Small Businesses and Small Business Finance During the Financial Crisis and the Great Recession: New Evidence From the Survey of Consumer Finances

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Abstract

We use the Federal Reserve's 2007, 2009 re-interview of 2007 respondents, and 2010 Surveys of Consumer Finances (SCFs) to examine the experiences of small businesses owned and actively managed by households during these turbulent years. This is the first paper to use these SCFs to study small businesses even though the surveys contain extensive data on a broad cross-section of firms and their owners. We find that the vast majority of small businesses were severely affected by the financial crisis and the Great Recession, including facing tight credit constraints. We document numerous and often complex interdependencies between the finances of small businesses and their owner-manager households, including a more complicated role of housing assets than has been reported previously. We find that workers who lost their job responded in part by starting their own small business, and that factors correlated with the survival of a small business differed greatly depending upon whether the firm was established or new. Our results strongly reinforce the importance of relationship finance to small businesses, and the primary role of commercial banks in such relationships. We find that both cross-section and panel data are needed to understand the complex issues associated with the creation, survival and failure of small businesses.

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It is widely understood that small businesses, small business formation and the successful financing of both are critical components of the U.S. 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]

This paper 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 both owned and actively managed by households during these turbulent years. We believe this is the first paper to present such a comprehensive analysis of small businesses during this extraordinary period, and it is certainly the first to use these SCF data on small businesses. Indeed, although the SCF has been used by many researchers since its

[1] Recent papers supporting this view, but in some cases expressing concerns for the future, include Decker, Haltiwanger, Jarmin and Miranda (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' 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.

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 surveys used here have 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 uniquely well-suited to evaluating interactions between small business and household finances. As will be discussed below, such interactions have long been considered central to understanding entrepreneurial activity. Moreover, the SCF provides an additional dimension by allowing comparisons of households who have a small business with those who do not own a small business. Second, the timing of the surveys affords the opportunity 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 re-interview with participants in the 2007 SCF. This panel structure affords numerous opportunities to study directly how a set of small businesses and their owners were affected by 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 pre-crisis studies and provides a benchmark for future research. In short, the combination of the three surveys provides a totally new, unique and logically consistent data set to examine a wide variety of factors that affected small businesses and

[4] See Avery *et al.* (1998).

their owner's households before, during and just after one of the most extraordinary periods in U.S. economic history.

In addition to describing and analyzing small businesses over the crisis and its immediate aftermath, this paper contributes significantly to four core strains 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 households, (3) the importance of "relationship finance" for small businesses, and (4) determinants of the probability of success, failure and creation of a small business.

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. For example, between 2007 and 2010 median real revenues and profits fell by double digits at both sets of firms. In addition, the data indicate 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 endogenous to the firm, such as credit history and a poor balance sheet, were cited much more frequently by both established and new small businesses. 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 at least seven key measures of small business – household interconnections, including indications of a more complicated role of housing assets in small business finance than has been reported previously. Our results indicate

that 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 differ greatly depending upon whether the firm was an established or a new small business. We identify several significant factors, the only common one between the two types of firms being the non-small-business-related net worth of the owner-household. 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 credit cards. Local banking offices remain highly important for small businesses. Comparisons of results found using backward-looking cross-section data with those found using forward-looking panel data indicate that both types of information are highly valuable for researching the topics addressed in this paper. Thus, both cross-section and panel data are needed to advance our knowledge of these and no doubt many other issues in household and small business economics.

The paper proceeds as follows. The next section reviews the extensive small business literature with the dual aims of distinguishing our study from that literature and placing our work within its context. Section II describes the SCF small business data, including important differences across the three waves of the survey we use, discusses limitations that should be understood when using the SCF data and briefly compares the SCF small businesses to those found in U.S. Census reports. This section sets the stage for our substantive analysis which proceeds in four parts. Section III 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 other households. Section IV uses the 2007 cross-section survey and its 2009 panel re-interview to examine differences between small businesses (and their owner-manager households) that survived and those that failed during the crisis and recession and to identify the key characteristics of households who started a small business during this period. Section V 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 VI uses the findings from the previous three sections to present a unified narrative of the experiences of small businesses owned and actively managed by households over the full time period covered by the three surveys; the section and paper end with recommendations for future research and improved data collection.[5]

I. Literature Review

While the academic literature on small business is huge, virtually all of it pre-dates the recent financial crisis and recession. That being said, the pre-crisis literature identified a number of interrelated core issues and principles that both help guide our work and frame the contributions of this paper. First, small-business research generally distinguishes between established and new small businesses, because the two groups exhibit important

[5] The Appendix defines the variables used in this study.

differences. These differences derive in part from the skills required of entrepreneurs versus those needed by the managers of a going concern. But they 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 established and new small businesses 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 strongly indicates that the importance of relationship finance is a fundamental difference between small businesses and larger firms that have access to broader capital markets. Lastly, the probabilities that a small business will succeed, fail or be created at all derive from the complex interactions of a large number of 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 briefly below.[6]

[6] There are of course other core small business issues which 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 of these topics see Kerr and Nanda (2009), Black and Strahan (2002), and Petersen and Rajan (1995); for the second see Decker *et al* (2014), Haltiwanger *et al* (2013) and Udell (2008); and recent papers that consider gender and race are Robb and Robinson (2012) and Hurst and Lusardi (2006).

The life cycle of small business finance

The life cycle of small business finance has been reviewed and described by Berger and Udell (1998). Initially a new firm is not only young and small, but its risk characteristics are typically highly opaque to outside investors. Consistent with this view, very young firms frequently appear to rely on "inside finance" from the founding entrepreneur and possibly friends and family members. As the firm grows and begins to demonstrate its 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. In particular, it emphasizes the importance of age, size, and the "informational opacity" of the firm for understanding a small business' financing options at any point in its life cycle and the overall importance of well-functioning capital markets for small business growth.

Berger and Udell correctly 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 this point. 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.[7] In apparent contrast with the life-cycle paradigm, 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, they find that much of this debt is tied directly to the entrepreneur through a sole proprietorship or personnel assets used as collateral. While on balance the authors interpret their results as a serious challenge to parts of the life-cycle paradigm, they argue that their findings strongly "underscore the importance of liquid credit markets for the formation and success of young firms," and that new firms "are especially sensitive to changes in bank lending conditions."[9]

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, and perhaps more importantly, we are able to estimate a firm's probability of survival over the crisis controlling for these life-cycle characteristics and a variety of other household and firm characteristics. Lastly, we use the augmented data on small businesses available on the 2010 SCF to investigate whether some of the key findings of the pre-crisis literature are supported by post-crisis data.

[7] The Kauffman Firm Survey is described in Robb and Robinson (2012) and Robb and Reedy (2011).

[8] Robb and Robinson (2012), p. 25.

[9] Ibid.

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, probably because of a shortage of data, the vast majority of studies have focused on only one piece of the puzzle -- 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. For example, Evans and Jovanovic (1989) were among the first to find a positive relationship between individual wealth and entrepreneurial activity and Holtz-Eakin *et al.* (1994) found a positive correlation between the probability of starting a business and receiving a recent inheritance.[10]

More recent research has challenged the strength of the wealth/small business formation relationship. In two papers, Hurst and Lusardi (2006 and 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."[11] These authors also "find that both past and future inheritances predict current business entry, showing that inheritances capture more than simply liquidity."[12]

[10] Schmalz *et al.* (2013), using French data from before the crisis, find a positive correlation between increases in house prices and the probability of starting a small business.

[11] Hurst and Lusardi (2006), pp. 1-2.

[12] Hurst and Lusardi (2004), p. 319.

In (to our knowledge) the only study of its kind to date, Avery *et al.* (1998) documents that the relationship between small business and household finances is highly complex. Using data from both the National Survey of Small Business Finances and the Survey of Consumer Finances from the late 1980s through the mid-1990s, these authors investigate a variety of potential interdependencies and other interactions. For example, in partial support of Hurst and Lusardi, Avery *et al.* 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] However, they also find that almost half of all small businesses had no loans. Lastly, these authors "find strong evidence that personal commitments are substitutes for business collateral, at least for lines of credit."[15]

Our study substantially 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

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[13] Avery *et al* (1998), p. 1058.

[14] Ibid.

[15] Ibid., p. 1059.

based on home ownership and wealth that is independent of home ownership. Other key variables we consider 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. We examine the importance of credit relationships running from the household to the small business, and we are able to classify a household's small business by industry type and organizational form.

The importance of relationship finance

The third core issue to which our paper makes significant contributions is the importance of "relationship finance" to both established and new small businesses. In his review of the large body of theoretical and empirical research on relationship banking as it applies to small businesses lending, Udell (2008) argues that "current academic research suggests that relationship lending should best be viewed as one of many alternative lending technologies."[16] Relationship lending relies primarily on "soft 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' 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

[16] Udell (2008), p. 94. A short and clearly selective list of other important papers in the relationship banking literature includes Schenone (2010), Berger and Udell (2006, 1998, 1995), Berger et al (2005), Elyasiani and Goldberg (2004), and Petersen and Rajan (1994).

structures."[17] Moreover, Berger and Udell (1998) argue "that the degree of informational opacity is a key feature that drives the financial growth cycle and that distinguishes small-business finance from large-business finance."[18]

While the importance of relationship finance appears well-established, the importance of local banking offices to small businesses remains somewhat controversial. Using data from 1993, Petersen and Rajan (2002) argued that technological change has fundamentally 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. They argue "that the significant innovations in bank lending introduced thus far . . . have 'peeled off' only some, and probably the more distant, loans made previously by local lenders, leaving a hard core of local loans not easily amenable to these new technologies."[19] DeYoung et al (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 *et al.* (2009) find that while some distances have increased for some financial products (e.g. asset-backed loans) and some small businesses (higher-credit-quality

[17] Ibid. Black and Strahan (2002) present evidence that challenges this view.

[18] Berger and Udell (1998), p. 660.

[19] Brevoort and Hannan (2006), p. 1993.

