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Statistical Databases for Economic Research on the Financing of Small Firms in the United States

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This paper updates information about the databases available for researchers in conducting small business financial research. A definition of a statistical database is provided first as a basis for selecting a database suitable for statistical research. Five major databases are discussed in detail, followed by a brief discussion of eight data sources for time series information on activities in specific financing markets for small firms. Comments are provided on the strengths and weaknesses of each of the five major databases regarding their uses for conducting different types of research and on possible areas for improvement.

Introduction

Research on small business financing issues has been much hampered by the lack of statistics. Financial data come from the users of financial services—the small business borrowers—and/or the suppliers—the lenders and investors. Small firms are reluctant to provide information about their finances, and lenders/investors have been unwilling or unable to provide lending data classified by the size of the borrowing businesses. Except in the case of data compiled from administrative records and reports submitted by businesses and financial

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institutions, obtaining information on small firms' financing activities usually requires special surveys.¹

Policymakers and researchers need information to answer a variety of questions concerning the financing of small and medium-sized enterprises: What is the structure of the financial market for small firms?. Who are the participants, and how important are they to the lenders and borrowers? What are the costs? What factors affect participants' decisions in the market? How are the markets responding to changes in external conditions, such as economic conditions, deregulation, re-regulation, etc.?, How are the markets performing? How are the markets serving subgroups of borrowers such as minority- and women-owned firms, and start-up firms? Are there financing gaps and if so, what are the causes of the market imperfections—discrimination by the suppliers, underdevelopment of the market, high transaction costs as a result of high search costs? What has the government done to help? How successful have any such efforts been?

Different kinds of data are needed to investigate different issues. Cross-sectional data on the types of borrowers and lenders, the classes of products, geographic distribution, etc., are most useful for profiling the structure and characteristics of the market and its participants. A longitudinal or panel-type database is needed to examine a firm's decision and actions at different life-cycle stages. A cross-sectional database updated regularly over time with consistent data collection criteria and methods for a defined population offers opportunities for time-series analysis.²

Another issue that impinges on the availability of data is confidentiality. Micro-firm data enable researchers to investigate individual firms' decision making processes—a firm's borrowing decision and a lender's lending decision. But many statistics collected by government agencies come as part of administrative records such as tax returns and unemployment insurance program filings, and are made available only in aggregate statistics.³ It has been difficult to obtain permission to access micro data because of confidentiality issues. Some public use files, however, have been created by these agencies to make the micro-firm data available to the public for research.⁴

This paper will provide a survey of statistical databases available for research on small business financing in the United States.⁵

¹ A review of the data sources used in the chapter on “Small Business Financing” in the 1982 edition of the State of Small Business: A Report of the President include the Quarterly Financial Reports (then by Federal Trade Commission), Statistics of Income data (from SOI Division of the Internal Revenue Services), The Flow of Funds Account and Statistical Release E.2 from Federal Reserve Board; “The Single Most Important Small Business Problems” (National Federation of Independent Businesses) and special tabulations on common stock offerings by the Securities Exchange Commission. See The State of Small Business: A Report of the President, March 1982.p. 105-133. In the later editions, information about commercial and industrial loans by small banks and venture capital investment from Capital Publishing Co. were added.

² A database conducive to time-series analysis requires consistency in both the definition of variables and the statistical methodology of data collection.

³ Preserving the privacy of the subjects of research—avoiding revealing the identity of individual reporting units—is a major concern of statistical collection agencies.

⁴ Examples include IRS Statistics of Income Division's individual income tax public use files and the Bureau of the Census Business Information Tracking Series files.

⁵ This paper will be prepared in a format similar to two previous articles prepared by Ou (1990) and Wolken (1995).

I. What is a Statistical Database?

A statistical database is a database for a well-defined population. Populations can be of varying sizes as long as they are well defined. The Office of Advocacy estimates that there are 23 million small firms, but only 5.7 million small “employer” firms, based on estimates from the Bureau of the Census.⁶ There are subgroups of small firms—by race, industry, and special business characteristics. For example, statistics are regularly collected for members of one of the largest small business trade associations in the United States, the National Federation of Independent Business (NFIB).

Information for a population can be collected from all known members of the population—so-called census data—or from a statistically representative sample of the population that the data are intended to describe or depict. A statistically representative sample requires that a generally acceptable survey methodology has been utilized to generate unbiased estimates of the population. The sampling methodology should meet requirements such as that the respondents are randomly selected rather than self-selected, non-response bias is known, etc. In short, the estimation must be capable of being duplicated.

The information collected must be for a specific time frame—during a certain time period (for flow information) or at a certain point in time (for stock information).⁷

In addition, the variables to be estimated should be defined and interpreted consistently by the respondents and data collection organizations. This is especially important with financial data from small firms, as many small business owners are unfamiliar with financial terminology. For example, a business’s net worth is obtained by subtracting the value of debts from total assets owned by the business. This value does not exist until the business owner takes account of the firm’s assets and liabilities. Moreover, the value of net worth can vary since assets can be based on either cost or market value.⁸

II. Major Statistical Databases for Financial Research in the United States

The following databases meeting these criteria will be described in terms of their coverage, the regularity of data collection, and strengths and limitations with respect to various small business research efforts:

1. The Survey of Small Business Finances (NSSBF for 1987 and 1993 and SSBF for 1998)
2. Loans to small businesses by depository institutions—call reports (June edition) and Community Reinvestment Act (CRA) reports (since 1997)
3. Consumer Finance Survey (CFS by the Board of Governors of the Federal Reserve System)

⁶ U.S. Small Business Administration, Office of Advocacy, *Small Business by the Numbers*.

⁷ For example, flow information might include output, sales, and profits during a given quarter or a given year, as contrasted with stock-type information on the number of employees, value of total assets, or value of debts outstanding as of a certain date. This is one reason statistics collected in many commercial databases are not used by researchers as aggregated statistics for comparisons over time. For example, employment data from the Dun & Bradstreet file is not suitable for analysis of job creation over time by small firms in the United States.

⁸ In this respect, data collected through interviews is more accurate than that obtained through mail surveys, unless the questions in the mail survey are simple and easily understood. Data collected in the SCF and SSBF are examples—all terms were well defined and interviewers were well trained to explain the terms when necessary.

4. Tax return data from the Statistics of Income (SOI) division of the Internal Revenue Service (IRS)
5. The National Federation of Independent Business (NFIB) studies of Credit, Banks, and Small Business, a survey of a special group of small firms—the members of the NFIB.

