showing the percent of small businesses that wanted credit but did not apply because they *expected to be denied*, even though they had not been denied credit in the previous five years.[36] The fourth measure is the sum of rows 1 and 3, and provides a measure of total demand, that is, the percent of small businesses that wanted credit whether or not they applied. Row 5 gives the percent of row 4 small businesses (i.e., those that wanted credit) whose credit needs were not fully met.

Starting again with established firms and first looking at rows 1 and 2, the conventional measures of credit access, while the percent of firms that applied for credit is remarkably stable across 2009 and 2010, the percent that were denied rose substantially in 2010 (from 11 percent to 20 percent). However, the other measures of credit access suggest that credit conditions did not change much for established small businesses between the two years. The percent of firms that wanted credit but did not apply because they expected to be denied actually fell slightly. Meanwhile, the percentage of small businesses wanting credit and the percentage of small businesses that had unfulfilled credit needs increased by small amounts.

Turning to the new firms, it is clear that credit supply constraints were more severe for new than for established small businesses, especially in 2009. For example, in 2009 60 percent of new firms said their credit needs were unfulfilled while 36 percent of established businesses said this was the case. This difference narrowed in 2010, but this percentage was still substantially larger at the new firms. However, the percent of new firms that were fully or partly denied fell by almost 16 percentage points between 2009 and 2010. Total demand for credit (line 4) fell from 40 percent to 25 percent of firms, and the percent of firms that said their credit needs were unfulfilled fell from 60 percent to 46 percent. On balance, these data suggest that credit access for new firms actually improved between 2009 and 2010.

36. Thus we exclude from this measure small businesses that might not be considered creditworthy because they had been denied credit in the recent past.

Table 7.8 **Access to credit in 2009 and 2010 (percent of primary SBs actively managed by a HH)**

	2009		2010	
	Established	New	Established	New
1. Applied for credit	21.9	26.8	25.3	17.7
2. Applied, but fully or partially denied	11.3	41.0	19.8	25.4
3. Wanted credit but did not apply b/c expected denial	8.3	12.8	7.9	6.9
4. Wanted credit	30.2	39.6	33.2	24.6
5. Credit needs unfulfilled	35.7	60.0	38.9	46.3

	2009			2010		
	No employee	Employee = 1,2	Employee ≥ 3	No employee	Employee = 1,2	Employee ≥ 3
1. Applied for credit	9.9	21.9	38.4	10.5	21.5	44.7
2. Applied, but fully or partially denied	27.5	17.3	20.8	19.7	25.0	19.0
3. Wanted credit but did not apply b/c expected denial	7.6	6.8	13.8	4.9	8.9	10.2
4. Wanted credit	17.5	28.7	52.2	15.4	30.4	54.9
5. Credit needs unfulfilled	59.0	36.9	41.7	45.3	47.0	34.0

A different perspective is provided in the bottom panel of table 7.8. The percent of firms applying for credit increased substantially with firm size in both years while the percent of these firms that were fully or partially denied hovered around 20–25 percent for all size classes in both years. The percent of firms that wanted credit but did not apply because they expected to be denied increased with firm size in both years. Thus, total demand for credit (line 4) increased substantially with firm size, consistent with the partial demand reflected in line 1. Importantly, the percent of small businesses that said their credit demands were unfulfilled declined substantially with firm size in both years. Thus, credit conditions were unsurprisingly tighter for the smallest firms. However, credit conditions appeared to improve, especially for the smallest firms, in 2010. The percent of no-employee firms that said their credit needs were unfulfilled fell from 59 percent in 2009 to 45 percent in 2010.

7.5.2 Reasons Given for Actual or Expected Credit Denial

Both the 2009 and 2010 SCFs asked respondents to identify the reasons for either being denied (given the small business applied for credit) or expecting to be denied credit (given the small business did not apply for credit). Since owner-managers were not prompted with possible reasons, the survey recorded a large variety of open-ended responses that were classified using a common coding framework. However, respondents were allowed to give only one, and presumably the most important, reason for actual or expected denial. We have further aggregated the reasons given into eight categories, and the percentages of small businesses identifying a reason in each of these categories are displayed in table 7.9. In both years, the reasons given range from primarily internal factors such as credit history and a poor balance sheet to external causes such as a weak economy and government regulation. Because of sample size limitations, table 7.9 does not separate firms into established, new, or by size.

Several interesting patterns emerge from table 7.9. In both years, some type of "credit history" issue is typically the dominant reason given for either the denial or expected denial of credit.[37] Credit history is closely followed by reasons associated with the type or size of the business[38] or business viability (especially in 2009) for why credit was denied. However, in both years a "poor balance sheet" is also a major reason given for the actual and the expected denial of credit. Indeed, except for a "weak economy," cited somewhat frequently for the expected denial of credit in both years, the other

37. Small business owners appear to have difficulty separating business from personal credit history and thus we combine these reasons into one generic credit history category. The evident difficulty of separating business and personal credit history supports the view that for many business owners, household and business finance are closely intertwined.

38. This included reasons such as the small business was too small, a "bad fit," or the "wrong type."

Table 7.9 **Reasons credit either was or was expected to be denied in 2010 (percent of responses)**

	2009		2010	
	Denied	Expected denied (given not denied)	Denied	Expected denied (given not denied)
Poor balance sheet	9.8	26.6	36.0	25.3
Credit history	28.1	39.4	38.9	32.1
Type/size of business	21.3	7.9	14.2	10.0
Viability of business	33.7	5.6	10.8	16.4
Informational problems	0.0	0.0	0.0	4.5
Weak economy	4.5	19.8	0.0	10.4
Government regulation	2.0	0.6	0.0	0.6
Other	0.6	0.1	0.0	0.8

reasons listed in table 7.9 are of minor importance compared with the first four reasons. For example, "government regulation" is rarely cited as a reason. On balance, the data in table 7.9 suggest that reasons primarily internal to the firm are by far the most common factors cited by small businesses for their actual or expected denial of credit over these two years.

7.5.3 Relationship Finance

As discussed in our literature review, the relationship between a small business and its financial institutions, especially its commercial bank(s), has been a core concern of small business finance research. In addition, some of the primary issues in relationship finance, such as the role of commercial banks versus other financial intermediaries and the importance of local versus nonlocal banks, are central to the methodology used by federal agencies in their antitrust analysis. The 2010 SCF allows us to examine some of the most important issues identified in this research and relevant to policy analysis.

Table 7.10 provides several perspectives on the importance of credit relationships in 2010 for established versus new small businesses (top panel) and firms with no employees versus those with some employees (bottom panel). The first four rows of each panel provide a short-run view by focusing on relationships that existed over the previous year. Rows 5 through 8 provide an intermediate-run perspective by examining relationships over either the previous five years or since the business came into existence.

The short-run importance of credit relationships with commercial banks, often viewed as having a comparative advantage in supplying credit to small businesses, is explored in rows 1 and 2 of each panel. The first row reports the percent of the "primary" small businesses owned and actively managed by a household that at some point over the previous year had a business loan, a business line of credit, or a personal loan used for business purposes with a

Table 7.10 **Credit relationships of SBs 2010 (percent of primary SBs actively managed by a HH)**

	Established	New	
1. Bank credit (ex. CC)	19.8	16.8	
2. Bank credit (in CC)	38.6	34.6	
3. Credit relation (ex CC)	23.8	24.0	
4. Credit relation (in CC)	39.8	37.2	
5. Cred. rel. or bus. appl. for cred. in prev. five yrs. (ex CC)	36.0	32.9	
6. Cred. rel. or bus. appl. for cred. in prev. five yrs. (in CC)	47.6	43.2	
7. Cred. rel. or bus./HH appl. for cred. in prev. five yrs. (ex CC)	79.9	86.2	
8. Cred. rel. or bus./HH appl. for cred. in prev. five yrs. (in CC)	83.6	88.1	
	No employee	Employee = 1,2	Employee ≥ 3
1. Bank credit (ex. CC)	8.8	16.7	35.1
2. Bank credit (in CC)	27.0	36.0	55.1
3. Credit relation (ex CC)	12.2	24.5	40.3
4. Credit relation (in CC)	27.4	38.4	57.5
5. Cred. rel. or bus. appl. for cred. in prev. five yrs. (ex CC)	18.9	36.6	57.9
6. Cred. rel. or bus. appl. for cred. in prev. five yrs. (in CC)	31.2	46.9	67.1
7. Cred. rel. or bus./HH appl. for cred in prev. five yrs. (ex CC)	78.5	80.6	87.0
8. Cred. rel. or bus./HH appl. for cred in prev. five yrs. (in CC)	82.4	83.4	89.6