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.[20]

In contrast to relationship lending which relies primarily upon soft information, most other lending technologies, often called "transactions-based lending," rely more on "hard information." Again 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."[21] Prominent examples of transactions-based lending technologies include financial statement lending, asset-based lending, leasing, and credit scoring. Importantly, this 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 indeed have a comparative advantage in relationship lending, but they also utilize transactions-based technologies, and *vice versa* for larger banks.

The data on small businesses on the 2010 SCF allow us to examine a variety of indicators of relationship banking measured at the small business level. Thus, and as was the case with the other two core issues discussed above, we can investigate whether some of the key findings of pre-crisis research on relationship banking have held up over this tumultuous period and establish benchmarks for future research. Moreover, these issues are not only important for better understanding the nature of relationship finance; they also lie at the

[20] Brevoort *et al* (2009), p. 26.

[21] Udell (2008), p. 94.

core of the methodology used by the U.S. Department of Justice and the federal banking agencies for evaluating the potential competitive effects of proposed bank mergers and acquisitions.[22] 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 to small businesses of commercial banks, other types of insured depositories and other classes of financial institutions. Second, while we cannot tell if a small business' primary financial institution is a small, medium-sized or very large bank, 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. Lastly, 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.

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. While we cannot critically review this entire literature here, we do want to place our work

[22] Many of the concepts used in this methodology have been controversial for years. See Kwast *et al.* (1997).

within its context.[23] Studies have identified four broad categories of relevant factors: characteristics of the founding entrepreneur or current owner, characteristics of the business 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 sometimes 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 that have sometimes been found to be important include a variety of 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 industry (e.g. retail, manufacturing, and service), overall growth rates in the industry, the degree of competition, and the size of the industry. Lastly, studies that cover an extended time period tend to use a variety of measures of demand in the national and sometimes the local economy as controls in an estimating equation.

While each of the above factors has been considered in one or more studies, no study has considered all of the factors and 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 founding entrepreneur's or current owner's age, education, net worth and attitude toward risk, as well as a variety of firm and industry characteristics. In addition,

[23] For recent reviews, see Mach and Wolken (2012) and Balcaen and Ooghe (2006). Other interesting and relatively recent work includes Cole and Sokolyk (2014 and 2013), Hunter (2011), Liao et al (2008/09), Ooghe and Prijker (2008), Strotmann (2007), Cressy (2006), Headd (2003), Honjo (2000), and Everett and Watson (1998).

because we examine survivability within the context of a single macroeconomic/financial event, the need to control for changes in the macroeconomic environment is not compelling. Indeed, a simultaneous strength and limitation of our study is that we focus on the characteristics of small businesses that either did or did not survive or were created during the extremely stressful years from 2007 through 2009.

II. Small Businesses in the Surveys of Consumer Finances

This paper uses information from the cross-sectional SCFs in 2007 and 2010 and from the panel re-interview in 2009 with participants in the 2007 survey.[24] The SCF is distinguished from other U.S. household surveys both by its focus on wealth measurement and by its inclusion of an over-sample intended to provide adequate coverage of very wealthy households. These characteristics have special utility for this paper. Specifically, the SCF collects detailed information on all aspects of wealth, including the closely-held businesses that are the subject of this paper, along with supporting information on sources and uses of income, use of financial services, and a variety of 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

[24] See Bucks *et al.* [2009], Bricker *et al.* [2012] and Bucks *et al.* [2011] for descriptions of the 2007 SCF, the 2010 SCF and the 2009 SCF re-interview survey.

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.[25] Thus, inadequate coverage of the wealthiest households would seem likely to have serious effects on the ability to analyze personal businesses.

Limitations of the SCF small business data

While the SCF is a rich source of information, its design imposes some 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 re-interview. Consequently, much of the detail 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. For our purposes, this limitation of the 2009 survey is offset somewhat by the fact that new elements were added to the panel questionnaire to obtain information particularly 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 earlier business. Thus, we can study factors that affected the survival or failure of these

[25] Overall, businesses accounted for 21.0 percent of household net worth in 2010.

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. Importantly, the 2010 SCF incorporated these credit-related questions and added a series of 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 that are treated as businesses for tax purposes may be reported by SCF respondents as a business. The only non-negligible 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.[26]

Second, households reporting that they own one or more businesses may have either a relatively active interest in running their business or a relatively passive one, and it seems reasonable to assume 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 a relatively active management role. In order to

[26] In 2010, 7.7 percent of households had a real estate investment that might be treated as a business asset while 13.3 percent of households had some other type of business investment.

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 necessarily 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 in some sense, 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.[27] In practice, it appears that it was very common in both surveys for respondents to combine multiple businesses that were effectively operated as a single business but that retained a

[27] As noted earlier, the shortened 2009 re-interview collected data for all businesses summarized together.

degree of legal separation for tax or other reasons. The questionnaire instructions available during the interview explicitly allow this way of reporting. The disadvantage of this approach is that the business described may not be a single legal entity; the advantage is that the business is more likely to reflect the business in a functional sense. It is not possible 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 quite large, sometimes as large as well-known publicly-traded firms. Such large firms almost surely look and behave quite differently than 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.[28] In the 2010 SCF, only 0.8 percent of primary businesses were larger than this.

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 requires typically 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 various government incentives that apply entirely or largely to farmers. On balance, our view is that combining farms with other types of businesses in the SCF would risk

[28] It is common to define a small business as one with less than 500 employees. This is, for example, the size standard widely used by the SBA (see www.sba.gov/content/summary-size-standards-industry-sector), and is the definition used in the National Survey of Small Business Finances (see Mach *et al.* (2006)).

substantially reducing the clarity of our results.[29] Thus, we do not include as a business any farm that is also the primary residence of the household.[30] 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 partially, 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 entirely owned by the household and 7.2 percent were half-owned. In addition, our

[29] Many other small business studies, including the National Survey of Small Business Finances, exclude farms from their definition of a small business. See Mach *et al.* (2006).

[30] Because of the difficulty of distinguishing other types of agricultural business from farming operations where the farm is not the primary residence, some such farms may be included in our sample. However, the potential number is very small.

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 of these reasons, the results reported in this paper 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, the available data suggest that this more limited approach should be strongly indicative of the larger universe.

Adjustments for statistical concerns

Like any survey, the SCF is subject to potential error as a consequence of interviewing only a sample of the larger population. In addition, some households selected into the survey do not participate, allowing the possibility that the characteristics of participants might differ from those of non-respondents in ways that induce bias in the statistics we report. The SCF addresses both of 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 due to 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 respondents who do not participate at all, some respondents who participate in the survey fail to give answers to all the questions they are asked. The SCF uses a form of 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.

Comparing SCF and U.S. Census Data

Estimates of the U.S. Bureau of the Census reported in the Statistics of U.S. Businesses (SUSB) and a series on non-employer 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 paper. [31] According to Census, there were about 27.8 million non-employer (zero 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.

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 non-employer business, the SCF estimate rises to about 10.8 million. Second, as also noted earlier, some households have real estate holdings that are formally organized as a business, but that are 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 non-employer businesses raises the total to about 18.8 million. However, this augmentation with real estate holdings almost surely overstates the possible number of unreported non-

[31] See www.census.gov/econ/smallbus.html for details.

employer businesses in the SCF, not least because ownership of income-producing real estate is often shared, and thus may be double counted in a statistical sense. Third, and possibly most importantly, the Census estimate of non-employer 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 businesses than the SCF, which is based on the state of the household's assets as of the time of the interview.

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 U.S. businesses with employees. The Census estimates that there were about 6.0 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 due to 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. Alternatively, adjusting the SCF estimate for the share of the business that each household owns reduces the total number of households with employer 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 zero employee small businesses, the two data sources compare quite closely with respect to employer firms.

III. Small Businesses in 2007 and 2010

This section uses variables available on both 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 providing data separately for 2007 and 2010, we distinguish established from new small businesses. [32] We begin by contrasting certain key characteristics of households that own and actively manage a small business with those of other households.

Households that own and actively manage a small business: univariate tests

Table 1 compares three sets of households with each other and between 2007 and 2010. The top panel 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 shows the same variables for households that own and actively manage an established small business (Est. SB); and the bottom panel provides the same data for households that

[32] Established businesses are defined as small businesses that are more than 3 years old or that were acquired by the household more than 3 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 tri-annual nature of the SCF means that there is no overlap in the population of our new small businesses. In 2007, in our sample of 1137 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 1536 small businesses the percentages were 85 percent and 15 percent respectively.

own and actively manage a new small business (New SB).[33] 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.[34] 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.[35] 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.

The univariate comparisons in table 1 suggest several broad but preliminary conclusions. First, households with either established or new small businesses differ in several statistically and economically significant ways from households that do not engage in these activities. 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, 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

[33] 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 previous section.

[34] See, for example, Cole and Sokolyk (2013), Bricker *et al* (2012) and Mach and Wolken (2006).

[35] In this and all subsequent tables 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 U.S. Bureau of Labor Statistics.

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. Lastly, while prior to the crisis (2007) the percent of households using bank credit is approximately the same across all three groups, post crisis (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, and unsurprisingly, 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 1. 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 either 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. Lastly, before the crisis households with an established small business were less likely to be using bank 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 1 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 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 using bank credit. Turning to households owning an established firm and using the income and net worth measures that include small businesses, households with established small business also lost income (down 21 percent) and net worth (down 24 percent). Income and net worth means, excluding small business income and equity, fell by 17 percent and 19 percent, respectively. Such households became slightly more risk averse, their average age increased somewhat and their mean years of education remained unchanged. Both groups of households experienced no significant changes in either average homeownership 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 using bank credit increased. Comparisons of the medians and other percentile values give no reason to challenge the impressions left by the means.

The fourth general impression from table 1 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 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 using bank 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.