A. Survey of Small Business Finances (SSBF, 1998)

The Survey of Small Business Finances (formerly called National Survey of Small Business Finances for earlier surveys) collects information on small business finances from a nationally representative sample of small firms with fewer than 500 employees in the United States. The Board of Governors of the Federal Reserve System conducted three national surveys on small business finances in 1988 (using 1987 information), 1994-1995 (using 1993 information), and 1999-2000 (using 1998 information) (Table I).⁹

The SSBF (or NSSBF) is the most comprehensive source of data available on small businesses' use of financial services and the suppliers of these services. The survey collects detailed information about a firm's uses of all types of services and credit and their respective suppliers; characteristics of the firm and its primary owner (for example, firm and owner age, industry, and type of business organization); and the firm's income statement and balance sheet. The survey also asks for information about the firm's most recent borrowing experience, as well as its use of trade credit and capital infusions in the most recent period.

For the 1998 SSBF, a cross-sectional sample of 3,561 for-profit, nonfinancial business enterprises responded to the telephone interview (compared with 4,637 for 1993). These firms are a sampling of about 5.2 million small businesses in operation at the end of 1998.¹⁰

A consistent definition and a majority of identical questions used across all three of the NSSBF/SSBF surveys permits an analysis of changes over time. However, as with other data collections of general purpose statistics, the NSSBF/SSBF database will not provide information to investigate many other financing issues that are of interest to researchers and policymakers.

A small final sample size is one of the major deficiencies of the 1998 SSBF.¹¹ This deficiency makes a detailed investigation of the financing issues for subgroups such as small firms owned by African Americans, Asians, etc., difficult, if not impossible. Another problem with the survey, a problem faced by all surveys directly collecting financial information from small firms, is the long average interview time. In a survey for a comprehensive profile of a firm's financing sources, this is inevitable. However, high costs have reduced the likelihood of

⁹ The first two surveys were called the National Survey of Small Business Finances (NSSBF). The Small Business Administration co-sponsored the first two surveys in 1988 and 1993. The Federal Reserve Board conducted a new survey covering information for the year 2003 during 2004-2005. It is expected that data will be made available for public use by the Spring of 2006.

¹⁰ See Bitler, Robb, and Wolken, "Financial Services Used by Small Business: Evidence from the 1998 Survey of Small Business Finances," *Federal Reserve Bulletin*, April 2001. See also U.S. Small Business Administration, Office of Advocacy, *Financing Patterns of Small Firms: Findings from the 1998 Survey of Small Business Finances*, September 2003.

¹¹ Despite an extra effort extended to increase the response rates for minority-owned firms in the 1998 survey, the outcome was a disappointment to the Federal Reserve Board's project director. The final count of small minority-owned firm respondents was 273 African-American owned firms, 214 Asian-origin firms, and 260 Hispanic-origin owned firms.

increasing the frequency of conducting the survey, say, every two or three years instead of every five years.¹²

Interim surveys using a shorter questionnaire covering more up-to-date developments in small business financing would be a very useful supplement to the present data collection effort. More information on lenders, especially commercial banks, could be included in the public use database. Finally, questions could be revised to obtain better information on the uses of equity capital.

Financial researchers at the Federal Reserve Board and the Federal Reserve Banks have utilized extensively the survey data, supplemented by internally available banking data for research on small business financing issues. The Office of Advocacy of the U.S. Small Business Administration has also sponsored contract research with special emphasis on utilizing “large database,” including this survey.¹³ For a listing of research conducted using this database by researchers at the Federal Reserve, the Small Business Administration, and other small business researchers, see the “Survey of Small Business Finances abstract” www.federalreserve.gov/publs/oss/oss2/abstract.html/

B. Loans to Small Businesses by U.S. Depository Institutions

Two databases are available for statistics on loans to small businesses by insured depository institutions (banks and thrifts or savings and loans). They are the Reports of Condition and Income (the call reports) submitted by all insured institutions and reports submitted under the Community Reinvestment Act requirements (the CRA reports) by larger depository institutions.

B. 1. June Call Reports on lending to small firms.

Since 1993, the Federal Reserve Board and other regulatory agencies have required all insured depository institutions to report on small business lending in mid-year Reports of Condition and Income (June call reports).¹⁴ These data are collected to measure the extent of insured depository institutions' lending to small businesses. In June 2002, there were 7,949 commercial banks submitting the reports (Table II).

In the June edition of the call reports, insured depository institutions report on two types of business loans: (1) commercial and industrial loans outstanding to U.S. businesses and (2) loans secured by non-farm nonresidential properties, by loan size. That is, the annual June reports cover, for each type of business loan, the number and amounts outstanding for loans with origination amounts of less than \$100,000, \$100,000-\$250,000, and \$250,000 to less than \$1 million.¹⁵

¹² It is always expensive to collect financial information from small businesses—because of the high costs of reaching the potential respondents, obtaining successful responses, editing the responses, etc. The costs are believed to have amounted to several hundred dollars per successful response for the 1998 and 2003 surveys. High cost has been one of the major considerations in the Federal Reserve Board’s decision on conducting this survey.

¹³ www.sba.gov/advo/research/

¹⁴ Major reporting problems occurred in the first year (1993), but since 1994, the data have been mostly reliable.

¹⁵ Origination amounts are the larger of the loan extension, loan commitment, or total loan value if the extension is part of a loan participation.

Attractive features of the call report data set are:

1. It is an administrative record submitted by all institutions under reporting requirements.¹⁶
2. It is fairly timely; data are available within three to four months.
3. With a well-defined population, annual data can be collected over time to permit a time-series analysis of small business lending activities;
4. Longitudinal studies could be attempted by creating panel data. However, extensive efforts would be required, including the uses of other banking files maintained by the federal regulatory institutions—the Federal Reserve System, the Federal Deposit Insurance Corporation, etc. because of extensive merger and acquisition activities of major banks during the past two decades.¹⁷

B. 2. The Community Reinvestment Act (CRA) database

The Community Reinvestment Act (CRA), enacted in 1977, was intended to encourage and monitor banks to meet the credit needs of the local communities from which they obtain deposited funds. The geographic location of loans made by the depository institutions is identified in the reports submitted to federal financial regulatory agencies. In 1994, the federal banking supervisory agencies revised the regulations implementing the CRA. The revisions included a requirement that banks report data on small business lending by census tract (Table III).¹⁸

To minimize the paperwork burden on small banks, the bank regulatory authorities require only banks with assets over \$250 million or any member banks of a bank holding company (BHC) with assets over \$1 billion to provide this information. For 2001, some 900 banks and BHCs filed CRA reports. These banks made 73 percent of the small business loans under \$ 1million. However, they accounted for 86 percent of total domestic assets and 87 percent of all business loans (based on June 2002 call reports for these banks).¹⁹

B. 3. A Comparison of the Two Data Sets

The call report and CRA data complement each other, but are not comparable, in that they provide different kinds of loan information, are identified differently by location, and cover different banks (not all banks are required to report under the CRA program) (Table IV).