Notes: 1. Reflects the presence of a personal bank loan used for business purposes, business bank loan, or business line of credit in questions regarding services used at the primary financial institution or sources of external finance for the ongoing operation or expansion of the SB in the previous year; 2. reflects 1. plus the use of a credit card; 3. reflects 1. plus the use of an "other" credit relationship for external financing of the SB; 4. reflects 3. plus credit cards; 5. reflects 3. plus any SBs that applied for credit in the lesser of the previous five years or since existence; 6. reflects 5. plus credit cards; 7. reflects 5. plus any SBs where the owner/manager HH applied for credit in the lesser of the previous five years or since existence; 8. reflects 7. plus credit cards.

commercial bank, in all cases excluding credit cards. Looking first at the top panel, almost 20 percent of the established firms and 17 percent of the new firms had such a bank credit relationship in 2010. Adding credit cards (CC in table 7.10) to the mix essentially doubles these percentages for both groups. Turning to the bottom panel, it is clear that the importance of bank credit relationships increases with firm size. Some 35 percent of the largest firms report such a relationship, but only 9 percent of the no-employee firms do. Credit cards appear more important for the smallest firms—the percentage reporting a credit relationship triples for no-employee firms but only rises by a factor of 0.6 percent at the largest small businesses.

While our results indicate that business credit cards are an important part of a small business' banking relationship, we cannot tell if they are used primarily for credit or transactions purposes. However, using the Kauffman Firm Survey, Robb and Robinson (2012) found they are very important for transaction purposes, much less so as a source of credit. Using the National Survey of Small Business Finances, Mach and Wolken (2006) found that

while a substantial percent of small businesses use credit cards, it is unclear how important they are as a source of credit. Whatever the primary role of credit cards for small businesses, our results are consistent with the conventional wisdom that commercial banks are an important source of credit for small businesses.

Rows 3 and 4 add "other" external sources of credit to the definition of a credit relationship. Such sources include other types of insured depositories (e.g., savings banks and credit unions) and nonbank financial institutions (e.g., finance companies and mortgage banks). Comparing rows 1 and 3 in both panels shows that while nonbank sources contribute to the supply of credit for small businesses, on balance nonbanks appear (consistent with the conventional wisdom) to be a modest source of funds. For example, among the established firms, the percent reporting a credit relationship rises from 20 percent to 24 percent, and among the largest firms the percent rises from 35 percent to 40 percent. Consistent with the life cycle theory of small business finance, the role of nonbank sources at new businesses is more substantial than at the established businesses. Row 4 in the bottom panel reinforces the increasing importance of credit relationships as a firm grows. Some 58 percent of the largest firms report a short-term credit relationship, but only 27 percent of the no-employee businesses do so.

Rows 5 through 8 give some insight into the importance of intermediate-run credit relationships. Because the questions behind these tabulations do not distinguish bank from nonbank sources of funds, the responses build on the bank and nonbank relationships as defined in row 3. Comparing rows 5 and 3 in both panels, it is clear that a longer-run perspective increases the importance of credit to small businesses. For example, among the established firms, the percent reporting a credit relationship jumps from 24 percent in the short run to 36 percent in the intermediate run, and among the largest firms, the percent rises from 40 percent to 58 percent. Row 6 adds credit cards and the data continue to support the importance of credit cards, but they play a smaller role in the intermediate run than in the short run. This suggests that credit cards are perhaps used more for transactions purposes than as a permanent source of credit.

Rows 7 and 8 of table 7.10 add to the numerator used in rows 5 and 6 the number of households owning and actively managing a small business in 2010 that applied for credit as a household. While such credit may not have been used for business purposes, we include this calibration because the often close and complex interdependencies between household and small business finance suggest "credit independence" is not necessarily the case. Put differently, the calculations shown in rows 7 and 8 give the broadest possible indication of the importance of credit to small businesses that the SCF can provide. These data show that credit access is important to the vast majority of small businesses and the households that own and manage them. All of the cells in rows 7 and 8 of both panels are over, and typically well over, 75 percent.

Table 7.11 **Primary financial institution of a SB in 2010 (percent of primary SBs actively managed by a HH)**

	Established	New	
Commercial bank	76.7	76.5	
Savings bank	7.5	5.2	
Credit union	5.4	8.9	
Fin./loan co.	0.8	0.5	
Brokerage	0.2	0.2	
Mortgage co.	0.3	0.0	
Other	0.0	0.0	
None	8.7	8.8	
	No employee	Employee = 1,2	Employee ≥ 3
Commercial bank	70.4	78.3	84.1
Savings bank	3.1	7.0	6.8
Credit union	11.3	7.5	2.7
Fin./loan co.	1.0	0.4	0.7
Brokerage	0.4	0.1	0.0
Mortgage co.	0.1	0.7	0.0
Other	0.0	0.0	0.0
None	13.6	6.1	4.5

7.5.4 Primary Financial Institution

Table 7.11 shows the percentages of small businesses that identified various types of financial institutions as their "primary financial institution" in 2010. As with previous similar tables, established versus new firms are shown in the top panel and no-employee versus some employees firms are given in the bottom panel. Overwhelming majorities of both established and new small businesses and businesses across all size classes identified a commercial bank as their primary financial institution. At the low end of the spectrum, 70 percent of the smallest new businesses said a commercial bank was their primary financial institution. At the top end, 84 percent of the largest new firms did so. When we add the percentages for savings banks and credit unions to the commercial bank percentages, the percentages jump to between 85 percent and 94 percent. Having said this, it is noteworthy that almost 9 percent of both established and new small businesses and almost 14 percent of the no-employee businesses did not identify any financial institution type as their primary financial institution (the last row in each panel). Around 5 percent of the other size classes responded similarly. Still, it is clear that insured depositories, and especially commercial banks, are by far the most important financial institutions for the vast majority of small businesses.

7.5.5 Key Financial Services

Table 7.12A identifies the most important financial services used by a small business at its primary financial institution (almost always a com-

Table 7.12A **Financial services used by a SB at its primary financial institution in 2010 (percent of primary SBs actively managed by a HH)**

	Established	New	
Business checking	83.4	76.2	
Business savings	24.4	26.0	
Business line of credit	16.0	13.9	
Business mortgage	5.7	1.8	
Business credit card	19.2	16.3	
Business payroll	14.5	22.3	
None	3.7	6.9	
	No employee	Employee = 1,2	Employee ≥ 3
Business checking	73.2	84.3	90.9
Business savings	17.9	22.5	37.6
Business line of credit	7.1	12.3	31.7
Business mortgage	1.8	5.9	7.7
Business credit card	12.6	16.4	29.7
Business payroll	14.6	17.2	18.3
None	7.2	3.2	1.9

mercial bank), and table 7.12B examines whether small businesses tend to bundle, or cluster, their use of financial services at these institutions. Looking at table 7.12A, it is clear that the vast majority (over 75 percent) of both established and new firms use a business checking account at their primary institution. In addition, the incidence of use increases with business size, with 73 percent of even the smallest firms saying they use a business checking account. Indeed, use of each service increases with firm size. Business savings accounts are cited much less often than checking accounts, but still relatively frequently by all of the six groupings of small businesses. On balance, it is clear that the supply of deposit services is a central function of financial intermediaries for small businesses.