Comparisons of the inter-temporal 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 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 that own and actively manage a small business: multivariate tests

The univariate results of table 1 are highly informative, often quite suggestive and generally consistent with our expectations. However, a number of these impressions clearly need to be subjected to multivariate tests, and table 2 presents the results of such tests. The table provides the results of multivariate logit regressions that estimate the probability that a household owns and actively manages an established small business (left panels) or a new small business (right panels) in 2007 and 2010. [36] The right-hand-side variables in the regressions reported in the (1) columns are the same as those in table 1, except only income including that from the small business and net worth including small business equity are included and the ratio of home equity to total net worth proxies for home ownership as well.[37]

Looking first at the (1) columns for households with an established small business(vs. those with no small business), all of the right-hand-side variables are statistically significant

[36] As a robustness check, separate logits were estimated for households whose small business had no employees. The substance of these results is the same as that reported in the text with one exception: for households with a new small business, education is no longer statistically significant.

[37] Inclusion of both this ratio and a homeownership indicator variable led to substantial multicollinearity. All dollar values enter in log form in these and subsequent regressions.

at the 95 percent level or better (most are significant at 99 percent) except the risk preference variable in 2007, which is significant at the 90 percent level. In addition, the signs of all of the variables are the same across the two years. For the most part the signs of the variables support the impressions provided by table 1. Thus, *ceteris paribus*, in both years a household was more likely to have an established small business if it had higher net worth (including equity in the small business where relevant), if less of its net worth were in home equity, if it were partnered, if it were less risk averse, and if it used bank credit. Indeed, the access to bank credit indicator variable, which was about the same for both groups of households in 2007 in table 1, is strongly positive in a multivariate context. However, results for three variables run counter to the impressions of table 1. Households with higher incomes (including business income where relevant), who are older, and who are more educated are estimated in both years to be, *ceteris paribus*, less likely to have an established small business.

Results for households with new small businesses (vs. those without a small business) are very similar, but not quite the same, as those for households with an established small business. With only two exceptions, all variables are significant at least at the 90 percent level, and most are significant at the 99 percent level or better. All signs are the same across both years. Moreover, the results for households with a new small business are even more consistent with the impressions provided by table 1 than are the results for households with an established small business. Specifically, *ceteris paribus*, in both years a household was more likely to have a new small business if it had higher net worth, if less of its net worth were in home equity, if it were partnered, if it were less risk averse, if it were

younger and if it were more educated. Interestingly, the indicator variable for the household's use of bank credit is once again strongly positive in 2007, but in contrast to the results for established firms, only weakly significant (88 percent level) in 2010. Consistent with the results for households with an established small business, in both years higher income households are, *ceteris paribus*, less likely to be the owner of a new small business in the previous three years.

Overall, the multivariate regressions reinforce most of the impressions provided by table 1, but with a more nuanced view. For example, *ceteris paribus*, in both 2007 and 2010 more education tends to be associated with a lower probability that a household will own and actively manage an established small business, but more education is associated with a higher probability that a household will own and actively manage a new small business. This asymmetry could, for example, reflect on-going changes in the nature of start-ups. But it could also be due to other factors and seems deserving of future research. In addition, at least two of the multivariate results are surprising either in light of the impressions left by table 1 or our perception of the "conventional" wisdom regarding small business finance.

First, the statistically strong and consistently negative correlation of household income with the probability of having either an established or a new small business is unexpected and inconsistent with the impressions of table 1. 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.[38] Alternatively, it may be that higher income households simply feel much less of a need to

[38] The negative coefficient on income is robust to a variety of model specifications.

own a small business. Or, it may 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 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, especially among sole proprietorships, an ownership structure heavily represented in the SCFs.[39] Thus, our multivariate results for household income may in part reflect the underreporting of income by survey households. On balance, our income results also seem worthy of additional research.

Second, our ability to separate home equity from other components of net worth leads to the new and even provocative suggestion that, *ceteris paribus*, a dollar of net worth 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. Alternatively, 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 small business, thereby driving down their ratio of home equity to net worth.

To test these possibilities, we estimated logit models, reported in the (2) columns of table 2, that substitute two new right hand side variables for the ratio of home equity to net worth. "House" is the dollar value of a household's housing assets, and "Mortgage" is the dollar value of any mortgages for which those housing assets are the collateral. While the column (2) results for these variables are clearly strongest for households with established

[39] Households are encouraged to use tax records to assist their responses to the SCF.

firms, these estimations suggest that (1) conditional on having housing assets, tapping into home equity via any type of mortgage is positively associated with having a small business; but that (2) conditional on the amount of those mortgages, holding a larger proportion of total net worth in housing is a negative signal of small business ownership. The first result is consistent with the "conventional wisdom" that many small business owners use their home as collateral for loans that support their small business. However, the second result is consistent with our (new) conjecture that other forms of net worth may, at the margin, be more valuable to the small business owner. In either case, we believe these results strongly indicate the need for further research on the interdependencies and interconnections between home ownership and small business finance.

Other key characteristics of SCF small businesses

Table 3 displays six key characteristics of small businesses owned and actively managed by households in 2007 and 2010. Looking first at both the established and the new businesses, it is clear that the means of these six variables are often strongly affected by observations in the upper tail of a given distribution. For this reason, most of our discussion will focus on the median of a given variable for both sets of firms.

Each of the four measures of size 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 14 employees.[40] Median annual income (profits) in 2007 is only $41 thousand 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

[40] Owners are not counted as employees. Thus, the number of employees can be zero.

effect, with median real income falling 51 percent and median total revenues by 33 percent between 2007 and 2010.

Except for the median number of employees (one), the size measures of new businesses are, as expected, much smaller than those of established firms. In 2007, median profits at new small businesses were a mere $3.5 thousand, median total revenues only $15,000, and the median value of the firm was only $22,000. The first two numbers decline to a stunningly small $500 and $7,000 in 2010, although reported median 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 engendered a substantial shift toward smaller firms among new small businesses, a pattern not so evident among the established firms where the number of employees measures remained unchanged. This result for new firms is consistent with the view that many workers who lost their job during the recession responded by forming their own small business, a hypothesis we investigate more deeply in section IV.

Our first glimpse of the interdependencies between small business and household finance is provided in the last two rows of each panel of table 3. 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), 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 central tendency at the established small businesses.

Table 4 categorizes established and new small businesses into six broad industry classifications. In addition, because of the demonstrated importance of size in the literature, this and most subsequent tables in this paper separate firms into three groups based on the number of employees. The boundaries of these three groups were defined both 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.

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 35 and 55 percent of the firms. Indeed, among the established firms the sum of the "Professional Services" and the "Lower Technical Services" categories is over 50 percent of the firms in four of the six possible cells (and almost 50 percent in the other two), and well over 50 percent in all of the cells for the new small businesses. 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 clearly represent a broad cross-section of American small businesses. Overall, between 2007 and 2010 there appears to have been a shift away from nonfarm agriculture, mining and manufacturing toward the other three categories among established firms. However, except for a definite move toward professional services, perhaps reflecting the

relatively high rate of job loss by white collar workers during the recession (a suggestion we also investigate in section IV), this trend is not so evident among the new small businesses.[41]

Table 5 categorizes the small businesses by their ownership structure. In both years, sole proprietorships dominate both established and new small businesses with no or only one or two employees. Among the smallest firms the partnership structure is rarely chosen. However, once a firm grows to three or more employees the choice of organizational structure is much more evenly distributed. Indeed, among all but the smallest new small businesses there appears to have been a shift toward limited liability forms between 2007 and 2010. Despite these broad patterns, it is clear that small businesses chose a variety of ownership structures.

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 6 indicate that the vast majority of small businesses, often over 80 percent, were started *de novo* by the household. That being said, substantial percentages of small businesses, especially those with three or more employees, were purchased by the household. Relatively few, typically well under 10 percent, were inherited. Among new firms with one or more employees there appears to have been a slight movement toward start-ups and away from purchases between 2007 and 2010, but no other trends stand out.

[41] Autor (2010) 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" (p. 2).

Given the interest in the role of inheritances in the small business literature, we looked a little more closely at the characteristics of households (and their small business) who inherited their established small business versus households who acquired their established small business in another manner.[42] On average, households who 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 either came from or was guaranteed by its owner-household. While most of these differences between the two sets of households and the two sets of small businesses seem reasonable, they suggest that the role of inheritances remains an interesting area for future research.

IV. Small Business Survival, Failure and Creation From 2007 through 2009

This section uses the 2007 SCF and its 2009 panel re-interview to examine differences between small businesses that survived and those that failed during the financial crisis and the Great Recession and to identify the key characteristics of households that started a small business during this period.

Survival and Failure

The definition of small business failure is not necessarily straightforward. According to Everett and Watson (1998), the literature has used five basic measures: discontinuance of ownership of the business, discontinuance of the business itself, bankruptcy, businesses that were sold or liquidated to prevent further losses, and businesses that simply could not

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

"made a go of it."[43] The 2009 SCF asks a household if its small business "went out of business" between 2007 and the survey and the re-interview data allow us to exclude from this definition businesses that were sold, went public or were in some way 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.[44]

Univariate tests

Table 7 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. In 2007, households with small businesses that would survive had unambiguously higher levels of income (both including and excluding income from the small business) and 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 non-business net worth 309 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

[43] Everett and Watson (1998), p. 374.

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

household's age, years of education, partnership status, use of bank credit and degree of risk preference.

Turning to the small businesses themselves, table 8 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 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 5 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 table 3, well under 20 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 9 separates the surviving and failed firms as of 2007 according to the same industry classifications used in table 4. While the percentages clearly differ between the two groups, only the "wholesale/retail" and the "lower-tech services" classifications appear noteworthy. Both of these 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 to 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 10. 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 section III, 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 non-business 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. Lastly, sole proprietorships were greatly underrepresented and subchapter S corporations were substantially overrepresented in the group of small businesses that would survive.

Multivariate tests

Table 11 presents logit regression results which subject these preliminary conclusions to multivariate tests. The table reports separate regressions for established, new, and pooled established and new firms. 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.[45]

It is immediately apparent that there are substantial differences in the results for established versus new firms. More variables are significant in the regressions for established businesses, a result which may be due in part to the relatively small number of new businesses.[46] That being said, of potentially greater interest are the differences in which variables are significant.