CRA data reflect the loans being made during a given year (the flow of credit), while the call reports cover all the loans outstanding as of June 30 of the year (the stock of credit). The call reports attribute all lending of a banking organization to the state where the

¹⁶ However, a member of a bank holding company (BHC) can file a separate report or report its activities in the consolidated report filed by the parent BHC.

¹⁷ See, KeyPoint Consulting, LLC., (by Hancock, Wilcox, and Peek) The Effects of Mergers and Acquisitions on Small Business Lending by Large Banks, a report prepared for the U.S. Small Business Administration, Office of Advocacy. March 2005. www.sba.gov/advo/research/banking.html

¹⁸For more information about the history of the CRA, see “Home Purchase Lending in Low-Income Neighborhoods and to Low-Income Borrowers,” *Federal Reserve Bulletin*, February 1995, 71-105, and “New Information on Lending to Small Businesses and Small Farms: The 1996 CRA Data,” *Federal Reserve Bulletin*, January 1998, 1-35.

¹⁹ See Table G in U.S. Small Business Administration, Office of Advocacy, *Small Business and Micro Business Lending in the United States, 2002 edition* (December 2003).

headquarters of the reporting bank is located,²⁰ while the CRA data report actual lending in a given census bloc.²¹

One major limitation of the banking data is that only very limited information is available about the loan contracts—nothing about the business borrower, loan type, loan terms (including maturity, loan costs, etc.), or the location where the loans were made (for call report data). Small loan size is used as a proxy for lending to small firms.²²

Second, depository institutions make loans to small businesses through different channels—indirectly through personal loans to business owners in the forms of home equity lines, home equity loans, and personal credit cards or credit lines, as well as directly through loans to businesses *per se*. Personal loans used for business purposes will not be booked as commercial and industrial loans or non-farm, nonresidential property loans.

Additional problems arise in attempts to use the CRA database for time-series analysis. As the number of reporting banks and the component banks of a BHC change over time, the reporting population is not defined. Caution is needed to conduct a time-series analysis of aggregate trends in small business lending by CRA-reporting banks.

Another major problem is that the CRA database provides only loan data. Other information about a bank's lending activities and performance can be obtained by linking the CRA data files to the call report files. While it is easier now to link the two databases, the results have not been totally successful.²³

Comparisons of figures in the two databases are also difficult, as CRA data reflect annual flows, and call report data reflect loans outstanding as of June 30, and there is no information about the maturity structure of the loans made.

Finally, the number of credit card loans issued by major banks has been increasing. The amount of these loans reflects line limits, while the loans outstanding are amounts drawn down. Since many banks do not report credit card operations separately (for example, Wachovia, U.S. Bankcorp, Wells Fargo, and others) the relationship between loan flows and loans outstanding becomes rather complex.

Of course the data would be more useful if firm size rather than loan size is available. In addition, for banks that issue considerable credit in the form of business credit cards and that maintain separate accounting operations for these activities, credit card activities should be reported separately from other C&I lending.

Despite the limitations of these data, a sizeable body of literature has used the call reports and the CRA database to examine issues centering around bank consolidation and the effects of bank size on small business lending. Examples: papers by Peek and Rosengren (1998); Strahan and Weston (1998); Berger et al. (1998); Walraven (1997); Dr. James Kolari (2003) K.

²⁰ Given the recent increase in interstate mergers, call report data become less relevant and CRA data become more relevant in understanding the lending activity in a given state.

²¹ For example, in the call report database, Wells Fargo is shown as located in California, but the CRA database shows Wells Fargo lending in all 50 states. Consequently, CRA data are important in analyzing the state-by-state lending behavior of the larger banks.

²² However, this assumes that small loans are initiated with small firms. In some situations, this assumption may not be tenable. The 1997 revision to the CRA required banks to report loans to businesses with annual revenues under \$1 million. This should provide useful reference information.

²³ In the 2000 version of *The Bank Holding Company Study*, matching was successful so that both the Call Report and CRA information on BHCs could be ranked using Advocacy's four-variable methodology.

Samolyc and B. Avery (2002); Avery, Bostic, and Canner on the CRA Special Lending Programs, *Federal Reserve Bulletin*, November 2000.²⁴

III. The Survey of Consumer Finances (SCF)

The Survey of Consumer Finances (SCF) is a triennial household survey sponsored by the Federal Reserve Board with cooperation from the Statistics of Income Division (SOI) of the Internal Revenue Service (IRS). Detailed data are collected on household finances—sources of household income and expenses, details of holdings of assets and debts, as well as employment status, household characteristics, and risk-taking attitudes. The most recent survey, the 2001 SCF, collected information between June and December of 2001 (Table V).

While most interviews were obtained in person, about 35 percent were conducted by telephone, generally as an accommodation to respondents' preferences.²⁵ Since data are collected on certain items that are not always widely distributed in the population (e.g. ownership of privately held businesses or tax-exempt bonds), the SCF combines two techniques for random sampling. The sample is selected from a dual frame that is composed of a standard, multistage area-probability (AP) sample and a list frame.²⁶

SCF is the best database to investigate the financial behavior and investment activities of owners of, and investors in, privately held businesses in the United States. It allows the researchers to develop a profile of household heads that own and invest in privately held businesses, including the number and changes in the number of households that own privately held businesses; profiles of different types of business owners and non-business owners, including multiple business owners/investors and career-oriented self-employed individuals. (The table provides a brief description of these owners for 1989 through 2001.)²⁷ Since the SCF included questions on detailed household financial transactions—investment in personal and business assets as well as the sources of financing—it is an invaluable source of information on the intermingling of owners' personal and business finances. (See Avery and Haynes on wealth as collateral versus uses of personal financing sources (HELIC), etc. for business purposes).²⁸

Since the unit of observation is the head of a household, information collected has more relevance to the activities of the business owner than to the business(es) they own. While the survey also collects information about the businesses households own—including the number of employees, type of business, industry, gross revenues, net income, how and when the business was acquired—the database is not an important source of information on the small business population (privately held businesses) in the United States. The data provide a profile of the “first” businesses identified by the business owners for the 1998 survey. Of a total of 13

²⁴ Data became available in 1997. See also annual analyses of banks' lending to small firms by the U.S. Small Business Administration, Office of Advocacy, in *Small Business and Micro Business Lending in the United States, 2002 Edition*, and editions for years from 1994 through 2001.