The data in table 7.12A reinforce the importance of credit services to small businesses. For both established and new firms, business lines of credit and (as in table 7.10) business credit cards appear to be the most important credit services. This impression is reinforced when the data are arrayed by firm size. For example, 32 percent of the largest firms and 7 percent of the smallest firms report having a business line of credit. Business credit cards are used by 30 percent of the largest small businesses and 13 percent of the smallest firms. In contrast, business mortgages are used by very few new and no-employee firms, although their use increases to almost 6 percent by established firms and to almost 8 percent by the largest small businesses.[39]

In addition to deposit and credit services, the data in table 7.12A indicate that business payroll services, a type of payments service, are important

39. A business mortgage is any mortgage owed by the small business.

Table 7.12B Number of financial services used by a SB at its primary financial institution in 2010 (given at least 1)

	Established	New	
1 service	41.7	34.4	
2 services	35.3	35.3	
> 2 services	23.0	30.4	
At least 1 credit and 1 deposit service	33.7	38.5	
	No employee	Employee = 1,2	Employee ≥ 3
1 service	47.3	40.0	37.9
2 services	33.1	35.9	33.1
>2 services	19.1	24.1	29.0
At least 1 credit and 1 deposit service	30.4	59.8	41.0

to some small businesses, and more important to new than to established firms. In addition, 15 percent of the smallest firms report using business payroll services, a proportion that rises only to 18 percent at the largest small businesses.

The data in table 7.12B are somewhat ambiguous regarding whether small businesses tend to cluster their use of financial services at their primary financial institution. In this sense, these data are not a strong reinforcement of the importance of relationship finance. For example, only 23 percent of established firms and 30 percent of new businesses say they use more than two services at their primary institution, while 42 percent of established and 34 percent of new firms say they use only one service. When firms are arrayed by size, the data remain ambiguous. Thus, the extent of clustering of financial services and its importance for relationship finance and antitrust analysis warrants future research.[40]

7.5.6 Local Banking Offices

Table 7.13 addresses the final small business finance issue to which this chapter contributes: the importance of local banking offices to small businesses. The table gives the mean, median, and 25th and 90th percentiles of the distribution of miles between a small business and the nearest office of its primary financial institution in 2010, once again separating the firms into six groups.[41] It is clear that, according to this metric, local banking offices remain highly important to both established and new small businesses and

40. Bank antitrust analysis at the US Department of Justice and the banking agencies assumes small businesses consume a cluster of services at their geographically local depository institution.

41. We cannot say if the primary financial institution is a small, medium, or large firm. However, as already discussed, we can say the primary financial institution is almost always a commercial bank.

Table 7.13 Distance (miles) to primary financial institution from SB in 2010

	2010			
	Mean	Median	P25	P90
Established	5.04	2	0	12
New	6.13	3	0	15
0 employees	5.06	2	0	12
1,2 employees	5.08	2	0	11
≥ 3 employees	5.91	2	0	15

Note: Differences not significant at $p < 0.10$.

across all size classes of firms. For example, the median distance across all the groupings of small businesses is never more than three miles, and the mean distance ranges from a low of five miles (for established and the two smallest size classes) to a maximum of six miles (for new and the largest small businesses). Even the 90th percentile distances only range from twelve to fifteen miles.

7.6 Summary

This section summarizes our most important findings within the context of a unified narrative of the experiences of small businesses owned and actively managed by households over the financial crisis and the Great Recession. It also suggests key areas needing further research and recommends additions and revisions to existing data.

7.6.1 The SCFs are a Rich Source of Small Business Data

The SCFs are rich and underused sources of information on small businesses and the households that own and actively manage them. Indeed, SCF data are unique in several important ways, including:

1. Having three surveys conducted between 2007 and 2010, one of which is a panel;
2. containing extensive data on the close association between small business and household finance;
3. including households that do not own a small business; and
4. collecting a substantial amount of information on small businesses' use of financial institutions and services.[42]

While it is difficult to benchmark precisely the SCF data with US Census data on small businesses, it is clear that the small businesses in the SCF represent a broad cross section of firms with regard to size, age, industrial clas-

42. Of course, the 2013 and subsequent SCFs will also have many of these advantages.

sification, ownership structure, and method of acquisition by the household. The SCF and census data appear to coincide well for small businesses with at least one employee, but diverge for firms with no employees.

7.6.2 The Financial Crisis and Great Recession Hurt Small Businesses

Our examination of the SCF data over the period just before, during, and just after the financial crisis and the ensuing Great Recession revealed a complex picture of small businesses and their owner-managers. The financial crisis and the Great Recession severely affected the vast majority of both established and new small business. For example, between 2007 and 2010, median real revenues and profits fell by 33 percent and 51 percent, respectively.

The 2009 and 2010 SCFs indicate that while during the crisis and the Great Recession credit supply conditions were a concern for both established and new small businesses, constraints were much more severe at new firms. For example, in 2009 60 percent of new firms said their credit needs were unfulfilled while 36 percent of established firms said this was the case. In addition, credit conditions were tighter for the smallest firms. Credit supply improved by 2010 for both established and new firms and for both small businesses with no employees and those with at least one employee.

Households gave a variety of reasons for their small business either being denied credit or expecting it to be denied credit. In general, reasons primarily internal to the firm were the most common factors cited for their actual or expected denial of credit. For example, in both 2009 and 2010, some type of credit history issue was typically the dominant reason given for either the denial or expected denial of credit. Reasons associated with the type or size of the business or its poor balance sheet were also cited frequently. Mostly external factors, such as a weak economy or government regulation, were given much less often.

7.6.3 Small Business and Household Finance are Intimately Connected

The interdependencies and other interactions between the finances of small businesses and their owner-manager households are numerous and complex and continue to be an important area for research. The vast majority of small businesses in the SCFs, typically over 75 percent, were started by the household, and relatively few were inherited. In addition, substantial percentages of households made or guaranteed a loan to their small business. These percentages were stable across 2007 and 2010 and were more important for new small businesses than for established firms. On average, about 20 percent of new small businesses and 13 percent of established businesses had such a loan or guarantee. Established firms had a higher probability of survival over 2007–2009 if they had such a loan or guarantee. In addition, households that had access to credit were more likely to start a small business over this period.

Multivariate statistical tests show the importance of distinguishing

between established and new firms when trying to identify the characteristics of households that have a small business. For example, in both 2007 and 2010, a household was more likely to have an established small business if it had (a) higher net worth, (b) less of its net worth in home equity, (c) a partner, and (d) access to credit.

In contrast, while factors (a), (c), and (d) were also significantly correlated in both years with the probability a household had a new firm, in both years a household was also more likely to have a new small business if it were (a) younger, (b) more educated, and (c) less risk averse.

While all of these results are interesting, many reinforce the existing literature (e.g., the importance of household net worth and access to credit, and personal characteristics such as age, education, and risk attitude) and some deserve further investigation (e.g., the consistently negative or zero correlation of household income with the probability of having a small business and the positive correlation of being partnered), the home equity correlations are especially intriguing and are uniquely well suited to being examined using the SCF. Our research is consistent with the simultaneous existence of two interpretations of the data. First, conditional on having housing assets, we find that tapping into home equity via any type of mortgage is positively associated with having a small business. This result is consistent with the conventional wisdom that many small business owners use their home as collateral for loans that support their business. Second, conditional on the amount of the mortgages supported by a home, we find that holding a larger proportion of total net worth in housing is a negative signal of small business ownership. This suggests the new conclusion that nonhousing forms of net worth may, at the margin, be more valuable to the small business owner, perhaps because they are more liquid.

7.6.4 Laid-Off Workers Responded in Part by Starting Small Businesses

Our results indicate that workers who lost their jobs during the Great Recession often started their own small business. Multivariate tests using the 2007–2009 panel SCFs show that households were more likely to start a small business during the heart of the crisis and the Great Recession if in 2007 they had (a) higher income, (b) access to credit, (c) more education, and (d) the head of household had been unemployed sometime in the year before the 2009 reinterview. In addition, the relatively high rate of job loss by certain segments of white-collar workers during the Great Recession is consistent with SCF data that indicate a trend between 2007 and 2010 toward the creation of small businesses in the professional services industrial classification.

In contrast to our analysis of new small businesses formation using backward-looking cross-section data, the forward-looking estimations using the 2009 panel reinterview of 2007 SCF respondents find no correlation of household small business creation with the household's net worth, ratio of home equity to net worth, risk preferences, partnership status,

and age. However, both panel and cross-section results identify a positive correlation for education and unemployment status in the twelve months before 2009. While the reasons for the asymmetries between the panel and the cross-section results are not always clear, we believe our analyses of both strongly indicate that both types of information are highly valuable for researching the topics addressed in this chapter and many other issues in household and small business economics.