Starting with the established firms, results are generally, but not fully consistent with the univariate results. Thus, variables whose 2007 values are correlated, *ceteris paribus*, with a higher probability of survival include larger household non-business net worth, the business being older (over five years old), larger firm size as measured by the number of employees, the level of business income, and the dollar value of the business, and adoption of the corporate form of organization. Interestingly, the age of the head of the owner-manager household, which did not seem important in the univariate table, is positively

[45] Again, all variables are defined in the appendix. In addition, we attempted to estimate separate regressions for zero employee and employer firms but the number of observations was insufficient to allow meaningful distinctions between the two groups of firms.

[46] There are a total of 183 new firms in the panel, 27 of which failed; and a total of 835 established small businesses, 38 of which failed.

associated with survival given that the household head's age is between 35 and 62 years.[47] Apparently a small business' chances of survival were higher if its owner-manager were at least in his mid-thirties but not over her mid-60s. Also consistent with the univariate comparisons, coefficients on the head of household's years of education, degree of risk preference, partnership status, and use of bank credit are all insignificant. In addition, the indicator variables (not shown) for the non-farm agriculture, mining and manufacturing industries are, as expected, not significantly different from the indicator variable for professional services (the excluded industry).

However, several of the multivariate results are inconsistent with the univariate comparisons for the established small businesses. In a multivariate context the household's non-business income is insignificant, as are the indicator variables for home ownership and whether the business had a loan or guarantee from its owner-manager household. In addition, the univariate results suggested that firms in the "wholesale/retail" and "lower-tech services" industries experienced substantially lower survival rates, a result that is not supported by the multivariate estimation (industry indicator coefficients not shown) for established firms.

Perhaps the most interesting differences between the univariate and multivariate results for the established firms are those for the household non-business income and the indicator variable for home ownership. Higher household non-business income, which appeared to be quite closely associated with firm survival in the univariate table, is

[47] Experiments with other age brackets yielded qualitatively similar results.

insignificant in a multivariate context. This result is surprising and unexpected and reinforces our recommendation in section III that the role of household income in understanding small business finance deserves further research. Similarly, the insignificance of the home ownership variable reinforces our earlier conjecture that the role of home ownership in small business formation and finance is more complex than previously thought.

Turning to results for the new small businesses, only five variables are statistically significant in the logit regression in table 11. Consistent with the results for established firms, the owner-manager household's non-business net worth is positively associated with the probability of a new firm's survival. However, the coefficient on household non-business income is now negative, a result which surely reinforces the need for further research. In addition, the indicator variable for home ownership, insignificant in the established firm logit, is now positive and statistically significant. This result is consistent with the univariate comparisons, but more importantly it reinforces the need for further research on the role of home ownership in small business creation and finance. Lastly the coefficients on the indicator variables (not shown) for the "wholesale/retail" and the "low-tech service" industries are significantly negative, a result consistent with the univariate results and suggestive of the conclusion that these univariate results were driven by the new firms. [48]

[48] More generally, the logit results for the "pooled" sample suggest that the univariate results were, with only a few exceptions, driven primarily by the larger sample of established firms.

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. In addition, our discussion of changes in the industrial classification of small businesses in the SCF from 2007 to 2010 suggested that part of the explanation for the shift of new small businesses toward the "professional services" industry classification was the relatively high rate of job loss among some segments of white collar workers during the Great Recession. We now pursue these hypotheses more deeply using the 2007 SCF and its 2009 panel re-interview. 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 who neither started nor owned a business during the same period.

Univariate tests

Table 12 presents our first set of comparisons. It is immediately 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 12 months prior to the 2007 survey , the means of all of the variables shown are statistically different between households that stated a new business (top panel) and households that did not (bottom panel). 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 use bank 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. Thus, the data seem to support our earlier conjecture.

The last two variables in each panel of table 12 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 12 months before 2007 and 2009 surveys, respectively. Thus, in the pre-recession year of 2007, the same percentage (11 percent) of heads of household had been unemployed sometime in the prior 12 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 our 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.

Multivariate tests

These univariate results are subjected to multivariate tests in table 13, which 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 table 12. With the exception of the "Unemp 12 Mo 2009" variable, all of the right-hand-side variables in this regression are 2007 values of a given variable. Thus, this logit is "forward looking" in the sense 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 reported in table 2. Thus, these logits are "backward looking" in the sense 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 very different direction.

Looking first at the forward-looking panel regression, the logit results are generally, but not fully supportive of the univariate impressions. Consistent with the univariate results, 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 had higher net worth, larger income, and were more educated than households that would not start a business. Also consistent with the univariate results, a household was more likely to have started a business if its head had been unemployed sometime in the year before 2009, and both the head's employment status in the year before 2007 and the household's 2007 ratio of home equity to total net worth were irrelevant. However, unlike the univariate results, the other variables in table 13 are not significantly related to the probability that a household would start a small business in the next two years.

Turning to the backward-looking cross-section regressions, our first observation is that using the 2009 re-interview data we cannot replicate exactly the regressions reported in table 2. This is because, as was discussed in Section II, the 2009 SCF did not collect all of the

data collected in 2007 and 2010. However, we can come very close: the first seven right-hand-side variables given in table 13 also appear in table 2. Of the fourteen coefficients listed for these variables in the two cross-section regressions, eleven are the same sign and statistically significant as in table 2. Thus, the cross-section regressions in table 13 tell essentially the same story as the cross-section regressions of table 2.

When we compare the panel and cross-section results the consistency between the two approaches in some cases becomes problematic. On the consistent side, household net worth and education are positively correlated with the probability of having a new small business in both models, a household head's unemployment status in the year before the 2007 SCF is uncorrelated in both models, and while a household head's age, risk preferences and partnership status are statistically insignificant in the panel regression their coefficients have the same sign as in the cross-section regressions. However, results for three variables – household income, the ratio of home equity to net worth, and the household head's unemployment status in the twelve months prior to the 2009 SCF require further interpretation.

A household's income is, *ceteris paribus*, positively correlated with the probability it will start a small business in the forward-looking panel regression, but virtually always negatively correlated with this probability in the backward-looking cross-section results (both tables 2 and 13). 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 *ex post* households that have started a small business in the previous two or three years tend to have lower incomes than households that do not

start a business. On the other hand, the asymmetry may merely reflect tax avoidance or, more interestingly, the fact that we do not understand the interrelationships between a household's income and its willingness to start a small business. Given the persistent difficulty we have had in this study interpreting the role of income, we choose to conclude that these results reinforce the need for additional research in this area.

The ratio of home equity to net worth is insignificant in the panel regression, but virtually always negative and significant in the cross-section logits (both tables 2 and 13). While this result may just reflect a paucity of observations for the panel regressions, we believe it also reinforces the importance of understanding better the interdependencies between a household's housing assets and its propensity to start and maintain a small business.

Lastly, 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 the panel regression, but negatively correlated with this probability in the 2009 cross-section logit. We believe this asymmetry is perplexing. In our view, for the reasons expressed previously, this coefficient should be positive (or at worst insignificant) in both regressions, especially since most of this period experienced a very weak labor market. Thus, the interactions between employment status and small business creation seem a fertile area for future research.

Our comparisons of the panel and cross-section results lead us to one more strongly-held conclusion: both cross-section and panel data are highly valuable for analyzing these types of issues and no doubt many other topics in household and small business economics.

The 2009 panel SCF was collected as a result of a severe financial crisis and Great Recession, but we believe the data have more than proved that they should be collected on a more regular basis. Only panel data offer a reasonable hope of distinguishing changes due to changed circumstances from changes due to composition effects or shifts within groups.

V. 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 re-interview to investigate a variety of small business finance topics during these two 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.

Access to credit

Table 14 characterizes established (top panel) and new (bottom panel) small business access to credit across our three employee-based measures of firm size in 2009 (left panel) and 2010 (right panel). 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 that were either fully or partially denied credit. Thus, the combination of these rows provides a conventional measure of credit availability. The third row provides an unconventional perspective perhaps unique to the SCF 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.[49] The fourth measure is simply the sum of rows 1 and 3, and thus provides the percent of small businesses that wanted credit whether or not they applied. Row 5 gives our broadest measure of credit availability -- 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, it is clear that the percent of firms applying for credit increased sharply with size in both years and that a much smaller proportion of firms applied for credit in the crisis/recession year of 2009 than during the slightly more robust time of the 2010 survey. For example, in 2009 only about 5 percent of the smallest businesses applied for credit while almost 37 percent of firms with three or more employees did so -- in 2010 the comparable percentages were 11 percent and almost 46 percent, respectively.

While the pattern of increasing percentages with firm size persists for the new firms in both years, larger percentages of new firms across all size classes applied for credit in 2009 than 2010. Moreover, in 2009 the percentages of new firms applying for credit uniformly exceeded the percentages for established small businesses, but the opposite is true in 2010. These patterns suggest the unsurprising conclusion that the crisis/recession year of 2009 put more severe financial strains (i.e. greater need for credit) on new than on established firms.

[49] Thus we exclude from this measure small businesses that might not be considered credit-worthy because they had been denied credit in the recent past.

The next two rows of each panel provide more evidence regarding the degrees of financial stress on established and new firms over these two years. The second row of the top panel suggests that 2009 was generally less stressful than 2010 for established businesses that applied for credit. For example, in 2009 about 8 percent of the smallest established firms that applied for credit were either fully or partially denied credit, but in 2010 this ratio jumped to 24 percent. This conclusion must be softened somewhat because the third row shows that slightly larger percentages of established firms wanted credit but did not apply because they expected to be denied credit in 2009 than in 2010.