²⁵ For the 2001 Survey of Consumer Finances, the median-length interview required approximately 79 minutes, although complicated cases took substantially longer. 2004 data shall be available during the Spring of 2006.

²⁶ See Kennickell and McManus [1993] for a discussion of the sample design. The list frame is based on statistical records derived from tax returns. The list sample is designed to over-sample relatively wealthy families (excluding the Forbes' 400 wealthiest in the United States). Of the 4,449 completed interviews in the 2001 survey, 2,917 families came from the AP sample and 1,532 came from the list sample. The response rate for the AP sample was about 68 percent. The overall response rate for the list sample was about 30 percent.²⁶

²⁷ See Charles Ou and George Haynes, *A Profile of Owners and Investors of Privately-held Businesses in the U.S. 1989-1998*; Advocacy Working Paper series, November 2003 (www.sba.gov/advo/stats/).

²⁸ See also, Haynes, G. W., Walker, R., Rowe, B., & Hong, S. (1999). “The Intermingling of Business and Family Finances in Family-owned Businesses.” *Family Business Review*, 12(3), 225-240.

million first businesses owned by 13 million business owners, 6.5 million are sole proprietorships—3.75 million non-employer sole proprietorships and 2.8 million sole proprietorships with employees. That is, of a total of 7.23 million employer firms identified as the first business owned, 2.8 million were sole proprietorships. Also, there was a total of 5.2 million employer firms in the U.S. in contrast to the 7.2 million identified in the SCF. Apparently, many businesses have multiple owners and many business owners owned multiple businesses.²⁹

For working papers and articles using the SCF, visit the Federal Reserve Board website at www.federalreserve.gov/pubs/oss/oss2/methods.html/ See also George Haynes (2003), and Ou and Haynes (2003).

IV. Tax Return Data from the Statistics of Income Division of the Internal Revenue Service

Tax returns submitted by business taxpayers containing statements of revenue and expenses and balance sheet statements (for assets and liabilities) are the most comprehensive data on the financial conditions of businesses in the United States.³⁰ The Internal Revenue Service's Statistics of Income division annually conducts a sampling of tax returns (for different company organizations) for information on the financial condition of business operations in a given calendar or fiscal year for the business (Table VI).³¹ Aggregate data are tabulated by industry code and by firm size and are made available to the public through publication of the reports.

The SOI database has been used by various federal statistical agencies as the basis for estimates of various economic and business activities in the United States.³² Various traditional financial ratios have been computed for use by financial analysts (for corporations and partnerships that are required to file balance sheet statements with the IRS).³³

Overall, the database is not very useful for doing research on issues related to the availability of financing to small firms and the role different suppliers play in the small business financing markets. One major limitation of the database is that since the data are for tax filing purposes, the asset and liability items are grouped in a general purpose accounting format—e.g. debts in the balance sheets filed are grouped with reference to maturity—current, short-term and long-term debts (with maturities of over one year), and by debt type such as bonds, trade debts, or mortgage-related debt. No reference is made to other debt types, such as credit lines, or to debt sources or suppliers of the funds.

The database also offers limited information about the sources of equity capital for small firms. Only one source of internal equity—retained earnings—can be identified from

²⁹ The database could be an useful source of information on small sole proprietorships owned by American households—those that have yet to be captured in the Census Bureau file.

³⁰ Internal Revenue Service, Statistics of Income Division, *Sole Proprietorship Returns*, various years; *Partnership Returns*, various years; *Corporation Income Tax Returns*, various years, and *Corporate Source Book*, various years. However, no balance sheet information is required in the sole proprietorship tax filings. See also the SOI Division's *SOI Bulletin* for articles about these publications, as well as an analysis of the developments in these sectors.

³¹ The sample sizes are around 12,000 for corporate tax returns and 50,000 for sole proprietorship returns.

³² The U.S. Department of Commerce's Bureau of Economic Research and Bureau of the Census have made much use of the SOI database. SOI data on corporations has also been essential for reaching high-income households in the United States for the Survey of Consumer Finances.

³³ Prentice Hall, Financial ratios for U.S. Business, various years (until 1985?).

these annual statements.³⁴ Moreover, the value of net worth is not well defined because it is a residual item in accounting, defined after both the values of total assets and liabilities are established.³⁵ This also explains why a large number of small corporations show negative net worth in the tax returns, even though these corporations continue to operate with positive cash flows and vitality.

Finally, confidentiality (and disclosure) issues remain a major obstacle hindering researchers' access to more details or micro-data in the SOI databases.

V. NFIB Survey of Credit, Banks, and Small Business

The National Federation of Independent Business (NFIB) initiated a survey on credit market activities and attitudes of its members in 1980. Subsequent surveys were conducted in 1982, 1984, 1987, 1995, and late autumn of 2001. The findings of the recent survey appear in *Credit, Banks, and Small Business—the New Century* (Table VII).³⁶ This constitutes the longest time series on small business finances, longer than the National Survey of Small Business Finances conducted by the Federal Reserve Board (beginning in 1987). While there is some overlap in content between these two perspectives on small business finances, they are on the whole complementary. The NFIB credit and banking survey is designed more to collect information for investigation of the changing market conditions and their impact on small business financing. The Federal Reserve Board survey collects statistics on broader areas of small business financing--detailed information on the uses of all types of credit and financial services, with specific links to the suppliers.

From the beginning, the survey sample for *Credit, Banks, and Small Business* has been drawn from the NFIB membership, and this is also true of the 2001 edition.³⁷ More attention has been devoted to obtaining information on borrower and lender characteristics, changes in credit market conditions and lending practices, and the experience of small business owners in the banking markets. Information collected covers sources of financing for small firms; types of financing, such as credit cards, trade credit, and other products and services; technology and product/service use; credit availability and terms; the credit search, including the effects of mergers and acquisitions on banking competition; and the prices for and quality of the financial services used by small firms.

