

PERSPECTIVES ON SMALL BUSINESS SAMPLING FRAMES*

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I. Introduction

The creation of the Office of Advocacy of the U.S. Small Business Administration in 1976 was the first recognition that small firms needed an independent voice in the federal government. The subsequent passage of the Small Business Economic Policy Act of 1980 (P.L. 96-302) provided the initial funding, and a requirement that data and statistics be published annually describing the economic health of small firms. This legislation also required the SBA to include in its annual report data on employment, sales, federal procurement, exports, profits, and data on the growth of minority and women-owned firms.

The major problem with the requirement was that no firm size data base existed within the U.S. government to enable the SBA to fulfill its statutory mandate. Data from the Internal Revenue Service (IRS) was confidential, data from the Bureau of Labor Statistics (BLS) was unavailable by firm size, and data from the Bureau of the Census was also confidential and not timely. The government's only enterprise survey, Census' Enterprise Statistics, was published once every five years and then with a three year lag. Because the SBA was required to prepare a current, annual report on "The State of Small Business," these constraints presented major challenges.

This paper describes the methods by which the SBA has attempted to respond to these data challenges and fulfill its Congressional mandate during the past 13 years. The first part of this paper describes our historical data development activities from 1980-1990 using Dun and Bradstreet's Dun's Market Identifier (DMI) files, which were developed into a longitudinal Small Business Data Base (SBDB) to study business dynamics. The second part of the paper describes our current data development activities with the Bureau of the Census of the U.S. Department of Commerce since 1990, along with plans for the next several years. The third part of the paper describes SBA's proposed microdata survey, now undergoing pilot testing pending final approval from the U.S. Office of Management and Budget. The fourth and last part of the paper enumerates how supplemental surveys--often funded through agreements with other federal agencies--have also been used to supplement data base activities,

particularly for specific policy applications.

II. The U.S. Establishment and Enterprise Microdata Files (USEEM)

Beginning in late 1979, after being unable to secure access to current, firm size data from any single government agency, the Office of Advocacy of the SBA, leased Dun and Bradstreet's Dun's Market Identifier file (DMI). The Dun's DMI provided data on employment at both the establishment and firm level, as well as firm sales and age. In addition, the affiliation of each establishment with a higher order parent organization was also provided.

During the next twelve years, the Dun's DMI files--essentially a census of firms with employees operating full-time and using credit markets--were edited through the use of approximately 150 programs to check the consistency and internal validity of the data. Some of the many edits applied to raw DMI data included: removal of foreign employment, checking for consistent data over time, reconciling component establishments into corporate enterprises, consistency of SIC codes, and attempts to adjust the data for changes in the legal form of organization of firms.

When all of the edits were applied to raw DMI data, and the files were linked over time, two basic files were created which formed the Small Business Data Base (SBDB) for 1976-1990. These were the cross section U.S. Establishment and Enterprise Microdata File (USEEM), and the linked U.S. Establishment Longitudinal Microdata File (USELM).

Applying the USEEM Editing Rules

In the early years--1979 through 1985--there were significant difficulties in using Dun and Bradstreet (D and B) data for a purpose for which it was never intended: to make aggregate statements about the U.S. economy by firm size. As such, not every record in the DMI file was of equal quality and data were therefore classified into seven quality levels depending upon the availability, consistency, and

perceived reliability of the longitudinal information.¹ In this schema, weights were created to represent marginal records which had to be excluded from the longitudinal files. These weights varied by industry, type of firm (single or multi-establishment), firm size class, and region.

The calculation of a weight was the result of dividing the good quality records in the sample population by the "target" or universe population--based upon the full file count of businesses from the DMI file. Essentially, in this process, the business population was divided into 3,500 cells based upon the criteria listed above, and the derived weights were used to calculate the true longitudinal business population if all records were of equal quality.

The remaining editing rules used in deriving the USEEM and USELM files were derived from seven basic steps. These editing rules were concerned with reconciling the coverage of large organizations (and the imputation of proxy branches), the process of recording new births on DMI files, the removal of out-of-business firms from the files, the treatment of statistical outliers, and the removal of foreign employment from DMI files. Each of these major areas deserves some brief mention.