7.6.5 Small Business Survival Factors are Poorly Understood

Once again exploiting data from the 2007 SCF and its 2009 panel reinterview, we examined what variables 2007 values correlate with the probability that the business would survive from 2007 through the reinterview. While a variety of variables are sometimes correlated with the probability of survival, our primary conclusion is that the factors correlated with the probability of small business survival are at best poorly understood, at least for the recent crisis and Great Recession. As has been found in previous studies, higher household net worth was generally (but not in all models) correlated with increased chances of survival. This is an area in need of additional research.

7.6.6 Relationship Finance Remains Important for Small Businesses

This study reinforces the importance of relationship finance to both established and new small businesses. Indeed, access to credit is consistently significant in our multivariate tests. The SCF data for 2010 indicate that these relationships are heavily focused on commercial banks. Small businesses use deposit, credit, and sometimes payments services at their primary financial institution, institutions that are almost always a commercial bank. Business checking and savings accounts are the most important deposit services.

With respect to credit services, our research indicates that business lines of credit, business loans, and possibly bank credit cards are the most important credit services. In contrast, business mortgages are used by a small share of established small businesses and by even smaller proportions of new businesses. While access to credit is important even for some of the smallest (no-employee) firms, the incidence of credit relationships increases substantially with business size. In addition, credit relationships tend to increase in importance over time for both established and new firms and for both smaller and larger businesses.

Local banking offices remain highly important to both established and new small businesses and to small businesses of all sizes. For example, the median distance between a small business and the nearest office of its primary financial institution in 2010 across all of the groupings of small businesses used in this chapter is never more than three miles, and other moments of this distribution are consistent with our conclusion. This is consistent with the use of local markets for small business financial services in bank antitrust analysis. However, our results suggest that continuing to assume

that small businesses cluster their use of financial services at their primary financial institution is more problematic.

7.6.7 Recommendations for Future Research and Improved Data

Throughout this chapter, we have identified topics that we believe are especially in need of further research. Key topics include deeper understanding of the

1. interdependencies and interconnections between household and small business finance, including the roles of home equity and household income;
2. factors that affect the creation of small businesses, including the roles of employment history and education;
3. factors that affect small business survival; and
4. factors that affect small business credit availability and their choices of financial institutions and services.

In addition, we have not investigated a number of topics that could be studied with the SCF, such as the roles of gender and race in small business finance, creation, and survival.

All of these topics, and others, require high-quality data. With respect to the future conduct of the SCF, we make three recommendations.

First, we recommend conducting future panel reinterviews. This research was aided greatly by the availability of the 2009 panel reinterview of the 2007 SCF. This was the first panel reinterview of SCF respondents since the major redesign of the survey in 1989, and was done primarily in response to the financial crisis. The costs of such efforts could be made manageable by not conducting the reinterview with the same frequency as the triannual cross-section SCF, but often enough to provide data over the full economic cycle, or by alternating cross-section and panel reinterviews.

Second, existing questions could be clarified, and perhaps augmented, to focus on how households get financing for creating their small business, how this financing evolves over time, and what types of collateral are used. As a corollary, it would be highly desirable to get a clearer picture of the criteria small businesses use to choose their primary financial institution and when in the life cycle of their business they make and may revise that decision. We understand the difficulties of adding more questions to an already long survey, but we believe significant benefits could be achieved from the combination of a small number of additional questions, some culling of less useful inquiries, and some clarification of existing questions.

Last, we recommend expansion of the sample size to as large a sample as budget realities will allow. The SCF is a unique data source for many topics of intense interest to policymakers, researchers, industry participants, and the general public that go far beyond small business finance. However, analysis of many of these topics is often limited by the small number of observations that occur as the researcher drills down in the data to gain a deeper understanding of the subject under investigation.

Appendix A

Variable Definitions

Table 7A.1 Variable definitions

HH income	Total household (HH) income
Non bus. HH income	Total HH income less income from small business (SB) and rental income
HH age	Age in years
HH educ.	Years of education
Non bus. net worth	HH net worth less value of SB
Net worth	Total HH net worth (including SB)
Homeowner	Dummy = 1 if HH owns a home
HH partnered	Dummy = 1 if HH is married or has a partner
HH cred. access	Dummy = 1 if HH has a loan from an insured depository institution (other than credit cards [CC] or educational loans)
Home to net worth	Fraction of net worth held in home equity (bounded to [0,1])
Risk prefs	Subjective self-assessment of riskiness 1–4 (larger is more risk averse)
No. employees	Number of employees at SB, including self
Bus. income	Profits of SB
Bus. sales	Sales of SB
Bus. value	Total value of SB (irrespective of HH's share)
Bus. age	Calendar year age of business
HH bus. loan	Dummy = 1 if the HH made loan to SB
Amt. (% of sales)	Given HHBusLoan = 1, the fraction of loan to bus. sales
Age1	Dummy = 1 if HH age < 35
Age2	Dummy = 1 if 35 < = HH age < 62
Emp.	Dummy = 1 if no. employees > = 3
Corp.	Dummy = 1 if SB is a limited liability corporation or S corp.
BusAge5	Dummy = 1 if business < = 5 years old
Unemp. 12 mo. 2007	Dummy = 1 if head of HH was unemployed at any time in 12 months before 2007 SCF
Unemp. 12 mo. 2009	Dummy = 1 if head of HH was unemployed at any time in 12 months before 2009 SCF
SB	Dummy = 1 if HH owns and actively manages a SB and their primary business is a nonfarm with less than 500 employees. Dummy = 0 if HH is a nonfarm HH that does not have a SB with greater than 500 employees
NEW	SB less than or equal to 3 calendar years old
ESTABLISHED	SB greater than 3 calendar years old
Survival	Dummy = 1 if SB = 0 in 2007 and the SB went out of business, = 1 if business survived until 2009 or was sold
Started SB	Dummy = 1 if SB = 0 in 2007 and SB = 1 in 2009
House	Value of all residential houses owned by HH
Mortgage	Value of all HH debt collateralized by residential housing

Note: All dollar values expressed in thousands of 2007 dollars.

Appendix B

Univariate Analysis

This appendix provides univariate results that help to form the basis for the multivariate logit regressions discussed in the text.

Households That Own and Actively Manage a Small Business

Tables 7B.1A and 7B.1B compare three sets of households with each other, between 2007 and 2010, across four dimensions. The top panel of each table provides key characteristics of households that do not own and actively manage a small business (non-SB owners) in each of the years. The middle panel of 7B.1A shows the same variables for households that own and actively manage an established small business (est. SB), and the middle panel of table 7B.1B displays the same variables for households with a small business that has no employees (no emp. SB). Similarly, the bottom panel of table 7B.1A provides comparable data for households that own and actively manage a new small business (new SB), and the bottom panel of table 7B1.B displays data for households with a small business that has at least one employee (emp. SB).[43] The number of observations is provided in each cell. Because many distributions in the SCF (and other household and small business surveys) are highly skewed, each continuous variable's mean plus its median (P50), 25th (P25), and 90th (P90) percentile values are shown.[44] For small business owners, two measures of income and net worth are provided: one includes business income or the value of the business, as appropriate, and the other does not.[45] In addition, for all three groups of households, the ratio of home equity to total net worth (including small business equity where applicable) is given. To our knowledge, this is the first study of small business owners to separate home equity from other components of net worth, a potentially important analytical advantage and a major benefit of using the SCF. Separate compilations are provided for established, new, no-employee and employee small businesses, but the concepts are not combined in order to maintain sufficient sample size. Last, when comparing variables across the two years, it is important to remember that the samples are two separate cross sections of households, not a panel of the same households.

43. To preserve consistency with the groups of households that own a small business, the non-SB owners grouping of households also excludes farmers as defined in the main text.

44. See, for example, Cole and Sokolyk (2013), Bricker et al. (2012), and Mach and Wolken (2006).

45. In this and all tables here and in the text dollar values are given in 2007 dollars. Our inflation deflator is the annual average of the all items Consumer Price Index Research Series Using Current Methods for urban households (CPI-U-RS), computed by the US Bureau of Labor Statistics.