B. Statistics for Time Series Analysis of Small Business Financing Issues in the United States.

The data described above are more comprehensive data collection efforts, intending to provide a more detailed description of the markets— market activities as well as factors that affect the behaviors of the market participants. Most of these databases are not designed to

³⁴ See *The State of Small Business: A Report of the President, 1987*, Chapter 2, 72-74.

³⁵ Consequently, it is not very meaningful to calculate one important indicator—the debt-to-equity ratio. The broad NAICS industry grouping does not help either.

³⁶ NFIB Research Foundation, *Credit, Banks, and Small Business—the New Century*, at www.nfib.org

³⁷ NFIB, “The *Credit, Banks...*”. micro-data are available for researchers wishing to use them. While the NFIB membership is large and generally reflects the broader population, the sample inevitably creates questions about whether it is representative of the small business population in the United States. The authors of the studies discussed weighting the data in response. A set of weights appears in the dataset for those who are more concerned about whether the sample is representative and less concerned about change over time. The weights were created by the authors from a three-axis matrix consisting of employee size of the business (four classifications), industry (eight major SIC codes), and geographic region (seven regions). The matrix was produced by the Office of Advocacy of the U.S. Small Business Administration.

provide time-series information for the analysis of trends and cyclical fluctuations in the market activities. It is true that there are enough years of annual call report data to portray some trends, but not cyclical changes. Because of the short duration of recessions in the U.S. economy over the past 30-40 years, only quarterly data permit an analysis of small business financing issues during these periods.³⁸

Data have been collected and estimates made for financing activities in some specific markets used by small firms to examine trends and cyclical changes in the credit conditions confronted by small businesses. For example, quarterly data are available only on a very limited basis from the Flow of Funds Accounts data prepared by the Federal Reserve Board. Quarterly surveys on the banks' lending conditions and small firms' perceptions of credit availability are conducted by the Federal Reserve Board and the NFIB (from their member survey). Quarterly estimates are now also available for venture capital funding.

Some of these databases are collected with a lower degree of comparability with other comprehensive databases—that is, with different small business definitions, a less comprehensive small business population, and for some, the sample may not be statistically representative, etc. The data collected, or estimates provided, however offer more current information about developments in the markets and changes in activities in the markets for small business financing. These series include:

1. Federal Reserve Board, "Flow of Funds Accounts"
2. Federal Reserve Board, "Senior Loan Officer Opinion Survey"
3. Federal Reserve Board, "Survey of Terms of Business Lending" (Statistical Release E2) on bank loan rates by loan size
4. U.S. Department of Commerce, Bureau of the Census, Quarterly Financial Reports
5. National Federation of Independent Business (NFIB), quarterly (and monthly) surveys of business expectations
6. National Venture Capital Association (NVCA)/Thomson Financial Corporation, Venture Capital Yearbook
7. Center for Venture Research, University of New Hampshire, angel capital
8. Thomson Financial, initial public offerings (IPOs) of small issuers

A brief description of these data series are provided below.

1. Flow of Funds Accounts for Non-farm, Non-corporate Business in the United States

The Federal Reserve Board's Flow of Funds data provide estimates of the sources and uses of funds by non-financial corporate businesses and by non-farm, non-corporate businesses. Commercial mortgage loans and bank loans not elsewhere classified are identified as the sources of funds in the flow of funds accounts. Since no breakdown for small corporations is available in the non-financial corporation accounts, only the information on accounts for non-

³⁸ See Popkin and Company, *Small Business during the Business Cycle*, prepared for the U.S. Small Business Administration under contract no.SBAHQ-01-R0011, and PM Keypoint, LLC, *Impact of Tight Money and/or Recession on Small Business*. A report prepared for the U.S. Small Business Administration under contract no. SBAHQ-01-C-0152. June 2003.

farm, non-corporate businesses is useful for understanding the small business financial markets.³⁹

For more information, see Board of Governors of the Federal Reserve System, “Flow of Funds Accounts,” various issues. (www.federalreserve.gov/releases/)

2. Senior Loan Officer Opinion Survey on Bank Lending Practices

The Senior Loan Officers' Survey, conducted quarterly by the Federal Reserve Board, solicits, among other things, information on changes in bank lending policies towards small and medium-sized to large firms.⁴⁰ Small firms are defined as firms with less than \$50 million in annual sales. The sample consists of approximately 60 large domestic banks and 24 U.S. branches and agencies of foreign banks. The three questions relevant to small business borrowers relate to loan standards, the spread of the lending rate over the banks' cost of funds, and the demand for loans.

One major limitation of the survey is that since only loan officers of large banks (and branches of foreign banks in the United States) are included in the survey, and small businesses are defined as those with annual sales of under \$50 million, information collected in this survey does not cover the majority of small businesses in the United States. For more information, see www.federalreserve.gov/boarddocs/surveys/

3. Survey of Terms of Business Lending

The Survey of Terms of Business Lending collects data on details of the terms of borrowing for gross commercial and industrial (C&I) loan extensions made by commercial banks during the first full business week in the middle month of each quarter (February, May, August, and November). The authorized panel size for the survey is 348 domestically chartered commercial banks and 50 U.S. branches and agencies of foreign banks. However, the estimates reported here are not intended to measure the average terms on all business loans in bank portfolios.

The sample data are used to estimate the terms of loans extended during that week at all domestic commercial banks and all U.S. branches and agencies of foreign banks. Information collected is reported by loan size (under \$100,000, \$100,000 to under \$1 million, \$1 million to under \$10 million, and over \$10 million) and by risk category of the loans.⁴¹ The variables provided in the statistical release include: maturity/repricing interval, risk category of loans; weighted-average effective loan rate (percent); total value of loans; average loan size; weighted-average maturity; and percent made under commitment, secured by collateral, subject to prepayment penalty, index-based, etc.

The survey is the only source for information on the terms of bank loans to small firms (or small loans) by commercial banks in the United States. Since loan volumes are also estimated, it is tempting to attempt to compare the estimates with the loan estimates derived

³⁹ The usefulness of this account is further diminished by its “residual” nature—that is, many of the estimates are derived from the subtraction of other accounts from the total. The result is that larger than average estimates are observed for several items in the accounts after revision of the estimates.