Proxy Branches, New Coverage, and Old Records

As SBA's understanding of DMI files increased, we observed certain peculiarities. For example, not all firms reported every branch which they owned to Dun and Bradstreet because of proprietary reasons. Therefore, employment at the enterprise level had to be checked against the sum of employment in all the branches owned by any one firm. When the total enterprise employment was more than the employment in the sum of the branches, algorithms were developed to impute "proxy branches" to account for the remaining employment in the firm. While these techniques were not without criticism, there was no better way to force total enterprise employment to be equal to the sum of employment in all the branches of any given company.

With the help of Dun and Bradstreet, we attempted to identify new coverage in the Dun's DMI file. Generally, firms which were new to the world had a code of zero in the "year business started" field; firms which were new to the files generally had a start date filled in. While these generalizations did not always work out so well in practice, they allowed a reasonable--but imperfect representation of new

firm growth. And, of course, a major test of the accuracy of these methods was always to test employment growth calculated from USEEM/DMI files with the employment statistics of other federal agencies--such as the Bureau of the Census or the Bureau of Labor Statistics.²

While many of the employment comparisons at aggregate levels were quite favorable, they were much less favorable when comparisons were made for 4 digit industries, and for counties or very small MSAs. One problem which emerged from our analysis--aside from the timely recording of births--was the timely removal of dissolved firms from the DMI files.

Births and Deaths

During the 1980s the editing of births and death data was essentially handled through the derivation of assumptions--after studying thousands of actual records--and comparing Dun and Bradstreet's practices with reality. We found, for example, that a dead firm could take up to 4 years to be deleted from DMI files, particularly if it had no credit inquiry. While the files are purged very differently today, SBA did not have the resources during that period to personally call all suspicious firms to determine if they were still in business. Similarly, a birth could be the first appearance of a firm, or it could be a firm that was really up to 4 years old; that is, it had gestated in someone's home or had business conducted on a part-time basis or shared space with another firm before hiring its first employee and/or leasing space. While many of these problems are better handled in today's DMI files, there will always be some lags in the recording of firm births and deaths, to say nothing of the branches or components of each of these firms.³

There were many subtle editing decisions which had to be made in preparing USEEM/DMI files. Many of these decisions were caused by the increase in merger/acquisition activity during the 1980s. Many were solved with the assistance of Dun and Bradstreet, but some remained elusive. However, despite the limitations outlined above, the USEEM and USELM passed most validation tests as reasonable representations of the nonfarm, nongovernment full-time business universe with employees. But the major successes using these files came from applications to which the data files were put.

Applications of the Small Business Data Base

The USEEM/USELM files were the first federal files within the United States from which dynamic employment change could be calculated. Before the appearance of these files, virtually every federal calculation of employment growth was done on a "net" basis, assuming that each firm remained in the same size class forever. The USELM files were the first enterprise based files in the U.S. to calculate employment growth by studying the components of employment growth--births of new firms and expansions of existing firms--and the components of job loss--contractions of existing firms and dissolutions of firms. In addition to tracing the movement and growth of jobs, the files provided the first use in providing hard data on the business failure debate: it was shown, for example, that small firms generally last much longer than is previously imagined, particularly if they grow.⁴

In addition to studying job creation with the SBDB, it was also used as a **sampling frame** for various surveys to better understand the sources of funds for small firms.⁵ In particular, the DMI files were used to survey small firms on their use of informal investment capital, as well as on the general sources and uses of funds to start and expand small firms. Much of this research was conducted jointly with the Federal Reserve Board or by private companies under contract to the SBA.⁶

Other applications of the SBDB files included matching experiments to derive baseline estimates. For example, to derive the percentage of exports provided by small firms, DMI/USEEM files were matched against export declaration data. To determine whether small firms were receiving their fair share of federal procurement dollars, files were matched against those of the Federal Procurement Data Center.⁷

In most cases, match rates in excess of 50 percent were rare due to inconsistency of name and address matches, differing primary SIC codes, and inconsistent recording of firm births and deaths.