Table 7B.1A **Characteristics of HHs that own and actively manage small businesses and those that do not**

	2007				2010			
	Mean	P50	P25	P90	Mean	P50	P25	P90
Non SB owners		*N* = 3,135				*N* = 5,031		
HH income	65[a,b,c]	40	21	120	60[a,b]	38	21	114
HH age	50.2[a,b]	49	36	77	50.4[a,b]	49	36	76
HH educ.	13.1[a,b,c]	13	12	17	13.3[a,b]	13	12	17
HH net worth	345[a,b,c]	95	10	693	289[a,b]	57	6	606
Homeowner	0.61[a,b]				0.60[a,b]			
Home to net worth	0.46[a,b,c]	0.43	0	1	0.42[a,b]	0.33	0	1
HH partnered	0.55[a,b]				0.54[a,b]			
HH cred. access	0.66[a,b,c]				0.45[a,b]			
Risk prefs	3.2[a,b,c]	3	3	4	3.3[a,b]	4	3	4
Est. SB		*N* = 938				*N* = 1,306		
HH income	214[c]	91	58	394	168	75	44	356
Non bus. HH income	121[c]	51	13	230	101	48	13	225
HH age	51.5[c]	51	43	66	54.0	55.0	46.0	70.0
HH educ.	14.3	14	12	17	14.4	15.0	12.0	17.0
Non bus. net worth	1,433[c]	652	225	5,723	1,249	529	149	4,225
Net worth	2,405[c,(z)]	807	284	7,645	1,960	615	190	5,456
Homeowner	0.89				0.88			
Home to net worth	0.29[c]	0.23	0.10	0.71	0.26	0.19	0.05	0.66
HH partnered	0.78				0.81			
HH cred. access	0.64[c]				0.73			
Risk prefs	2.7[c]	3	2	4	2.8	3	2	4
New SB		*N* = 199				*N* = 230		
HH income	115[b]	73	43	186	107[b,(z)]	64	39	193
Non bus. HH income	91[b]	54	30	162	93	51	25	180
HH age	42.6[b]	41	34	60	42.8[b]	43	32	60
HH educ.	14.7[b]	16	13	17	14.6	16	12	17
Non bus. net worth	562[b,c]	243	107	1,394	631[b]	158	47	1,992
Net worth	802[b]	289	123	2,074	855[b]	215	64	2,362
Homeowner	0.79[b,c]				0.70[b]			
Home to net worth	0.35[b]	0.25	0.07	1	0.29	0.15	0	1
HH partnered	0.83				0.77			
HH cred. access	0.70[b,c]				0.63			
Risk prefs	2.7	3	2	4	2.8[b]	3	2	4

Note: Comparison for income and net worth measures are made in both logs and levels. Log statistical comparisons are made to mitigate the effect of outliers; (z) indicates significant for levels only and (y) indicates significant in logs only. All dollar values expressed in thousands.

[a]Mean significantly different from new SBs at 5 percent or greater.

[b]Mean significantly different from established SBs at 5 percent or greater.

[c]Mean significantly different from 2010 at 5 percent or greater.

Table 7B.1B **Characteristics of HHs that own and actively manage small businesses and those that do not**

	2007				2010			
	Mean	P50	P25	P90	Mean	P50	P25	P90
Non SB owners		*N* = 3,135				*N* = 5,031		
HH income	65[a,b,c]	40	21	120	60[a,b]	38	21	114
HH age	50.2[a,b]	49	36	77	50.4[a,b]	49	36	76
HH educ.	13.1[a,b,c]	13	12	17	13.3[a,b]	13	12	17
HH net worth	345[a,b,c]	95	10	693	289[a,b]	57	6	606
Homeowner	0.61[a,b]				0.60[a,b]			
Home to net worth	0.46[a,b,c]	0.43	0	1	0.42[a,b]	0.33	0	1
HH partnered	0.55[a,b]				0.54[a,b]			
HH cred access	0.66[a,b,c]				0.45[a,b]			
Risk prefs	3.2[a,b,c]	3	3	4	3.3[a,b]	4	3	4
No emp. SB		*N* = 267				*N* = 358		
HH income	114	74	42	172	103	63	34	201
Non bus. HH income	82	47	18	135	73	42	12	160
HH age	48.2[c]	48	38	63	50.3	51	41	67
HH educ.	14.5	15	13	17	14.2	14	12	17
Non bus. net worth	709[c]	205	64	1,390	642	153	34	1,709
Net worth	910[c,(z)]	263	88	1,926	786	217	70	1,971
Homeowner	0.81				0.80			
Home to net worth	0.39[c]	0.32	0.13	1	0.32	0.22	0.01	0.86
HH partnered	0.74				0.73			
HH cred. access	0.57[c]				0.70			
Risk prefs	2.8[c]	3	2	4	3.0	3	2	4
Emp. SB		*N* = 870				*N* = 948		
HH income	230[b,c]	100	60	450	186[b]	82	48	395
Non bus. HH income	132[b]	56	19	254	117[b]	54	20	263
HH age	49.1[b,c]	49	39	65	51.8[b]	52	43	69
HH educ.	14.3	15	12	17	14.6[b]	16	12	17
Non bus. net worth	1,474[b]	379	128	3,506	1,404[b]	385	87	3,437
Net worth	2,592[b,c]	699	237	6,402	2,298[b]	592	154	5,316
Homeowner	0.89[b]				0.86[b]			
Home to net worth	0.35[b]	0.20	0.09	0.77	0.26[b]	0.18	0.06	0.68
HH partnered	0.83[b]				0.84[b]			
HH cred. access	0.72[b]				0.70			
Risk prefs	2.8[c]	3	2	4	2.9[b]	3	2	4

Note: Comparison for income and net worth measures are made in both logs and levels. Log statistical comparisons are made to mitigate the effect of outliers; (z) indicates significant for levels only and (y) indicates significant in logs only. All dollar values expressed in thousands.

[a]Mean significantly different from emp. SBs at 5 percent or greater.

[b]Mean significantly different from no emp. SBs at 5 percent or greater.

[c]Mean significantly different from 2010 at 5 percent or greater.

Households with an Established or New Small Business

The univariate comparisons in table 7B.1A suggest several broad but preliminary conclusions. First, households with established or new small businesses differ in several statistically and economically significant ways from households that do not own a small business. Indeed, the means of all of the variables listed in the top panel are significantly different at the households with established or new small businesses from the means at the non-SB owners. On average, households with either type of small business have statistically and substantially higher incomes, over a year more education, much higher net worth by either measure shown, a higher percentage of home ownership, a lower percentage of their net worth in housing if they own a home, are more likely to have a spouse or other personal partner, and lower levels of professed risk aversion. All of these differences in means exist in both 2007 and 2010. Moreover, where relevant, virtually all of these impressions hold up to comparisons of medians and the two other percentiles shown. The average age of non-SB owners in both years is statistically (but only slightly) less than that of the average owner of an established SB, but statistically higher by a little over seven years than the mean age of the owner of a new small business. However, these age results do not necessarily hold up across the three percentiles of the distribution. Last, while prior to the crisis (2007) the percent of households with access to credit is about the same across all three groups, postcrisis (2010) the percent is significantly smaller at the non-SB households.

Second, while the means of most of the variables differ in expected and significantly different ways between households with established small businesses and those with new small businesses, there are some interesting exceptions. In 2007, households owning an established business had statistically higher mean incomes than households with a new small business, and this result holds in 2010 if business income is included. However, when business income is excluded, in 2010 both sets of households have comparable average incomes. Moreover, P25 and median values of this latter measure of income are lower at established firms in both years. Clearly, households with established firms rely relatively more on income from their firms than do households owning a new business. In addition, the mean net worth of households with established firms is significantly larger than that of households with a new firm in both years across both definitions of net worth, and this result holds across the other moments of the distribution shown in table 7B.1A. The heads of households with established small businesses tended to be older, to have slightly less education, and to be more likely to own a home than the heads of households with new small businesses, but there is no difference in their probability of being partnered or their mean risk preference. When a home was owned, in 2007 the percent of total net worth held in the home was higher at households with a new small business,

but this was not the case in 2010. Moreover, in both years a similar pattern is observed in the medians of this ratio. Last, before the crisis, households with an established small business were significantly less likely to have access to credit than were households with a new small business, but this (statistical) difference disappears in 2010.