Turning to the new small businesses, the second and third rows of the bottom panel reinforce the view that access to credit in 2009 was almost surely worse for new firms than for established businesses. The percentages of firms that applied for credit but were either fully or partially denied are at least three times larger than those for established businesses, and almost eight times larger for the smallest businesses. While only 3 percent of the smallest new firms that wanted credit did not apply because they expected to be denied compared to almost 10 percent of the established firms, much larger proportions of larger new firms wanted credit but did not apply because they expected denial than was true of the established businesses. The situation improved somewhat in 2010, but the percent of new firms that applied for credit but were either fully or partially denied is still larger at the new small businesses across all size classes of firms.

The final two rows of each panel provide, as discussed above, more general measures of credit availability. For established firms, these data once again suggest that while credit

conditions improved somewhat between 2009 and 2010, especially for the smallest businesses, credit conditions were still tight for many firms in 2010. For example, row 5 indicates that while the percent of established firms that said their credit needs were not met fell from 68 percent to 45 percent at the smallest businesses, this percent barely changed at the other two size classes of firms. For new firms, the last two rows suggest a more substantial improvement in credit conditions between 2009 and 2010. Smaller percentages of firms wanted credit in 2010 across all size classes, and much smaller percentages of firms said their credit needs were not fully met in 2010 than 2009. However, these more general measures of credit conditions still indicate that credit conditions were tighter for new than for established small businesses. In both years larger (usually much larger) percentages of new small businesses reported that their credit needs were not fully met than did established firms.

Both the 2009 and 2010 SCFs asked respondents to identify the reasons for either actually being denied (given the small business applied for credit) or expecting to be denied credit (given the small business did not apply for credit). Owner-managers were not prompted with possible reasons, and thus 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 15. In both years, the reasons given range from clearly endogenous factors such as a poor balance sheet and credit history to exogenous causes

such as a weak economy and government regulation. As with previous tables, we begin by examining the established firms and then turn to the new businesses.

Several interesting patterns emerge among the established firms for why credit was either denied or expected to be denied. First, some type of "credit history" issue is the most common reason for either the denial or expected denial of credit.[50] Credit history is closely followed by a "poor balance sheet," and then by concern over the "type" or size of the business.[51] Thus, some concern primarily endogenous to the small business dominated respondents' reasons for the denial or expected denial of credit. Third, in the crisis year of 2009 a "weak economy" was cited by only 6 percent of established firms as the reason for denial, but by 16 percent as the reason for the expected denial of credit. By 2010 these reasons had dropped to a stunning zero percent and 7 percent, respectively. Fourth, "government regulation" and "other" reasons were never important reasons for the denial or expected denial of credit by established firms. Fifth, while there is some variation in the reasons given for the actual versus the expected denial of credit (e.g. the roles of "type/size of business" and a "weak economy" in 2009), the differences between reality and expectations for the established firms seem rather small. Lastly, the large differences in percentages reported in the "viability of business" category from 2009 to 2010 are somewhat perplexing. This category includes reasons such as either the owner-manager or

[50] Both established and new 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.

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

the business was too young, the firm's ability to repay was questionable, and the firm was in a risky industry. All of these reasons are essentially endogenous to the firm, and thus these results may just reflect the dominance of such reasons for the actual or expected denial of credit by established firms. However, their outsized importance in 2010 is puzzling.

The patterns for new small businesses in table 15 are in some ways similar to, but also clearly not the same as those for established firms. Similar to established businesses, some type of credit history issue is the most consistently-cited reason for either the denial or expected denial of credit. More generally, and as was the case for established firms, in addition to credit history new small business owners cite concerns that are essentially endogenous to the business – a "poor balance sheet," the "type/size of the business," and "viability of the business" – as by far the most important reasons for the actual or expected denial of credit. The augmented and consistent importance of "viability of the business" for new firms is particularly interesting because this category includes that the management or firm is "too young" as the reason for actual or expected denial. An area where both established and new firms appear to be in full agreement is the role of "government regulation." Neither group ever cites this as a frequent reason for either the actual or expected denial of credit. In contrast to the established firms, the differences between reality and expectations for the new small businesses are often quite large, and the direction of the difference often reverses itself from 2009 to 2010. Such variability may be explainable and consistent with the relatively higher stresses experienced by new firms. For example, the consistent importance of a "weak economy" in expectation but not in

reality may well reflect rational decision making by owners and managers. However, for now we highlight this as another area deserving of future research for which the SCF is very well suited.

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 also 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 both identified in this research and relevant to policy analysis.

Table 16 provides several perspectives on the importance of credit relationships for established and new small businesses in 2010 across our three firm size classes. 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. As a first observation, the importance of firm size is obvious and quite striking as the percent of firms having some type of credit relationship virtually always increases substantially with the number of employees.

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 commercial bank, in all cases excluding credit cards. Only about 8 percent of the smallest established firms and 11 percent of the smallest new businesses reported such a bank credit relationship in 2010. However, 36 percent of established and 28 percent of new businesses with three or more employees reported such a relationship. Still, these results are somewhat at variance with the "conventional wisdom" that emphasizes the importance of commercial banks to small businesses.

When bank credit cards are added to the definition of a bank credit relationship (row 2), the increased importance of banks is striking. For example, among the smallest established businesses the percent reporting a bank credit relationship jumps from 8 percent to 27 percent, and at the largest firms the percent rises from 36 to 54 percent. Similar jumps occur at the new firms, with the largest firms' percentages rising from 28 to 66 percent. These results differ from previous research which suggested that credit cards are either not very important or that it is not clear how important they are.[52] However, our findings are consistent with the view that commercial banks are an important source of credit for small businesses.

[52] Using the Kauffman Firm Survey, Robb and Robinson (2012) found that credit cards are not that important for new small businesses. Using the National Survey of Small Business Finances, Mach *et al.* (2006) found that while a substantial percent of small businesses use credit cards, it is not clear how important they are as a source of credit.

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 and nonbank financial institutions. Comparing rows 1 and 3 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 very modest source of funds. For example, among the smallest established firms the percent reporting a credit relationship rises from 8 to 10 percent and among the largest firms the percent rises from 36 to 40 percent. Consistent with the life cycle theory of small business finance, the role of nonbank sources at new businesses is more substantial, with percentages rising from 11 to 18 percent at the smallest firms and from 28 to 41 percent at the largest small businesses. Row 4 in both panels reinforces the importance of credit cards to small business credit supply.

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, it is clear that a longer-run perspective increases the observed importance of credit to both established and new small businesses. For example, among the smallest established firms the percent reporting a credit relationship jumps from 10 percent in the short-run to 18 percent in the intermediate-run, and among the largest established firms the percent rises from 40 to 58 percent. Somewhat smaller, but still quite noticeable, increases occur at the new firms. Row 6 adds credit cards and the data continue to emphasize the importance of credit cards even in the intermediate-run.

Rows 7 and 8 of table 16 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 clearly important to the vast majority of both established and new 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. Indeed, this percentage rises to 98 percent of the largest new small businesses.

Primary financial institution

Table 17 shows the percentages of small businesses that identified various types of financial institutions as their "primary financial institution" in 2010. Overwhelming majorities of both established and new small businesses across all three size classes identified a commercial bank as their primary financial institution. At the low end of the spectrum, 70 percent of both the smallest established and the smallest new businesses said a commercial bank was their primary financial institution; and at the top end 90 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 and 96 percent. Having said this, it is noteworthy that almost 14 percent of both the smallest

established and the smallest new businesses did not identify any financial institution type as their primary financial institution; and 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.

Key financial services

Table 18a identifies the most important financial services used by a small business at its primary financial institution (almost always a commercial bank), and table 18b attempts to determine if small businesses tend to bundle, or cluster, their use of financial services at these institutions. Looking first at table 18a, it is clear and perhaps unsurprising that the vast majority (usually over 75 percent) of both established and new firms use a business checking account at their primary institution and that the incidence of use increases with small business size. Indeed, use of each service generally increases with firm size. Business savings accounts are also used by substantial percentages of both established and new firms. Thus, the supply of deposit services is an important function of financial intermediaries for small businesses.

The data in table 18a reinforce the importance of credit services to small businesses. For both established and new firms, business lines of credit and (as in table 16) business credit cards appear to be the most important credit services. For example, 32 percent of the largest established firms and 28 percent of such new firms report having a business line of credit. Business credit cards are used by 28 percent of the largest established small businesses and by 40 percent of such new small businesses. In contrast, business

mortgages are used by relatively small shares of established firms and by virtually none of the new businesses.

In addition to deposit and credit services, the data in table 18a indicate that payments services are somewhat important to small businesses, and perhaps slightly more important to new than to established firms. For example, 13 percent of the smallest established firms report using business payroll services, but 19 percent of the smallest new firms say they use these products at their primary institution. At the largest businesses, comparable percentages are 18 percent and 22 percent.

The data in table 18b generally support the view that small businesses, and especially larger firms, tend to cluster their use of financial services at their primary financial institution. Thus, in this sense these data reinforce the importance of relationship finance. Forty-six percent of the largest established businesses and 54 percent of the largest new small businesses say they consume more than two services at their primary financial institution. And, 56 percent of the largest established firms and 69 percent of the largest new firms say they use at least one credit and one deposit service. Still, substantial percentages of firms say they use only two or even just one service. For example, 50 percent of the smallest established businesses and 43 percent of the smallest new small businesses say they use only one service, and about a third of both established and new small firms report using only two services.

Local banking offices

Table 19 addresses the final small business finance issue to which this paper 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.[53] It is clear that, according to this metric, local banking offices remain highly important to both established and new small businesses across all size classes. 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 three miles (the largest new firms) to a maximum of seven miles (the smallest new businesses). Even the 90th percentile distances are typically only 10 or 15 miles.

VI. A Summing Up

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

The SCFs are a rich source of small business data

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

[53] Again, 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.

important ways, including having three surveys conducted between 2007 and 2010 one of which is a panel, containing extensive data on the close association between small business and household finance, including households that do not own a small business, and collecting a substantial amount of information on small businesses' use of financial institutions and services.[54] While it is difficult to benchmark precisely the SCF data with U.S. 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 classification, ownership structure, and method of acquisition by the household.