Master Establishment List (MEL)

A major problem with many applications was that only established firms with employees could be surveyed. In 1985, in an attempt to reach smaller and new startup firms, SBA developed a larger sampling frame by merging commercially available

yellow-page directories with DMI files. The resulting file was called the **Master Establishment List (MEL)**, and was used as a data base for many studies of newer startup firms, as well as minority-owned and women-owned businesses.⁸ In addition to financing studies for smaller firms, the MEL file was used to survey firms on their provision of health and pension benefits by firms of different sizes.

In sum, the development of Small Business Data Base USEEM/USELM files began a period of renewed interest in small business research--especially regarding employment, job creation and tax policy. And the rekindled interest in small firms led in turn to the funds which spearheaded pioneering efforts in response to P.L. 96-302 which mandated an annual report to Congress on "The State of Small Business." From 1976-1990, a large body of information about the growth and characteristics of small firms was gleaned from the USEEM files of the SBDB.

III. Transition to the Bureau of the Census

Beginning in fiscal year 1992, a multi-year agreement was concluded with the Bureau of the Census, U.S. Department of Commerce to produce a new data base for the Small Business Administration. These new files would be based upon a match between Census' Standard Statistical Establishment List (SSEL)--the major listing of all establishments within the federal government--and the Company Organization Survey (COS)--an annual Census survey in which companies enumerate all establishments under their common ownership or control.

The SSEL is the same frame which is used for Census' County Business Patterns publication, and provides complete industrial coverage. While the COS is an annual mail survey for companies with 50 or more employees, it is supplemented by administrative records from the Internal Revenue Service (IRS) for companies with fewer than 50 employees. Among the variables which are available for inclusion in this data base are number of firms and establishments, employment payroll and receipts; the latter is derived on an annual basis from ratios of receipts per dollar of payroll to protect the confidentiality of the data. All of the tables that have been produced array data by size of firm for about 10 firm size classes (See Table 1).

The cross section tables which have been

produced also show the legal form of organization of enterprises for 1988-1990, and where permissible, down to the 4 digit level by state. Disclosure or confidentiality is a potential problem when displaying 4 digit data by firm size at sub-national levels. All of the tables produced from Census files must undergo rigorous disclosure proofing, and this frequently produces a tradeoff between the number of size classes which can be revealed and the degree of industrial detail which can be shown. In reality, compromises are often possible. Size classes can be aggregated to allow a larger permissible degree of industrial detail to be shown.

The Next Steps

During FY 1994 and 1995, the Census Bureau will be developing longitudinally linked enterprise files under contract to the SBA. A broad range of statistical issues has arisen in developing the methodology for producing these files. This has included the precise definition of a birth and a death, as well as how to treat SIC changes, changes in management and mergers/acquisitions, as well as divestitures. Work on these issues is proceeding, with the first of the longitudinal files available in about a year. These initial files will measure dynamic employment growth for the 1989-1991 period, followed by annual changes after 1992. Once completed, these files will be capable of measuring employment growth by state, major MSAs, down to the 3/4 SIC level, pending satisfaction of all disclosure algorithms.

The Good News and Bad News

With the development of linked Census files to study job creation by firm Size, SBA will have access to the best files ever developed to measure the small firm job contribution share. However, because SBA will not have access to these files, running customized tabulations can only be done by sworn Census personnel or deputized SBA employees. In addition, these files cannot be used for survey or policy purposes because all of the names and addresses are confidential by law. As shown in Table 2, as we move away from Dun and Bradstreet data, the statistical tradeoffs become more severe.

While the Census files provide the national and state enterprise baseline counts, they are not available for most other policy purposes. This

means, for example, that in order to study the availability of health care in small firms, SBA will still have to secure a commercially available mailing list.