The third broad impression provided by the data in table 7B.1A is that the financial crisis and the ensuing recession significantly and adversely affected both households that did not have a small business and those with an established firm. Looking first at the non-SB owners, in 2010 such households had, on average, significantly lower real income (down 8 percent) and less net worth (down 16 percent), and tended to have slightly more education and to be a little more risk averse than the comparable cross section in 2007. In addition, consistent with a steep decline in home values, the ratio of home equity to total net worth fell, as did the percent of households with access to credit.

Turning to households owning an established firm and using the income and net worth measures that include small businesses, we find that households with established small business also lost income (down 21 percent) and net worth (down 24 percent). Means of household income and net worth, excluding small business income and equity, fell 17 percent and 19 percent, respectively. The group of such households was slightly more risk averse in 2010 than in 2007, their average age increased and their mean years of education remained unchanged. Neither households with an established nor those with a new business experienced significant changes in either average home ownership or partnership rates. However, for both groups, the average ratio of home equity to total net worth (including equity in the small business) fell, and the percent of households reporting access to credit increased.

The fourth general impression from table 7B.1A is that, in contrast to the non-SB owners and the established small business household groups, many of the mean characteristics of households that successfully started a new small business in the three years before either 2007 or 2010 were little changed between those years. This result is perhaps surprising, given the differences found for the other two household groups and the obvious differences between the three years prior to 2007 versus 2010. Statistical tests of the difference in means indicate that only the level of real net worth (excluding the value of the small business) and the percentages of households that were homeowners or used bank credit changed significantly. Interestingly, the non-small business components of net worth increased by 7 percent. Less surprisingly, the percent of households owning a home declined from 79 percent in 2007 to 70 percent in 2010 and the percent reporting access to credit also declined significantly. These patterns are consistent with the view that while the financial endowment needed to start a small business rose during the crisis period, perhaps because of increased credit constraints, the ability of housing net worth to provide that endowment declined, consistent

with a precipitous decline in housing prices and the overall decline in home ownership.

Comparisons of the intertemporal patterns of the medians and other percentiles of the distributions of households that started a new small business in the three years before either 2007 or 2010 suggest a more complex and perhaps less surprising story than that provided by the means. While the head of household's age and years of education remain essentially constant within the group across the two surveys, median and P25 values of both measures of household income and both measures of net worth all declined substantially from 2007 to 2010, and only increased at the 90th percentile. Thus, as was the case for the "non-SB owners" and the owners of established small businesses, it is clear that the owners of new small businesses in the lower portions of these distributions were typically much worse off in 2010 than the comparable group in 2007.

Households Whose Small Business had No or Some Employees

As was true in table 7B.1A, the univariate comparisons of table 7B.1B suggest several broad but preliminary conclusions that in most cases need to be subjected to multivariate tests. First, both no-employee and households whose small business has one or more employees differ in several statistically and economically significant ways from households that do not own a small business. Indeed, once again the means of all of the variables listed in the top panel are significantly different at the households with either type of small business than the means at the non-SB owners. On average and in both 2007 and 2010, households with either type of small business had higher incomes, more education, and greater net worth were more likely to own a home, had a lower ratio of home equity to total net worth if they owned a home, were more likely to be partnered, and had lower levels of professed risk aversion. Where relevant, virtually all of these impressions hold up to comparisons of medians and the two other percentiles shown. In 2007, households with a small business were slightly younger than households that did not own a small business, but this was not necessarily the case in 2010. In addition, in 2007 credit access did not present a uniform pattern across the household groups, but in 2010 households with a small business consistently were more likely to have access to credit.

Second, in both years the households whose small business had no employees generally differed significantly from households whose small business had at least one employee. On average in both years, households whose small business had at least one employee had higher incomes using both measures of income, were older, had higher net worth using both measures of net worth, were more likely to own a home, had a lower ratio of home equity to total net worth if they owned a home, and were more likely to be partnered. Interestingly, in 2007 the mean education level of the two groups was the same and households whose small business had at least one

employee were much more likely to have credit access. However, by 2010 households with at least one employee had (slightly) more education but were no more likely to have access to credit. In both years there is little or no difference in reported risk preference between the two groups. All of these impressions are supported by the other moments of the distributions shown.

Comparisons between 2007 and 2010 of the two groups of households that owned and actively managed a small business indicate that the financial crisis and recession severely affected both groups, especially households at or below the median level of a given variable. Thus, mean real total income of households whose small business had at least one employee fell by 19 percent, and their real total net worth declined by 11 percent. Households whose small business had no employees showed no statistically significant decline in either average income measure, but both mean measures of real net worth fell significantly and substantially. The average age of both groups of households increased, and both groups reported slightly higher levels of risk aversion. Reported access to credit increased for households whose small business had no employees, but remained statistically unchanged for households whose business had at least one employee.

Small Business Survival and Failure

Table 7B.2 compares key characteristics in 2007 of small business-owning households whose firms would survive from 2007 to 2009 (top panel) with those of households whose firms would fail (bottom panel) over that period. The data in this and the next section in this appendix use the panel of households provided by the 2007 and 2009 SCFs.

In 2007, households with small businesses that would survive had higher levels of real income (both including and excluding income from the small business) and real net worth (excluding the value of the small business) than households whose firms would fail. Median household income (including income from the small business) was 43 percent greater and median nonbusiness net worth 209 percent larger at the households whose firms survived. Households whose firms would survive were 18 percentage points more likely to own a home, but the mean value of their ratio of home equity to total net worth was not significantly different from that of households whose small business failed. Also, there were no statistically significant differences in the means between the two sets of households with respect to the heads of household's age, years of education, partnership status, access to credit, and degree of risk preference.

Turning to the small businesses themselves, table 7B.3 compares key characteristics in 2007 of small businesses that would survive from 2007 to 2009 (top panel) with those of small businesses that would fail (bottom panel). Mean values of all seven characteristics shown differ significantly across the two groups, and these differences hold up across the three percentile points

Table 7B.2 **Characteristics of HHs that actively manage a SB (by survival status 2007–2009)**

	2007			
	Mean	Median	P25	P90
Survived 07–09, *N* = 923				
HH income	205	90	55	383
Non bus. income	121	54	17	227
HH age	49.3	49	40	65
HH educ.	14.5	16	12	17
Non bus. net worth	2,237	557	198	5,514
Home to net worth	0.31	0.23	0.10	0.92
Partnered	0.82			
HH credit access	0.89			
Homeowner	0.88			
Risk prefs	2.78	3	2	4
Failed 07–09, *N* = 65				
HH income	86[a]	63	48	147
Non bus. income	70[a]	50	30	135
HH age	45.9	42	35	65
HH educ.	14.6	15	12	17
Non bus. net worth	515[a]	180	34	921
Home to net worth	0.40	0.32	0.10	1
Partnered	0.74			
HH credit access	0.89			
Homeowner	0.70[a]			
Risk prefs	2.92	3	2	4

[a]Mean significantly different from open SBs at 5 percent or greater.

given. More specifically, in 2007 all four measures of firm size—number of employees, business income, total sales, and business value—are substantially larger at the businesses that would survive the next two years. In addition, the firms that would survive were older—on average by about five years—than the firms that would fail. Small businesses that would survive were slightly more likely to have a loan or financial guarantee from their owner-manager household than were the small businesses that would fail. However, consistent with the data in tables 7.2A and 7.2B, well under 25 percent of firms in either group had such a financial relationship with their owner-manager household. When such a loan or guarantee did exist, the combination of the two was a much smaller percentage of sales in 2007 (on average about one-fifth as great) at the firms that would survive.