The financial crisis and Great Recession had substantial adverse effects on small businesses

Our examination of the SCF data over the period just before, during and just after the financial crisis and the Great Recession revealed a complex picture of small businesses and their owner-managers. To begin with, 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 double digits at both sets of firms. While the financial endowment needed to start a small business increased during the period, perhaps because of tighter credit constraints, the ability of housing net worth to provide that endowment declined.

The data suggest that during the crisis and recession credit supply concerns were substantial for both established and new small businesses, but were much more severe at new small businesses than at established firms. For example, in 2009 the percentages of

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

firms that applied but were either fully or partially denied credit were at least three times larger at new small businesses than at established firms, and almost eight times larger at the smallest new businesses. Data which add the experiences of firms that wanted but did not apply for credit because they expected to be denied reinforce these conclusions. The situation improved somewhat, but was not reversed, in 2010.

The 2009 and 2010 SCFs give additional insight into the nature of the credit supply conditions faced by small businesses during this period. Households report a variety of reasons for their small business either being denied credit or expecting it to be denied credit, and these reasons differ somewhat between established and new firms. In general, both sets of firms cite most frequently reasons essentially endogenous to the firm for the actual or expected denial of credit. Such reasons include issues associated with a firm's credit history, balance sheet, size and, especially for new firms, the age of either the owner-manager or the firm itself. Exogenous concerns, such as a weak economy or government regulation, are cited much less frequently by both established and new small businesses.

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 were started *de novo* by the household, and relatively few were inherited. In addition, substantial percentages of households either made or guaranteed a loan to their small business. These percentages are stable across 2007 and 2010 and are relatively 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.

Multivariate statistical tests indicate that in both 2007 and 2010 a household was more likely to have either an established small business or to have started a new small business in the previous three years if the household (1) had higher net worth, (2) held less of its net worth in home equity, (3) were partnered, (4) were less risk averse, (5) used bank credit, (6) had lower income, and (7) were younger. In contrast, more educated households were less likely to have an established small business, but more likely to have started a new small business.

While all of these results are quite interesting, many reinforce the existing literature (e.g. the importance of household net worth, risk attitude and access to bank credit), and some deserve further investigation, 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 thus consistent with the "conventional wisdom" that many small business owners use their home as collateral for loans that support their small 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 and perhaps provocative conclusion that non-housing forms of net worth may, at the margin, be more valuable to the small business owner, perhaps because they are more liquid.

Laid-off workers responded in part by starting small businesses

Our results indicate that workers who lost their jobs during the Great Recession responded in part by starting their own small business. Statistical tests show that households were more likely to start a small business during the heart of the crisis and the Great Recession (2007-09) if in 2007 they had (1) higher net worth, (2) larger income, (3) more education, and (4) if the head-of-household had been unemployed sometime in the year before the 2009 re-interview. 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 which 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, forward-looking estimations using the 2009 panel re-interview of 2007 SCF respondents find no correlation of household small business creation with the household's ratio of home equity to net worth, access to credit, risk preferences, partnership status and age. While the reasons for these asymmetries in results are not always clear, we believe our analyses of both cross-section and panel data strongly indicate that both types of information are highly valuable for researching the topics addressed in this paper and many other issues in household and small business economics.

Small business survival factors differ greatly between established and new firms

Once again exploiting data from the 2007 SCF and its 2009 panel re-interview, we examined what variables 2007 values correlate with the probability that the business would survive from 2007 through the re-interview. Significant differences are found between

established and new small businesses. For established firms, a higher probability of survival is associated with (1) larger household net worth (excluding the value of the small business), (2) the business being over five years old, (3) the owner being at least in his mid-thirties but not over her mid-60s, (4) larger size as measured by three concepts – number of employees, value of the business, and business income, and (5) adoption of the corporate form of organization. For new small businesses, a higher probability of survival is associated with (1) larger household net worth (excluding the value of the small business), (2) home ownership, (3) membership in the wholesale/retail or low-tech service industries, and (4) possibly lower household non-business income. Thus, the only common variable across established and new small business is household non-business net worth, and home ownership is only relevant for the new small businesses. Moreover, other variables that were highly correlated with the probability that a household would own and actively manage an established or new small business, such as its use of bank credit, years of education, and degree of risk preference, are not associated with the probability of survival during the crisis period.

Relationship finance remains important for small businesses

This study strongly reinforces the importance of relationship finance to both established and new small businesses. In addition, 2010 SCF data indicate that these relationships are heavily focused on commercial banks. Small businesses use deposit, credit and payments services at their primary financial institution, institutions which are almost always a commercial bank. Business checking and savings accounts are the most important deposit services. Payments services, while somewhat important, are much less critical than deposit

and credit services. The fact that small businesses often cluster their use of these services at their primary financial institution is consistent with the importance of relationship finance.

With respect to credit services, our research indicates that business lines of credit, business loans and bank credit cards are the most important credit services. In contrast, business mortgages are used by relatively small shares of established small businesses and by virtually none of the new businesses. The SCF data suggest that credit cards are more important to small businesses than has been found in previous studies. While access to credit is important even for many of the smallest (zero employee) firms, the incidence of credit relationships increases substantially with the size of the business for both established and new firms. In addition, credit relationships tend to increase in importance over time for both established and new firms and for both smaller and larger businesses, and credit cards remain a key component of the credit relationship in the intermediate-run.

Local banking offices remain highly important to both established and new 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 paper is never more than three miles, and other moments of this distribution are consistent with our conclusion. Thus, the continued use of local markets for small business financial services in bank anti-trust analysis is supported.

Recommendations for future research and improved data

Throughout this paper 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, household income, inheritances and education, (2) factors that affect the creation of small businesses, including the role of employment history, and (3) 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, this research was aided greatly by the availability of the 2009 panel re-interview of the 2007 SCF. This was the first panel re-interview of SCF respondents since the major redesign of the survey in 1989, and was done primarily in response to the financial crisis. We strongly recommend conducting future panel re-interviews. The costs of such efforts could perhaps be made manageable by not conducting the re-interview with the same frequency as the tri-annual cross-section SCF, but often enough to provide data over the full economic cycle, or by alternating cross-section and panel re-interviews. Second, existing questions could be clarified, and perhaps augmented somewhat, to focus more sharply 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 are sensitive to the difficulties of adding more questions to an already long survey, but we also believe significant benefits

would accrue from the combination of a small number of additional questions, some culling of less useful inquiries, and some clarification of existing questions. Lastly, we recommend expansion of the sample size to as large a sample as budget realities will allow. The SCF is a truly unique data source for many topics of intense interest to policymakers, researchers, industry participants, and the general public that include but also go far beyond small business finance. However, analysis of many of these topics is often quite 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.

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Appendix: 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 Networth	HH Net Worth less value of SB
Networth	Total HH Networth (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 Institutions in 2007 (other than credit cards (CC) or educational loans)
Home to Networth	Fraction of Networth held in home equity (bounded to [0,1])
Risk Prefs	Subjective self-assessment of riskiness 1-4 (larger is more risk averse)
# 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 Age<35
Age2	Dummy = 1 if 35<=Age<62
Emp	Dummy = 1 if # Employees>=3
Corp	Dummy = 1 if SB is an 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
Longest Job Tenure	Number of years respondent spent in longest job
SB	Dummy = 1 if HH owns and actively manages a SB and their primary business is a non-farm with less than 500 employees. Dummy = 0 if HH is a non-farm 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
FAIL	Dummy = 1 if SB=1 in 2007 and the SB went out of business, =0 if business survived until 2009 or was sold.
Started SB	Dummy = 1 if SB=0 in 2007 and SB=1 in 2009.

Table 1: Characteristics of HHs That Own and Actively Managed Small Businesses and Those that Do Not

	2007				2010			
	Mean	**P50**	**P25**	**P90**	**Mean**	**P50**	**P25**	**P90**
Non SB Owners		N=3135				N=5031		
HH Income	65$^{+*\dagger}$	40	21	120	60^{+*}	38	21	114
HH Age	50.2^{+*}	49	36	77	50.4^{+*}	49	36	76
HH Educ	13.1$^{+*\dagger}$	13	12	17	13.3^{+*}	13	12	17
HH Net Worth	345$^{+*\dagger}$	95	10	693	289^{+*}	57	6	606
Homeowner	0.61^{+*}				0.60^{+*}			
Home to Networth	0.46$^{+*\dagger}$	0.43	0	1	0.42^{+*}	0.33	0	1
HH Partnered	0.55^{+*}				0.54^{+*}			
HH Cred Access	0.66$^{+*\dagger}$				0.45^{+*}			
Risk Prefs	3.2$^{+*\dagger}$	3	3	4	3.3^{+*}	4	3	4
Est. SB		N=938				N=1306		
HH Income	214†	91	58	394	168	75	44	356
Non Bus HH Income	121†	51	13	230	101	48	13	225
HH Age	51.5†	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 Networth	2,405†	652	225	5,723	1,960	529	149	4,225
Net Worth	3,493$^{\dagger(z)}$	807	284	7,645	2,671	615	190	5,456
Homeowner	0.89				0.88			
Home to Networth	0.29†	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†				0.73			
Risk Prefs	2.7†	3	2	4	2.8	3	2	4
New SB		N=199				N=230		
HH Income	115*	73	43	186	107*$^{(z)}$	64	39	193
Non Bus HH Income	91*	54	30	162	93	51	25	180
HH Age	42.6*	41	34	60	42.8*	43	32	60
HH Educ	14.7*	16	13	17	14.6	16	12	17
Non Bus Networth	802*$^{\dagger(y)}$	243	107	1,394	855*	158	47	1,992
Net Worth	1,080*	289	123	2,074	1,079*	215	64	2,362
Homeowner	0.79*†				0.70*			
Home to Networth	0.35*	0.25	0.07	1	0.29	0.15	0	1
HH Partnered	0.83				0.77			
HH Cred Access	0.70*†				0.63			
Risk Prefs	2.7	3	2	4	2.8*	3	2	4

$^{+}$ Mean significantly different from New SBs at 95% or greater. *Mean significantly different from Established SBs at 95% or greater.
† Mean significantly different from 2010 at 95% or greater. All $ values expressed in thousands.
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. (y) indicates significant in logs only.
Risk Prefs are based on 1-4 subjective scale with 1 being riskiest.