⁴⁰ The Federal Reserve Board generally conducts the survey quarterly, timing it so that results are available for the January, May, August, and November meetings of the Federal Open Market Committee. The Federal Reserve occasionally conducts one or two additional surveys during the year—for example, in 1998 and 2001.

⁴¹ Research staff at the Federal Reserve Board have usually been very receptive to suggestions about doing special tabulations on the database for use by the Small Business Administration.

from the CRA reports. But as readers are cautioned, the volume estimates are not intended to measure total business loans in the banks' portfolios.

For more information, see *Federal Reserve Bulletin*; Statistical Release E.2 of the Board of Governors of the Federal Reserve System and www.federalreserve.gov/releases/.

4. Quarterly Financial Reports

The Census Bureau's Quarterly Financial Reports provide the most up-to-date information on the financial positions of U.S. corporations.⁴² Based upon a sample survey, the QFR presents estimated statements of income and retained earnings, balance sheets, and related financial and operating ratios for manufacturing corporations with assets of \$250,000 and over; and mining, wholesale trade and retail trade corporations with assets of \$50 million and over. The statistical data are classified by industry and by asset size.⁴³ The data collected are the basis for the Bureau of Economic Analysis' quarterly estimates of economic activity in the United States. While estimates of financial activities for small manufacturing corporations continue to be provided in the report, information for small firms became less useful after 1985, when an effort to reduce reporting burden for small companies substantially reduced the sample size. Consequently, many variables for small manufacturing corporations were estimated, rather than collected quarterly. The data collection efforts have been transferred from the Federal Trade Commission to the Bureau of the Census.

For more information, see U.S. Department of Commerce, Bureau of the Census, *Quarterly Financial Reports*. (www.census.gov/csd/qfr/)

5. NFIB Survey on Small Business Trends

In addition to the survey of credit, banks, and small business as discussed in the previous section, the NFIB Research Foundation conducts several other surveys. One survey that results in time series statistics for current business conditions and business attitudes of small firms is the quarterly survey of small business activities and attitudes as reported in Small Business Economic Trends⁴⁴

The quarterly survey collects detailed information on members' past business activities—sales, employment, etc, as well as their expectations of business conditions in the immediate future. Questions about credit conditions include those on credit availability, interest rates paid, and whether financing is a factor in business-related expectations and decisions.⁴⁵ In general, the questions asked in the survey are subjective—for example, questions as to whether current conditions in business or investment are better or worse than in the past or whether certain conditions are expected to get better or worse in the future. Time periods referenced in

⁴² The survey was conducted by Federal Trade Commission before 1984 when the Bureau of the Census took over the collection and publications of the database.

⁴³ However, data are provided only on small manufacturing corporations with assets under \$10 million. Moreover, because of the small number of respondents in the survey with a shorter questionnaire, estimates were made for several variables in place of data collected.

⁴⁴ In fact, monthly surveys are conducted by NFIB with larger sample size for the end of the quarter months. The other two are : 1. Small Business Poll (special issues faced by small business) and 2. Survey of Small Business Problems and Priorities. Note that the Small Business Poll solicits information from a nationally representative sample of small firms (conducted by the Gallup Organization) rather than from the members of NFIB

⁴⁵ For an effort to test a possible relationship between these variables and small business economic conditions, see Joel Popkin and Company, *Small Business during the Business Cycle*. A report submitted to the U.S. Small Business Administration (contract number SBAHQ-01-R-0011) July 2003,

the questions are not uniform, but most questions refer to the past or the next three months. (Source: www.nfib.org/research)

6. National Venture Capital Association (NVCA)/Thomson Financial Venture Capital Yearbook (www.pwcmoneytree.com/moneytree/index.jsp)

For a small number of emerging companies with fast growth potential, external equity capital plays a very critical role in financing their birth and growth. While private investment in dynamic ventures is very popular, very limited information is available about the magnitude of private equity investment. Only investment by formally organized institutions, venture capital funds, has been attempted since the mid-1970s.⁴⁶

Estimates of investment by private venture capital companies, financial intermediaries that accept private money for equity investment in fast growth companies, has been made and published in the Venture Capital Journal since mid 1970s.⁴⁷ However, statistics were collected only from “independent” venture capital companies, mostly limited partnerships.⁴⁸ What are missing were corporate-sponsored venture capital funds which were very active during the IT-telecom and equity investment boom of late 1990s, and some public venture capital funds. Quarterly estimates are available by sector and by geographic location (as made available in the MoneyTree survey). Detailed information on the source of funds are available in the annual edition published by NVCA—including sources of capital commitments, records of exits through IPO and acquisitions, and fund performance.⁴⁹

7. Center for Venture Research, University of New Hampshire, Angel capital

As discussed in the previous section, even less information is available for external equity from informal investors—the angel investors.⁵⁰ The market has developed significantly during the last half of the 1990s when equity investment were yielding high returns and with the emergence of a significant number of technology entrepreneurs-turned-investors. As the market developed, more structured, “semi-formal”⁵¹ organizations were formed for angel investing—the formation of angel clubs.

Effort to estimate the flow of angel capital investment has been made by VRC at University of New Hampshire under the direction of Professor Jeff Sohl.⁵¹ It was estimated

⁴⁶ SBA’s Small Business Investment Company program (SBIC) was initiated in 1963, providing a training ground of many promising venture capitalists.

⁴⁷ Dr. Stanley Pratt was the prime mover of this database effort. The Venture Capital Journal kept track of the developments in the venture capital industry beginning in the mid- 1970s. The company has since been acquired by Thomson Financial Co. and the data collection was performed by PriceWaterhouse-Cooper (in the MoneyTree project). The National Venture Capital Association co-sponsored this data collection effort and published the Venture Capital Yearbook.

⁴⁸ The number of VC firms increased from 87 (in 1980) to 892 (in 2002) with VC capital under managed rose from \$3 billion to \$253 billion in 2002. See “2003 National Venture Capital Association Yearbook” (2002 data) prepared by Thomson Venture Economics for NVCA.

⁴⁹ See “2003 National Venture Capital...” Op.cit. See also, The MoneyTree Survey, a quarterly study of venture capital investment activity in the United States., a collaboration between PricewaterhouseCoopers, Thomson Venture Economics and the National Venture Capital Association. (www.moneytree.com)

⁵⁰ The angel investors invest in private businesses without the use of investment professionals such as partners and their associates in VC companies. They rely on informal networks and contacts for investment opportunities.