Table 7B.4 separates the surviving and failed firms as of 2007 according to the same industry classifications used in table 7.3. While the percentages clearly differ between the two groups, only the "wholesale/retail" and the "lower-tech services" classifications appear noteworthy. Both of these

Table 7B.3 **Characteristics of 2007 primary SBs actively managed by HHs (by survival status 2007–2009)**

	2007			
	Mean	Median	P25	P90
Survived 07–09				
No. employees	8.47	1	0	14
Bus. income	501	30	5	500
Bus. sales	1,912	92	23	1,800
Bus. value	2,717	102	14	4,000
Business age	12.1	9	3	28
HH bus. loan	0.17			
Amt. (% of sales, given loan)	1.19	0.21	0.033	1.88
Failed 07–09				
No. employees	1.74[a]	0	0	2
Bus. income	28[a]	2	0	68
Bus. sales	79[a]	9	1	200
Bus. value	120[a]	10	0.2	331
Business age	7.5[a]	4	1	20
HH bus. loan	0.15[a]			
Amt. (% of sales, given loan)	5.52[a]	1.32	0.6	8.33

[a]Mean significantly different from HHs with open SBs at 95 percent or greater.

Table 7B.4 **Surviving versus failed 2007 SBs by industry (percent of primary SBs actively managed by a HH)**

	2007
Surviving SB	
Agricultural	6.4
Mining	18.6
Manufacturing	7.1
Wholesale/retail	14.2
Lower-tech service	12.7
Prof. services	41.0
Failing SB	
Agricultural	4.0
Mining	14.9
Manufacturing	3.2
Wholesale/retail	20.0
Lower-tech service	21.7
Prof. services	36.1

Table 7B.5 Surviving versus failed 2007 SBs by ownership structure

	2007
Survived 07–09	
Sole proprietor	43.4
Subchapter S	17.9
LLC/LLP	16.7
Partnership	12.5
Other	9.3
Failed 07–09	
Sole proprietor	63.2
Subchapter S	4.6
LLC/LLP	21.1
Partnership	6.8
Other	4.2

categories are substantially smaller among the businesses that would survive. Indeed, only about 27 percent of the firms that would survive belong to one of these categories, as compared with almost 42 percent of the businesses that would fail.

Small businesses that would survive or fail are classified by their 2007 ownership structure in table 7B.5. The two structures that clearly stand out as differing between the two groups are "sole proprietor" and "Subchapter S." Forty-three percent of the firms that would survive over 2007–2009 were sole proprietorships in 2007, but 63 percent of those that would fail had adopted this ownership form. In contrast, almost 18 percent of the firms that would survive were subchapter S corporations in 2007, compared with not quite 5 percent of the firms that would fail.

As was true in the first section of this appendix, the univariate comparisons in this section suggest several broad but preliminary conclusions. In 2007, households with small businesses that would survive the next two years generally had higher levels of income and nonbusiness net worth and were more likely to own a home than were households whose firms would fail. Firms that would survive were generally larger across several measures of size and tended to be older. Firms that survived were slightly more likely to have a loan or financial guarantee from their owner-manager household. When such a loan or guarantee existed, it was usually a much smaller percentage of sales at firms that would survive. While industry classifications generally did not appear to differ much between the two classes of firms, notable exceptions are the "wholesale/retail" and "lower-tech services" groups, both of which had substantially smaller percentages of firms that survived. Last, sole proprietorships were greatly underrepresented and subchapter S corporations were substantially overrepresented in the group of small businesses that would survive.

Small Business Creation

Table 7B.6 compares selected characteristics of households that started a small business in the 2007–09 period (top panel) with those who did not (bottom panel). It is apparent that, with only the two exceptions of the ratio of home equity to net worth and the household head's unemployment status in the twelve months prior to the 2007 survey, the means of all of the variables shown are statistically different between households that started a new business and households that did not. Moreover, where relevant, most of these differences are sustained across the other moments of the distributions shown. Thus, the heads of households that started a small business during the crisis and the Great Recession tended in 2007 to have higher income and greater net worth, to be younger, to have more education, to be more likely to be partnered, to be less risk averse, and to be more likely to have access to credit than the heads of households who did not start a small business. Some of these characteristics (e.g., income, net worth, and education) would seem to describe white-collar workers more than other types of employees.

Table 7B.6 Characteristics of HHs that started a SB during crisis (2007–2009)

	2007			
	Mean	Median	P25	P90
Started SB 07–09, *N* = 131				
Income	97[a]	70	43	163
HH age	45.2[a]	46	34	63
HH educ.	14.5[a]	15	12	17
Net worth	641[a]	166	39	1,398
Home to net worth	0.46	0.39	0.09	1
Partnered	0.69[a]			
HH credit access	0.56[a]			
Risk prefs	2.84[a]	3	2	4
Unemp. 12 mo. 2007	0.11			
Unemp. 12 mo. 2009	0.29[a]			
Did not start SB 07–09, *N* = 2,464				
Income	60	40	22	116
HH age	50	48	35	75
HH educ.	13.1	13	12	16
Net worth	294	88	10	657
Home to net worth	0.47	0.46	0	1
Partnered	0.55			
HH credit access	0.43			
Risk prefs	3.2	3	3	4
Unemp. 12 mo. 2007	0.11			
Unemp. 12 mo. 2009	0.16			

[a]Mean significantly different from HH that did not start a SB 2007–2009 at 5 percent or greater.

The last two variables in each panel of Table B6 provide important details regarding the employment history of the two household groups. The indicator variables for "Unemp. 12 mo. 2007" and "Unemp. 12 mo. 2009" give the percentage of heads of household who were unemployed at any time in the twelve months before the 2007 and 2009 surveys, respectively. Thus, in the prerecession year of 2007, the same percentage (11 percent) of heads of household had been unemployed sometime in the previous twelve months in both household groups. However, by 2009, 29 percent of the household heads where a new business was started had been unemployed in the previous year, but this was true at only 16 percent of the households that did not start a business. Thus, these data support the conjecture that the sharp rise in unemployment during the Great Recession was an important driver in the creation of new small businesses during that period.

Comparing SCF and US Census Data

Tables 7B.7 and 7B.8 compare the distribution of SCF data for firms with at least one employee with the distribution for comparable firms as reported in the US Census Bureau's Statistics of US Businesses (SUSB), all in 2007. Table 7B.7 separates firms into twenty industrial categories, and table 7B.8 divides businesses into five groups based on the number of employees. As reported in section 7.2 of the main text, it is clear that the SCF and census distributions are similar.

Table 7B.7 Employer small businesses by industrial category, percent (2007)

Industry	SUSB	SCF
Forestry, fishing, hunting, and agriculture support	0.4	3.1
Mining	0.3	0.2
Utilities	0.1	0.2
Construction	13.1	19.4
Manufacturing	4.7	5.9
Wholesale trade	5.5	3.5
Retail trade	11.7	7.6
Transportation and warehousing	2.8	2.4
Information	1.2	1.6
Finance and insurance	4.3	4.5
Real estate and rental and leasing	4.9	6.1
Professional, scientific, and technical services	12.9	17.6
Management of companies and enterprises	0.3	0.0
Administrative and support and waste management and remediation services	5.3	7.1
Educational services	1.2	1.1
Health care and social assistance	10.1	6.3
Arts, entertainment, and recreation	1.9	2.2
Accommodation and food services	7.8	4.1
Other services (except public administration)	11.1	7.3
Unclassified	0.2	0.0

Table 7B.8 **Employer small businesses by number of employees, percent (2007)**

Number of employees	SUSB	SCF
< 5	61.4	58.7
5–9	17.6	16.9
10–19	10.7	11.6
20–99	8.8	9.9
100–499	1.5	3.0

References

Autor, D. 2010. "The Polarization of Job Opportunities in the US Labor Market." Working Paper, Center for American Progress and The Brookings Institution's Hamilton Project, April. http://economics.mit.edu/files/5554.

Avery, R. B., R. W. Bostic, and K. A. Samolyk. 1998. "The Role of Personal Wealth in Small Business Finance." *Journal of Banking and Finance* 22:1019–61.

Balcaen, S., and H. Ooghe. 2006. "35 Years of Studies on Business Failure: An Overview of the Classic Statistical Methodologies and their Related Problems." *British Accounting Review* 38:63–93.

Berger, A. N., N. H. Miller, M. A. Petersen, R. G. Rajan, and J. C. Stein. 2005. "Does Function Follow Organizational Form? Evidence from the Lending Practices of Large and Small Banks." *Journal of Financial Economics* 76:237–69.