Table 2: Probability of Owning and Actively Managing a Small Business (SB)

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 parenthesis.

	Established versus No Small Business				New versus No Small Business			
Variable	2007		2010		2007		2010	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
log(Income)	-0.212***	-0.195***	-0.125***	-0.118***	-0.139**	-0.118*	-0.114***	-0.113***
	(0.045)	(0.044)	(0.027)	(0.027)	(0.064)	(0.064)	(0.034)	(0.034)
HH Age	-0.032***	-0.027***	-0.016***	-0.015***	-0.048***	-0.047***	-0.040***	-0.040***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.007)	(0.007)	(0.006)	(0.006)
HH Educ	-0.056**	-0.057**	-0.056***	-0.052***	0.096**	0.091**	0.146***	0.148***
	(0.023)	(0.023)	(0.020)	(0.019)	(0.043)	(0.043)	(0.038)	(0.038)
log(Networth)	0.782***	0.903***	0.634***	0.730***	0.327***	0.370***	0.242***	0.267***
	(0.043)	(0.046)	(0.030)	(0.035)	(0.056)	(0.063)	(0.036)	(0.039)
Home to Networth	-1.165***		-1.177***		-0.713**		-0.478*	
	(0.225)		(0.194)		(0.299)		(0.269)	
log(House)		-0.078***		-0.058***		-0.038		-0.015
		(0.018)		(0.015)		(0.028)		(0.022)
log(Mortgage)		0.062***		0.047***		0.037*		0.004
		(0.012)		(0.011)		(0.022)		(0.019)
HH Partnerned	0.640***	0.623***	0.531***	0.541***	1.017***	0.961***	0.766***	0.769***
	(0.130)	(0.132)	(0.109)	(0.110)	(0.226)	(0.227)	(0.182)	(0.183)
HH Cred Access	0.465***	0.147	0.650***	0.365***	0.612***	0.419**	0.239	0.215
	(0.104)	(0.119)	(0.094)	(0.113)	(0.176)	(0.197)	(0.152)	(0.181)
RiskPref	-0.125*	-0.133*	-0.133**	-0.151***	-0.325***	-0.335***	-0.298***	-0.308***
	(0.069)	(0.069)	(0.057)	(0.057)	(0.102)	(0.102)	(0.090)	(0.089)

Significance of p<0.01 designated by ***, p<0.05 is **, p<0.10 is *.

Table 3: Key Characteristics of Primary SBs Actively Managed by HHs

	2007				2010			
	Mean	**Median**	**P25**	**P90**	**Mean**	**Median**	**P25**	**P90**
Established SB								
# 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[†]	0.145	0.03	2.24	6.38	0.227	0.067	5.4
New SB								
# Employees	5.3[†]	1	0	9	1.5[*]	1	0	4
Bus Income	124[*]	3.5	0	100	41[*]	0.5	0	65
Bus Sales	968	15	1	406	217	7	0	200
Bus Value	623[*]	22	2	699	659[*]	21	1	391
HH Bus Loan	0.217[*]				0.193[*]			
Amt (% of Sales)	2.10[*†]	0.6	0.210	5.21	172.7[*]	0.5	0.30	4.5

[†]Mean significantly different from 2010 at 95% or greater.

[*]Mean significantly different from HHs with Established SB at 95 % or greater.

HH Loan/Guar is a dummy indicating whether or not the HH had a loan or guarantee to the SB. The Amt (% of Sales) is the percentage of this loan/guarantee relative to SB sales.

Table 4: Industry Classifications of Primary SBs Actively Managed by HHs

	2007			2010		
Established SB	**No Employee**	**Employee=1,2**	**Employee>=3**	**No Employee**	**Employee=1,2**	**Employee>=3**
Agricultural	10.0	5.2	7.1	8.1	8.0	4.6
Mining	19.1	27.8	19.4	15.9	13.0	13.1
Manufacturing	6.5	5.6	8.6	5.0	5.3	7.1
Wholesale/Retail	8.4	10.0	15.9	14.4	14.4	17.2
Lower Tech Service	12.8	16.7	12.0	14.9	21.3	16.3
Prof Services	43.3	34.7	36.9	41.5	38.0	41.8
New SB						
Agricultural	2.1	1.7	2.9	6.7	6.6	1.2
Mining	12.1	9.2	13.3	8.3	16.8	6.5
Manufacturing	6.9	6.5	5.1	11.8	7.5	3.2
Wholesale/Retail	22.8	29.1	7.5	13.1	12.9	22.4
Lower Tech Service	16.3	16.2	31.1	9.3	14.7	12.0
Prof Services	39.8	37.3	40.2	50.9	41.6	54.7

Table 5: SB Ownership Structure

% of Primary SBs Actively Managed by a HH

	2007			2010		
Established SB	**No Employee**	**Employee= 1,2**	**Employee>=3**	**No Employee**	**Employee= 1,2**	**Employee>=3**
Sole Proprietor	71.9	48.4	21.0	73.2	50.8	20.2
Subchapter S	10.5	16.4	24.9	6.9	13.6	32.3
LLC/LLP	11.5	9.2	19.0	14.9	20.8	23.5
Partnership	2.7	21.5	16.6	1.4	10.3	9.3
Other	3.4	4.5	18.5	3.7	4.4	14.8
New SB						
Sole Proprietor	63.0	43.6	30.9	72.1	38.5	12.1
Subchapter S	12.2	5.8	19.4	2.6	6.9	8.9
LLC/LLP	20.5	30.9	22.7	19.0	38.6	41.9
Partnership	2.1	10.1	20.1	3.0	14.1	20.8
Other	2.1	9.4	6.9	2.1	1.9	16.4

Table 6: Methods of Acquiring a SB

% of Primary SBs Actively Managed by a HH

	2007			2010		
	No Employee	**Employee=1,2**	**Employee>=3**	**No Employee**	**Employee=1,2**	**Employee>=3**
Established SB						
Bought/Invest	7.1	11.8	23.6	9.2	10.5	24.8
Started	85.1	81.6	57.2	85.6	81.5	60.3
Inherited	5.8	1.1	9.3	3.5	4.4	4.2
Join/Promote	2.0	5.4	10.0	1.7	3.6	10.7
New SB						
Bought/Invest	4.9	21.7	38.7	7.9	12.8	17.1
Started	89.9	76.5	46.1	89.8	78.8	63.1
Inherited	2.8	0.0	4.4	0.4	3.9	10.3
Join/Promote	2.3	1.9	10.8	1.8	4.5	9.4

Table 7: Characteristics of HHs Who 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 Networth	2,237	557	198	5,514
Home to Networth	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*	63	48	147
Non Bus Income	70*	50	30	135
HH Age	45.9	42	35	65
HH Educ	14.6	15	12	17
Non Bus Networth	515*	180	34	921
Home to Networth	0.40	0.32	0.10	1
Partnered	0.74			
HH Credit Access	0.89			
Homeowner	0.70*			
Risk Prefs	2.92	3	2	4

*Mean significantly different from Open SBs at 95% or greater.

Risk Prefs are based on 1-4 subjective scale with 1 being riskiest.

Table 8: Characteristics of 2007 Primary SBs Actively Managed by HHs, by Survival Status 2007-2009

	2007			
	Mean	**Median**	**P25**	**P90**
Survived 07-09				
# 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				
# Employees	1.74^{+}	0	0	2
Bus Income	28^{+}	2	0	68
Bus Sales	79^{+}	9	1	200
Bus Value	120^{+}	10	0.2	331
Business Age	7.5^{+}	4	1	20
HH Bus Loan	0.15^{+}			
Amt (% of Sales, given loan)	5.52^{+}	1.32	0.6	8.33

$^{+}$Mean significantly different from HHs with Open SBs at 95 % or greater.

HH Loan/Guar is a dummy indicating whether or not the HH had a loan or guarantee to the SB. The Amt (% of Sales) is the percentage of this loan/guarantee relative to SB sales.

Table 9: Surviving vs Failed 2007 SBs by Industry

	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 10: Surviving vs 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

*Survival is defined as the continued ownership of the business by the household. Failed is defined as a termination of the business itself. A reply of "Went out of business" to P09502 in the 2009 SCF.

Table 11: Probability of Survival 2007-2009

Logistic regressions of a 2007-2009 failure dummy on 2007 household and business variables run on the pooled sample and also run separately for established and new firms. 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. A reply of "Went out of business" to P09502 in the 2009 SCF.

Variable	Established	New	Pooled
log(NonBusIncome)	-0.024	-0.373**	-0.084
	(0.062)	*(0.189)*	*(0.055)*
log(NonBusNetworth)	0.148*	0.161*	0.117**
	(0.084)	*(0.088)*	*(0.053)*
Homeowner	0.340	1.537**	0.717
	(0.674)	*(0.729)*	*(0.446)*
Age1	12.872	-0.874	0.095
	(531.766)	*(0.713)*	*(0.546)*
Age2	1.015**	0.788	0.711**
	(0.406)	*(0.621)*	*(0.316)*
Educ	-0.009	-0.006	-0.005
	(0.097)	*(0.139)*	*(0.074)*
HHPartner	0.349	1.210	0.443
	(0.508)	*(0.832)*	*(0.396)*
HHCredAccess	-0.061	-1.808	-0.460
	(0.526)	*(1.312)*	*(0.463)*
RiskPref	0.010	-0.548	-0.165
	(0.264)	*(0.388)*	*(0.199)*
log(BusIncome)	0.093**	0.031	0.052
	(0.045)	*(0.056)*	*(0.032)*
log(BusValue)	0.103**	-0.029	0.071**
	(0.040)	*(0.062)*	*(0.032)*
Emp	1.064**	0.970	0.945**
	(0.518)	*(0.715)*	*(0.390)*
HHBusLoan	0.646	0.082	0.069
	(0.681)	*(0.653)*	*(0.403)*
Corp	0.972**	0.339	0.810**
	(0.482)	*(0.579)*	*(0.335)*
BusAge5	-1.168**		-0.713**
	(0.469)		*(0.336)*
Industry Dummies	Y*	Y***	Y**

Standard errors in parenthesis. Significance of p<0.01 designated by ***, p<0.05 is **, p<0.10 is *.