There is still much potential, however, for additional research applications from the Census files. For example, the Census based enterprise files have the ability to derive the ownership of some of the employer firms identified by race and gender. Census maintains this mailing list for the Census of Minority and Women-Owned Business Enterprises (SMOBE and WOBE). Together, these lists contain almost 5 million minority and women-owned firms, of which roughly 10 percent have employees. Therefore, of the approximately 5 million firms in the SBA enterprise files obtained from Census, about a half million minority and women-owned firms could be identified and their contributions and growth charted.

If a potential application of these data is to chart the progress of women-owned and minority-owned firms **with employees**, no such option is available for firms without employees. The only available option at present for the SBA to obtain information about nonemployer firms--some 75 percent of the total number of firms which file federal tax forms--is to conduct its own survey.

IV. The Proposed SBA Microdata Survey

During the past 14 years, the SBA has fundamentally changed in its data capabilities. There has been a shift from the use of Dun's DMI data to interagency agreements with the Bureau of the Census to produce annual enterprise data. These changes have involved tradeoffs in terms of costs, data access, and survey coverage. In this case, the price for obtaining carefully controlled and edited aggregate federal data is the inability to directly manipulate that data. In addition, identification of large samples of women-owned and export firms--available from the Dun and Bradstreet data, cannot be obtained from the Census data.

SBA has proposed to the Office of Management and Budget--the agency which must approve all federal statistical surveys--that SBA be given permission to begin its own small sample longitudinal survey. Such a survey would have the following purposes:

1. To trace the growth of a representative sample of minority and women-owned firms;

2. To seek the opinion of small firm owners on a variety of issues before the Congress (e.g., health care reform, mandated leave bills, the Americans With Disabilities Act etc.);

3. To obtain current data on firms which generally only have 8 year old data available to describe them;

4. To request information on financing issues of importance to small firms (such as borrowing costs, difficulties in securing credit, etc.).

If approved and funded, it is envisioned that such a survey would be taken annually. An attempt would be made to minimize the paperwork burden on small firms, and have them supply to SBA some of the same kinds of information firms have readily available because they have already produced this information for other government agencies.

Coverage of Nonemployer Firms

An important difference between the proposed SBA survey and the Dun and Bradstreet and Census datasets is the proposed inclusion of nonemployer firms in the SBA survey (See Table 2). As envisioned, the SBA survey would choose a representative group of nonemployer firms, and request the same (or similar) information from them as from employer firms. The idea would be to build the same kind of data base for the 75 percent of firms without employees, as would be done for the 25 percent of total firms that have employees. If the SBA were able to conduct such a survey, it would be the first time nonemployer firms (e.g., their survival, sales, profits, etc.) were considered sufficiently important for inclusion in such surveys.

There are about 9 million full-time self-employed persons. Little information is collected on this group of businesses. These small firms account for about 45 percent of all business tax returns filed.⁹ Again, the SBA survey would provide some information which would help determine the probability of growth of these sole proprietors and partners into larger firms.

Summary

With the creation of SBA's Office of Advocacy in 1976 came the requirement for a legislatively mandated Small Business Data Base in 1980. SBA has responded in three different ways to this Congressional requirement. From 1976-1990,

SBA leased all of Dun and Bradstreet's microdata, organizing it into longitudinally linked and cross section files of the U.S. business sector. However, there were difficult issues to resolve when using D and B files in new and previously untried ways.

Despite its limitations, however, the D and B data were an important research resource: not only were samples available for policy purposes, but unidentified data could also be shared with other third party users after payment of a license fee to Dun and Bradstreet. SBA's former Small Business Data Base established the Office of Advocacy as a center to which federal, state and local government agencies, academic institutions and large firms and small firms could turn to as a center for small business information, especially regarding research on job creation.

In 1991, SBA redirected its efforts to obtain data for its SBDB from D and B to the Bureau of the Census. Beginning as cross section files for 1988-1990, the Census dataset will be linked longitudinally and contain observations at the 4 digit SIC level for the nation, states, and selected MSAs. In addition, the files will contain data on firms and their component establishments, receipts and payroll. In time, these files will surpass the scope of the former Dun and Bradstreet-based SBDB.