Berger, A. N., and G. F. Udell. 1995. "Relationship Lending and Lines of Credit in Small Firm Finance." *Journal of Business* 68 (3): 351–81.

———. 1998. "The Economics of Small Business Finance: The Roles of Private Equity and Debt Markets in the Financial Growth Cycle." *Journal of Banking and Finance* 22:613–73.

———. 2006. "A More Conceptual Framework for SME Finance." *Journal of Banking and Finance* 30:2945–66.

Black, S. E., and P. E. Strahan. 2002. "Entrepreneurship and Bank Credit Availability." *Journal of Finance* 57 (6): 2807–33.

Brevoort, K. P., and T. H. Hannan. 2006. "Commercial Lending and Distance: Evidence from Community Reinvestment Act Data." *Journal of Money, Credit and Banking* 38 (8): 1991–2012.

Brevoort, K. P., J. A. Holmes, and J. D. Wolken. 2009. "Distance Still Matters: The Information Revolution in Small Business Lending and the Persistent Role of Location, 1993–2003." Finance and Economics Discussion Series no. 2010-08, Board of Governors of the Federal Reserve System, December.

Bricker, J., B. K. Bucks, A. B. Kennickell, T. L. Mach, and K. B. Moore. 2011. "Surveying the Aftermath of the Storm: Changes in Family Finances from 2007 to 2009." Finance and Economics Discussion Series no. 2011-17, Board of Governors of the Federal Reserve, March.

Bricker, J., A. B. Kennickell, K. B. Moore, and J. Sabelhaus. 2012. "Changes in US Family Finances from 2007 to 2010: Evidence from the Survey of Consumer Finances." *Federal Reserve Bulletin* 98 (2): 1–78.

Bucks, B. K., A. B. Kennickell, T. L. Mach, and K. B. Moore. 2009. "Changes in US Family Finances from 2004 to 2007: Evidence from the Survey of Consumer Finances." *Federal Reserve Bulletin* 95:A1–56.

Cole, R., and T. Sokolyk. 2013. "How Do Start-Up Firms Finance Their Assets?

Evidence from the Kauffman Firm Surveys." Working Paper, DePaul University and Brock University.

———. 2014. "Debt Financing, Survival, and Growth of Start-Up Firms." Working Paper, DePaul University and Brock University.

Cressy, R. 2006. "Why Do Most Firms Die Young?" *Small Business Economics* 26:103–16.

Decker, R., J. Haltiwanger, R. Jarmin, and J. Miranda. 2014. "The Role of Entrepreneurship in US Job Creation and Economic Dynamism." *Journal of Economic Perspectives* 28 (3): 3–24.

DeYoung, R., D. Glennon, and P. Nigro. 2008. "Borrower-Lender Distance, Credit Scoring, and Loan Performance: Evidence from Informational-Opaque Small Business Borrowers." *Journal of Financial Intermediation* 17:113–43.

Elyasiani, E., and L. G. Goldberg. 2004. "Relationship Lending: A Survey of the Literature." *Journal of Economics and Business* 56:315–30.

Evans, D. S., and B. Jovanovic. 1989. "An Estimated Model of Entrepreneurial Choice under Liquidity Constraints." *Journal of Political Economy* 97 (4): 808–27.

Everett, J., and J. Watson. 1998. "Small Business Failure and External Risk Factors." *Small Business Economics* 11:371–90.

Haltiwanger, J., R. S. Jarmin, and J. Miranda. 2013. "Who Creates Jobs? Small Versus Large Versus Young." *Review of Economics and Statistics* 95 (2): 347–61.

Headd, B. 2003. "Redefining Business Success: Distinguishing between Closure and Failure." *Small Business Economics* 21:51–61.

Holtz-Eakin, D., D. Joulfaian, and H. S. Rosen. 1994. "Entrepreneurial Decisions and Liquidity Constraints." *Rand Journal of Economics* 25:334–47.

Honjo, Y. 2000. "Business Failure of New Firms: An Empirical Analysis Using a Multiplicative Hazards Model." *International Journal of Industrial Organization* 18:557–74.

Hunter, M. G. 2011. "Understanding the Common Causes of Small Business Failures: A Qualitative Study." *Journal of Applied Management and Entrepreneurship* 16 (1): 86–103.

Hurst, E., and A. Lusardi. 2004. "Liquidity Constraints, Household Wealth, and Entrepreneurship." *Journal of Political Economy* 112 (2): 319–47.

———. 2008. "Do Household Savings Encourage Entrepreneurship? Household Wealth, Parental Wealth, and the Transition in and out of Entrepreneurship." In *Overcoming Barriers to Entrepreneurship in the United States*, edited by Diana Furchtgott-Roth. Lanham, MD: Rowman and Littlefield, Lexington Books.

Kerr, W. R., and R. Nanda. 2009. "Democratizing Entry: Banking Deregulations, Financing Constraints, and Entrepreneurship." *Journal of Financial Economics* 94:124–49.

Kroszner, R. S. 2008. "Effects of the Financial Crisis on Small Business." Governor, Board of Governors of the Federal Reserve System, testimony before the Committee on Small Business, US House of Representatives, November 20. https://www.federalreserve.gov/newsevents/testimony/kroszner20081120a.htm.

Kwast, M. L., M. Starr-McCluer, and J. D. Wolken. 1997. "Market Definition and the Analysis of Antitrust in Banking." *Antitrust Bulletin* Winter:973–95.

Liao, J., H. Welsch, and C. Moutray. 2008. "Start-Up Resources and Entrepreneurial Discontinuance: The Case of Nascent Entrepreneurs." *Journal of Small Business Strategy* 19 (2): 1–15.

Mach, T. L., and J. D. Wolken. 2006. "Financial Services Used by Small Businesses: Evidence from the 2003 Survey of Small Business Finances." *Federal Reserve Bulletin* October:A167–95.

———. 2012. "Examining the Impact of Credit Access on Small Firm Survivability."

Finance and Economics Discussion Series no. 2012-10, Board of Governors of the Federal Reserve System, Washington, DC, October. https://www.federalreserve.gov/pubs/feds/2012/201210/201210pap.pdf.

Neumark, D., B. Wall, and J. Zhang. 2011. "Do Small Businesses Create More Jobs? New Evidence for the United States from The National Establishment Time Series." *Review of Economics and Statistics* 93 (1): 16–29.

Ooghe, H., and S. De Prijcker. 2008. "Failure Processes and Causes of Company Bankruptcy: A Typology." *Management Decision* 46 (2): 223–42.

Petersen, M. A., and R. G. Rajan. 1995. "The Effect of Credit Market Competition on Lending Relationships." *Quarterly Journal of Economics* May:407–43.

———. 1994. "The Benefits of Lending Relationships: Evidence from Small Business Data." *Journal of Finance* 49 (1): 3–37.

———. 2002. "Does Distance Still Matter? The Information Revolution in Small Business Lending." *Journal of Finance* 57 (6): 2533–70.

Robb, A. M., and E. J. Reedy. 2011. "An Overview of the Kauffman Firm Survey: Results from 2009 Business Activities." Kauffman Foundation, March. http://www.kauffman.org/what-we-do/research/kauffman-firm-survey-series.

Robb, A. M., and D. T. Robinson. 2012. "The Capital Structure Decisions of New Firms." *Review of Financial Studies* 1 (1): 1–27.

Schenone, C. 2010. "Lending Relationships and Information Rents: Do Banks Exploit Their Information Advantages?" *Review of Financial Studies* 23 (3): 1149–99.

Schmalz, M. C., D. A. Sraer, and D. Thesmar. 2013. "Housing Collateral and Entrepreneurship." NBER Working Paper no. 19680, Cambridge, MA.

Slemrod, J. 2007. "Cheating Ourselves: The Economics of Tax Evasion." *Journal of Economic Perspectives* 21 (1): 25–48.

Strotmann, H. 2007. "Entrepreneurial Survival." *Small Business Economics* 28 (1): 87–104.

Udell, G. F. 2008. "What's in a Relationship? The Case of Commercial Lending." *Business Horizons* 51:93–103.