Table 12: Characteristics of HHs Who Started a SB During Crisis 2007-2009

	2007			
	Mean	**Median**	**P25**	**P90**
Started SB 07-09 N=131 (5.1% weighted)				
Income	97*	70	43	163
HH Age	45.2*	46	34	63
HH Educ	14.5*	15	12	17
Networth	641*	166	39	1,398
Home to Networth	0.46	0.39	0.09	1
Partnered	0.69*			
HH Credit Access	0.56*			
Risk Prefs	2.84*	3	2	4
Unemp 12 Mo 2007	0.11			
Unemp 12 Mo 2009	0.29*			
Did Not Start SB 07-09 N=2464 (94.9% weighted)				
Income	60	40	22	116
HH Age	50	48	35	75
HH Educ	13.1	13	12	16
Networth	294	88	10	657
Home to Networth	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			

*Mean significantly different from HH that did not start an SB 2007-2009 at 95% or greater.

Risk Prefs are based on 1-4 subjective scale with 1 being riskiest.

Table 13: Probability of Starting New Small Business During Crisis (Given No SB in 2007)

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 12 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 three 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.

Variable	*Panel*	*Cross Section 2009*	*Cross Section 2007*
HH Educ	0.151***	0.148*	-0.011
	(0.050)	(0.083)	(0.021)
log(Income)	0.310***	0.020	-0.152***
	(0.095)	(0.075)	(0.039)
Age	-0.012	-0.049***	-0.035***
	(0.008)	(0.013)	(0.004)
RiskPref	-0.172	-0.397**	-0.201***
	(0.121)	(0.176)	(0.060)
HH Partner	0.099	0.667*	0.750***
	(0.217)	(0.370)	(0.115)
log(Networth)	0.076*	0.220***	0.623***
	(0.040)	(0.081)	(0.035)
Home to Networth	0.335	-0.647	-0.969***
	(0.324)	(0.654)	(0.183)
HH Cred Access	0.137	N/A	N/A
	(0.245)		
Unemp 12 Mo 2007	0.207	-0.032	-0.309
	(0.332)	(0.632)	(0.225)
Unemp 12 Mo 2009	0.721***	-1.957*	N/A
	(0.246)	(1.026)	

Standard errors in parenthesis. Significance of p<0.01 designated by ***, p<0.05 is **, p<0.10 is *.

Table 14: Access to Credit in 2009 and 2010

% of Primary SBs Actively Managed by a HH

Established SB	2009			2010		
	No Employee	Employee =1,2	Employee>= 3	No Employee	Employee =1,2	Employee>= 3
1) Applied for Credit	5.2	29.2	36.9	11.3	34.2	45.8
2) Applied, but Fully or Partially Denied	8.2	22.1	19.4	24.1	26.4	23.9
3) Wanted Credit but Did Not Apply b/c Expected Denial	9.6	7.3	8.9	4.4	7.4	7.3
4) Wanted Credit	14.8	36.5	45.8	15.7	41.6	53.1
5) Credit Needs Unfulfilled	67.7	37.7	35.1	45.4	39.5	34.4
New SB						
1) Applied for Credit	19.1	33.5	44.0	8.4	25.8	36.8
2) Applied, but Fully or Partially Denied	63.3	65.6	62.9	27.6	29.2	39.3
3) Wanted Credit but Did Not Apply b/c Expected Denial	3.0	13.5	19.8	4.2	5.2	3.3
4) Wanted Credit	22.1	47.0	63.8	12.6	31.0	40.1
5) Credit Needs Unfulfilled	68.3	75.5	74.4	51.7	41.1	44.3

Table 15: Reasons Credit Either Was or Was Expected to be Denied in 2010

	2009		2010	
Established SB	Denied	Expected Denied (given not denied)	Denied	Expected Denied (given not denied)
Poor Balance Sheet	23.3	37.9	31.0	26.4
Credit History	34.7	36.7	36.6	35.0
Type/Size of Business	30.0	8.7	18.5	12.5
Viability of Business	2.1	0.1	13.9	11.6
Informational Problems	0.0	0.0	0.0	5.6
Weak Economy	5.9	16.1	0.0	7.0
Govt Regulation	2.0	0.3	0.0	0.8
Other	2.1	0.2	0.0	1.0
New SB				
Poor Balance Sheet	4.7	16.3	52.9	21.1
Credit History	25.6	41.7	46.4	20.8
Type/Size of Business	18.1	7.2	0.0	0.0
Viability of Business	45.7	10.6	0.7	34.6
Informational Problems	0.0	0.0	0.0	0.0
Weak Economy	3.9	23.2	0.0	23.5
Govt Regulation	2.1	0.9	0.0	0.0
Other	0.0	0.0	0.0	0.0

Table 16: Credit Relationships of SBs 2010: % of Primary SBs Actively Managed by a HH, within the last 5 years

Established SB	No Employee	Employee=1,2	Employee>=3
(1) Bank Credit (ex. CC)	8.0	27.4	36.1
(2) Bank Credit (in CC)	27.3	45.7	53.6
(3) Credit Relation (ex CC)	10.1	32.5	40.2
(4) Credit Relation (in CC)	27.3	47.8	55.4
(5) Cred Rel or Bus Appl for Cred in Prev 5 yrs (ex CC)	18.2	47.4	58.3
(6) Cred Rel or Bus Appl for Cred in Prev 5 yrs (in CC)	32.2	57.3	67.1
(7) Cred Rel or Bus/HH Appl for Cred in Prev 5 yrs (ex CC)	77.1	81.7	86.1
(8) Cred Rel or Bus/HH Appl for Cred in Prev 5 yrs (in CC)	82.1	84.6	88.4
New SB			
(1) Bank Credit (excl. CC)	10.8	18.2	28.2
(2) Bank Credit (incl. CC)	26.1	42.0	65.7
(3) Credit Relation (excl. CC)	17.5	29.6	40.5
(4) Credit Relation (incl. CC)	27.6	45.6	71.9
(5) Cred Rel or Bus Appl for Cred in Prev 5 yrs (ex CC)	20.7	43.4	55.2
(6) Cred Rel or Bus Appl for Cred in Prev 5 yrs (in CC)	28.6	55.7	78.9
(7) Cred Rel or Bus/HH Appl for Cred in Prev 5 yrs (ex CC)	82.1	89.8	93.2
(8) Cred Rel or Bus/HH Appl for Cred in Prev 5 yrs (in CC)	83.3	92.2	98.2

(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 5 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 5 years or since existence.
(8) Reflects (7) plus credit cards.

Table 17: Primary Financial Institution of a SB in 2010

% of Primary SBs Actively Managed by a HH

Established SB	**2010**		
	No Employee	**Employee=1,2**	**Employee>=3**
Commercial Bank	70.3	80.8	83.3
Savings Bank	8.5	6.8	7.0
Credit Union	6.4	4.8	2.9
Fin/Loan Co	0.8	0.7	0.8
Brokerage	0.3	0.1	0.0
Mortgage Co	0.0	0.5	0.0
Other	0.0	0.7	1.3
None	13.7	5.6	4.5
New SB			
Commercial Bank	70.4	81.6	89.6
Savings Bank	3.1	7.0	4.9
Credit Union	11.3	6.8	1.2
Fin/Loan Co	1.0	0.0	0.0
Brokerage	0.4	0.0	0.0
Mortgage Co	0.1	0.0	0.0
Other	0.0	0.0	0.0
None	13.6	4.6	4.2

Table 18a: Financial Services Used By a SB at its Primary Financial Institution in 2010

% of Primary SBs Actively Managed by a HH

Established SB	**2010**		
	No Employee	**Employee=1,2**	**Employee>=3**
Business Checking	75.8	88.2	91.0
Business Savings	17.0	29.1	38.9
Business Line of Credit	5.6	22.7	32.1
Business Mortgage	2.2	7.9	8.8
Business Credit Card	13.8	22.7	28.2
Business Payroll	13.0	15.4	17.7
None	5.7	2.4	2.2
New SB			
Business Checking	66.6	84.4	90.2
Business Savings	20.3	30.8	27.7
Business Line of Credit	10.6	16.7	28.2
Business Mortgage	0.0	2.8	0.0
Business Credit Card	9.7	22.0	40.2
Business Payroll	18.6	25.6	22.1
None	11.1	3.3	0.0

Table 18b: Number of Financial Services Used by a SB at its Primary FI in 2010 (Given at least 1)

Established SB	2010		
	No Employee	Employee=1,2	Employee>=3
1 Service	49.6	33.2	23.4
2 Services	32.8	32.3	31.1
>2 Services	17.6	34.5	45.5
At least 1 Credit and 1 Deposit Service	31.0	47.8	55.9
New SB			
1 Service	42.6	28.4	22.8
2 Services	34.2	36.1	23.5
>2 Services	23.2	35.5	53.7
At least 1 Credit and 1 Deposit Service	28.6	45.5	68.7

Table 19: Distance to Primary Financial Institution from SB in 2010

Established SB	2010			
	Mean	Median	P25	P90
0 Employees	4.29	2	0	10
1,2 Employees	5.48	2	0	15
≥ 3 Employees	6.32	2	0	15
New SB				
0 Employees	7.06	3	0	20
1,2 Employees	5.42	3	0	10
≥ 3 Employees	3.15	1	0	10