Finally, the nonemployer firms remain an intractable issue without a supplemental microdata survey. The 4,000 firm sample envisioned by SBA would include women and minority-owned firms, as well as encompass firms in industries not traditionally covered in enterprise surveys--particularly financial services, transportation services, and parts of the narrowly defined service sector.

ENDNOTES

^{*}Prepared for the International Conference on Establishment Surveys, Buffalo, New York, June 27-30, 1993. Opinions expressed are those of the author and do not necessarily represent any official positions of the U.S. Small Business Administration.

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¹See, for example, Catherine Armington and Marjorie Odle, "Constructing a Business Microdata Base for the Analysis of Small Business Activity" (Brookings Institution, Washington, D.C., July 1984).

²See, for example, Bruce D. Phillips and H. Shelton Brown, "Comparisons Between Small Business Data Base (USEEM) and Bureau of Labor Statistics (BLS) Employment Data: 1976-1986," Small Business Economics, I(4), 1988, pp. 173-184.

³See, for example, Joel Popkin and Company, "Validation of the Small Business Data Base," prepared for the Office of Advocacy of the U.S. Small Business Administration under contract SBA-2113-AER-87, February 1991. For example, in the Unemployment Insurance (UI) system, a terminated firm is defined as one which has not filed UI withholding taxes for at least 8 quarters.

⁴See, for example, Bruce D. Phillips and Bruce A. Kirchoff, "Formation, Growth and Survival: Small Firm Dynamics in the U.S. Economy," Small Business Economics, I(1), 1988, pp. 65-74.

⁵Bruce A. Kirchoff and Bruce D. Phillips, "Research Applications of Small Business Data Base of the U.S. Small Business Administration," in Donald L. Sexton and John D. Kasarda, eds. The State of the Art of Entrepreneurship (PWS-Kent, Boston, Mass., 1992).

⁶See, for example, Robert J. Gaston, Finding Private Venture Capital for Your Firm (Wiley and Sons, New York, 1989). This book was based on 3 research contracts with the SBA during the 1980s on the market for informal investment capital and the characteristics of business angels.

⁷See, for example, Jack Faucett Associates, "Development of Data for a More Recent Year of Federal Procurement." Completed under contract for the Office of Advocacy of the U.S. Small Business Administration, August 1989.

⁸See Executive Office of the President, "The State of Small Business," 1985 (Washington, D.C., U.S. Government Printing Office, 1985), especially Chapter 6, "Women-Owned Business," and Appendix C, "The Small Business Data Base: An Update."

⁹The sole exception to this generalization is the expanded March Current Population Survey (CPS) of the Bureau of the Census, supplemented by some of the data from Census' Survey of Income and Program Participation.

Table 1 United States - The Number of Establishments, Employment, and Annual Payroll by Industry and Firm Size for 1990