⁵¹ They are, however, not made available to public by the SEC, as it used to be during the 1980s.

that informal investment amounted to \$15.7 billion in 2002, about 50% of the amount of \$30 billion in 2001.⁵² Some 30,000 ventures received financing from angel clubs.

8. Thomson Financial, initial public offerings (IPOs) of small issuers

For equity capital provided to small firms from the public equity market, only IPO offerings (initial public offerings) registered with U.S. Securities Exchange Commission are available.⁵³ IPOs by venture capital funded companies is also available. Offerings in the limited offering markets—Regulation A offering, small business offerings, etc. have not been available when the SEC discontinue recording the filing information in digital format.⁵⁴

Conclusion

Researchers have come far in locating statistical information about small business financing activities. Comparing the statistical sources used in the discussions in the financing chapters of *The State of Small Business* reports of the early 1980s to those of the past several years, one realizes the significant progress made over the past 20 years.⁵⁵ But data on financial conditions and the financing behaviors of small businesses are still very limited. Many aspects of small business financial research cannot be carried out because of the unavailability of data. For example, no panel data are available on small firms and their financial information for an examination of the life cycle patterns of small growing firms; limited information is available about the costs of financing and its impact on small firms during high interest-rate periods; little is available on the risk and profitability of small business lending and investment, etc. Information is also lacking on many aspects of small business equity financing, especially on the demand and supply of internal and external equity. Finally, there is very limited information about the lending behavior of another major supplier of small business financing—finance companies. As an industry not subject to federal regulatory supervision, finance companies provide very limited information about the cost and the availability of credits supplied in different small business credit markets.⁵⁶

The situations could be in at least two ways: by continuing the effort to create new databases through more surveys and by expanding and/or revising existing database collection efforts. The Federal Reserve Board, the Bureau of Census, and the Kauffman Foundation are three major organizations with resources that are active in this effort.⁵⁷

⁵² See “The Angel Investor Market in 2002: Investment Activity and Growth Prospects” in www.unh.edu/cvr/ Information was obtained through mail survey of managers of angel club/alliances and individual investors. Of 108 confirmed angel clubs, 45 surveys were returned, representing a response rate of 42%. The respondents represented a diverse set with respect to geographic location and organizational structure and as such, the sample appears to adequately represent the disbursement of angel activity in the US.

⁵³ See Table “Common Stocks Initial Public Offerings by All and Small Issuers” in “The State of Small Business—A Report of the President”, various years.

⁵⁴ SEC used to public information on these offerings for presentation at the annual Small Business Capital formation Forum. See U.S. Securities and Exchange Commission, Directorate of Economic and Policy Analysis, “Small Business financing Trends” various years

⁵⁵ See “The State of Small Business—A Report of the President” various issues since March 1982 and “the Small Business Economy—A Report to the President” since 2001.

⁵⁶ See Haynes, G., *Finance Companies and Small Business Borrowers: Evidence from the 1993 and 1998 Surveys of small Business Finances* A Report prepared for the U.S. Small Business Administration (SBA Contract Number - SBA-8029-OA-93) April, 2005 and Dynan, Karen E., Johnson, Kathleen W., Slowinski, Samuel M. (2002). “Survey of Finance Companies, 2000”, in *Federal Reserve Bulletin*, January 2002, 1-14.

⁵⁷ The Office of Economic Research of the U.S. Small Business Administration is limited in financial resources to sponsor or support major data collection effort.

Among actions that can be taken to improve existing databases, the following suggestions are made.

1. **Survey of Small Business Finances.** More information on lenders, especially commercial banks, from administrative records such as call reports, etc., could be included in the public use database.⁵⁸ In addition, questions on the uses of equity capital could be revised to obtain better information. Finally, an interim survey (between the comprehensive surveys) on the most recent financing activity could be initiated (using a shorter questionnaire) for more up-to-date developments in small business financing. This might help reduce the number of questions and the average interview time to improve the response rates of the comprehensive survey.
2. **Call reports and CRA data.** One immediate item of interest to banking researchers is information on small business credit card activity. Banks that actively extend credit in the form of business credit cards and that maintain separate accounting operations for these activities should be required to report the statistics separately from other C&I lending. Also, in the CRA report, one loan category, loans to small firms with receipts under \$1 million, could be improved to make the data more useful. In fact, a small panel of data users could be organized by the financial regulatory agencies to review the two databases for possible improvements in data collection efforts.
3. **Survey of Terms of Business Lending.** As the only source of nationwide information of the terms of small business borrowing from commercial banks, the Survey of Terms of Business Lending could be expanded in its coverage to make it more useful to study the costs and the pricing of small business borrowing/lending. Expanding the numbers of banks participating in the survey, either to include all the CRA reporting banks or to increase the sampled banks from around 300 to, for example, 450, would allow for better understanding of the pricing and competition in different local markets.
4. **Survey of Consumer Finances.** More questions on intermingling of business and personal finances of business-owning households would be most useful. The survey is already constrained by the lengthy interview time required. One solution would be to economize on questions that are less important to make space for additional questions. Adding supplementary surveys are another alternative. The SCF survey is also a cost-effective way to provide a national profile of private business investors—angel investors-- through a supplemental interview on investment activities of angel investors in the United States.
5. **Finance company survey.** The Federal Reserve's survey of finance companies, which has been conducted every five years, should be expanded to obtain information on their lending to small firms.

Finally, administrative records in two government agencies—the Statistics of Income Division of the Internal Revenue Service (SOI/IRS) and the Securities and Exchange Commission (SEC) should be better utilized. A concerted effort to explore the best ways to utilize tax return data collected by SOI/IRS as the source of small business financial information is urgently needed. The SOI office has the most comprehensive financial information on American businesses--sole proprietorships, partnership, and corporations. The Master Business Files and information on business receipts and income have long been the

⁵⁸ The Federal Reserve Board should be able to design a data dissemination approach that can resolve the privacy issues in public use database.

basis of economic and business statistics of government statistical and research agencies such as the U.S. Treasury, the Bureau of the Census, the U.S. Department of Commerce's Bureau of Economic Analysis, etc. In addition to providing benchmark statistics on small firm financial activities, a public use file of data on small business tax payers would contribute much to small business financial research efforts in the United States. The SEC receives all the applications for public offerings (and limited public offerings) in the United States and has financial information on the most dynamic business groups in this country. However, since the late 1980s, the SEC has stopped generating information for public on applications for public offerings.

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Table I
Survey of Small Business Finances (1998)

Unit of analysis	Businesses
Data type	Micro-data from individual firms Cross-sectional; No longitudinal data Time series analysis—possible with a carefully designed research methodology
Population	All small businesses in the D&B Business Profile file (5.2 million in 1998)
Coverage: Population or Sample	A sample of 3,561 firms
Definition of small firm	A firm with fewer than 500 employees
Small business data elements	Uses of financial services and credit with link to the suppliers; Detailed information on the most recent loan applied/used; Financial statement data
Time frame:	
a. collection frequency	Once every five years (1987; 1993; 1998)
b. time period/date	End of the survey year and for the survey year
Time lag in data availability	1 and 1/2 years after data collection
Source	www.federalreserve.gov/boarddocs/surveys/
Remarks	Data available in either SAS transport file or in ASCII flat file.

Table II**Call Reports Submitted by Banks and Thrifts to Regulatory Authorities**

Unit of analysis	Depository institutions—banks and thrifts
Data type	Micro-data from individual institutions Cross-sectional Longitudinal data possible but only with great effort Suitable for time-series analysis
Population	All insured depository institutions in the United States
Coverage: population or sample	All reporting insured institutions
Definition of small firm	By loan size, not by borrower size.
Small business data elements	Loans outstanding; number and dollar amounts of business loans; commercial and industrial and non-residential mortgage loans by three loan sizes (<\$100,000; \$100,000 to <\$250,000; and \$250,000 to <\$1 million)
Time frame:	
a. collection frequency	Once a year in the June edition of the call reports
b. time period/date	End of June
Time lag in data availability	4 months after report submission
Source	www.chicagofed.org/economic_research_and_data/commercial_bank_data.cfm
Remarks	Knowledge and experience in accessing and manipulating data files are essential in efficiently conducting statistical research using this and related files

Table III

CRA Reports Submitted by Banks and Thrifts to Regulatory Authorities

Unit of analysis	Depository institutions—banks and thrifts
Data type	Micro-data from individual institutions Cross-sectional Longitudinal data possible for selected institutions; Time series analysis—not yet
Population	Large insured depository institutions in the United States
Coverage: population or sample	All large reporting institutions—900 larger banks and BHCs, 2002
Definition of small firm	By loan size, not by borrower size; also, small firms with receipts of less than \$1 million.
Small business data elements	Amount of loans for the year. Number and dollar amounts of business loans; C&I and non-residential mortgage loans by three loan sizes (<\$100,000; \$100,000 to <\$250,000; and \$250,000 to <\$1 million)
Time frame:	
a. collection frequency	Once a year
b. time period/date	Calendar year
Time lag in data availability	May or June in the following year.
Source	Federal Financial Institution Examination Council; website (http://www.ffiec.gov/cra/default.htm) .
Remarks	In ASCII flat file.

Table IV
Comparison of the Call Report and CRA Data Bases

	Call Report Data	CRA Data
Loan information provided	Stock of business loans outstanding, for example, as of June 2002	Flow of business loans over entire calendar year, for example, for 2001
How location is identified	Bank headquartered in the state	Lending activity in the state by a CRA reporting bank or BHC
Categories of banks covered	All reporting commercial banks and bank holding companies	Banks with \$250 million or more in assets or members of BHCs with more than \$1 billion in assets

Table V
The Survey of Consumer Finances, 2001

Unit of analysis	Households—head of the household; self-employed status of the spouse also identified
Data type	Microdata from individual firms Cross-sectional Longitudinal data--No Time series analysis—possible for certain topics
Population	All households in the United States (110 million households in 2001)
Coverage: population or sample	A sample of 4,449 households
Definition of small firm	"Privately" held businesses
Small business data elements	Holdings of various assets and debts of business owners and "investors" in privately held businesses.
Time frame:	
a. collection frequency	Once every three years (1988; 1992; 1995, 1998, and 2001).
b. time period/date	End of the survey year and/or the survey year;
Time lag in data availability	1 and 1/2 years after data collection
Source	www.federalreserve.gov/boarddocs/surveys/
Remarks	Data available in either SAS transport file or in ASCII flat file.

Table VI
Corporation Source Book of the Internal Revenue Service*

Unit of analysis	C and S corporations
Data type	Micro firm analysis—No Cross-sectional analysis Longitudinal---No Time-series analysis by size and industry **
Population	All corporations submitting tax returns to the IRS (4.7 million in 2000)
Coverage: --population or sample	A sample of about 12,000 tax returns
Definition of small firm	Asset size of corporations—varying asset sizes provided
Small business data elements	Major items in the income/expense statement and major assets and liabilities in the balance sheet plus tax-related variables
Time frame:	
a. collection frequency	Once every year (fiscal or calendar year depending upon company accounting practices)
b. time period/date	Calendar or fiscal year
Time lag in data availability	2 to 2 1/2 years after tax filing
Source	<i>SOI Bulletins</i> , various issues, and SOI Division of IRS www.irs.gov/taxstats/
Remarks	No micro-data on business tax returns is available for public uses. Requests to the Office of Statistics of Income division (SOI) for special tabulations are accepted.

* See also Corporation Tax Returns, Partnership Returns and Sole Proprietorship Returns prepared by the U.S. Department of the Treasury, Internal Revenue Service, Statistics of Income Division.

** See *Dynamics of Women-Operated Sole Proprietorships—1990-1998*, Office of Advocacy, U.S. Small Business Administration, March 2003

Table VII**NFIB Survey of Credit, Banks, and Small Firms, 2001**

Unit of analysis	NFIB member firms
Data type	Cross-sectional analysis Time series analysis for many variables
Population	Over 500,000 members of the trade association (NFIB)
Coverage: --population or sample	A sample of about 12,500 for the 2001 survey; A response rate of 18% for 2,220 responses
Definition of small firm	NFIB members
Small business data elements	Detailed items on the uses of credit by member firms, especially their experience; demographic characteristics of firms
Time frame:	
a. collection frequency	Once every 3-7 years
b. time period/date	Most current year and/or during the past year of past 3 years.
Time lag in data availability	1 ½ to 2 years(?)
Source	www.nfib.org/research