Industry and Data Type	Total	Employment Size of Firm							
		1-4	5-9	10-19	<20	20-99	100-499	<500	500+
TOTAL, ALL INDUSTRIES									
Establishments	6,175,559	3,032,253	970,580	599,529	4,602,362	590,496	254,747	5,447,605	727,954
Percent	100.0	49.1	15.7	9.7	74.5	9.6	4.1	88.2	11.8
Employment	93,469,275	5,116,914	6,251,632	7,543,360	18,911,906	17,710,042	13,544,849	50,166,797	43,302,478
Percent	100.0	5.5	6.7	8.1	20.2	18.9	14.5	53.7	46.3
Annual Payroll (\$1,000)	2,103,971,179	116,856,518	114,006,469	114,450,673	375,313,660	352,390,861	279,451,864	1,007,156,385	1,096,814,794
Percent	100.0	5.6	5.4	6.9	17.8	16.7	13.3	47.9	52.1
Total, Agricultural Services, Forestry, and Fishing									
Establishments	89,206	59,424	16,183	8,134	83,741	3,895	548	88,184	1,022
Percent	100.0	66.6	18.1	9.1	93.9	4.4	0.6	98.9	1.1
Employment	534,125	86,338	105,997	106,592	298,527	127,895	50,545	477,367	56,758
Percent	100.0	16.2	19.8	20.0	56.0	23.9	9.5	89.4	10.6
Annual Payroll (\$1,000)	8,724,020	1,623,390	1,518,039	1,654,922	4,796,351	1,997,351	811,286	7,604,988	1,119,032
Percent	100.0	18.6	17.4	19.0	55.0	22.9	9.3	87.2	12.8
07									
Establishments	85,584	57,038	15,705	7,811	80,554	3,612	496	84,662	922
Percent	100.0	66.6	18.4	9.1	94.1	4.2	0.6	98.9	1.1
Employment	504,967	83,399	102,884	102,278	288,561	118,326	45,078	451,965	53,002
Percent	100.0	16.5	20.4	20.3	57.1	23.4	8.9	89.5	10.5
Annual Payroll (\$1,000)	8,121,015	1,536,688	1,469,519	1,573,899	4,580,106	1,823,413	693,305	7,096,824	1,024,191
Percent	100.0	18.9	18.1	19.4	56.4	22.5	8.5	87.4	12.6
071									
Establishments	551	347	98	54	499	45	4	548	4
Percent	100.0	63.0	17.8	9.8	90.6	8.2	0.7	99.5	0.5
Employment	3,666	580	651	734	1,965	(D)	(D)	(D)	(D)
Percent	100.0	15.8	17.8	20.0	53.6	(D)	(D)	(D)	(D)
Annual Payroll (\$1,000)	78,202	10,682	12,264	13,757	36,703	(D)	(D)	(D)	(D)
Percent	100.0	13.7	15.7	17.6	46.9	(D)	(D)	(D)	(D)

Table 2 Characteristics of SBA Sample Frames

	Dun and Bradstreet DMI File	Census Enterprise Files	Proposal SBA Microdata Survey
Editing Control	N ¹	N	Y
Access to Microdata	Y	N ²	Y
Longitudinal	Y	Y	Y
Race-Gender Identification	N ³	Y ⁴	Y
Baseline Counts (Totals)	Y ⁵	Y	N
Sample for Policy Applications	Y	N ⁶	Y
Non-Employer Firms	N	N	Y
Price	\$\$\$\$	\$\$	\$
Dynamics Available	Y	Y ⁷	Y ⁸

¹Data collection controlled by Dun and Bradstreet, but internal SBA editing rules apply.

²Tabulations can be prepared under contract by the Bureau of the Census.

³Dun and Bradstreet has identified over 300,000 women-owned firms.

⁴Race and gender of firm owners can be identified for all firms within the scope of the Census of Minority-Owned and Women-Owned Business Enterprises. To date this has not been done for the SBA files.

⁵Counts are quite precise for enterprises and establishment employment, but centered on March quarter. Sales data typically lag one year.

⁶Names and addresses of firms are confidential by law.

⁷The dynamic longitudinal file is being developed during FY 94.

⁸The SBA survey, as planned, will allow a dynamic calculation of employment growth.

**COMMENTS OF JOEL POPKIN AT SESSION AT WHICH PAPERS
WERE PRESENTED BY J. DUNCAN AND B. PHILLIPS**

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KEY WORDS: small business information; small business policy.

The demand for company data bases of the scope described by Duncan and Phillips is likely to grow dramatically over the next ten years. There are several reasons most related to the likelihood that the number and importance of small business units will rise markedly in the U.S. Continuation of the trend toward outsourcing, both within and outside the U.S., is but one reason. More fundamental and persistent is the acceleration in the stock of knowledge that is increasing the need for specialized, service companies specialists which understand thoroughly a narrow subject area. The demand within many large firms for such specialized service outputs is often inadequate to maintain the service in-house. On the other hand, there may be a number of firms that require such a specialized service often enough to prompt the establishment of a service firm to provide it to them. "Niche suppliers" is the term used to characterize such firms, and they will grow with the stock of knowledge and the goods and services it generates. Furthermore, such firms are unlikely to become large because the services they provide are not characterized by economies of scale, nor are they likely to be merged.

Another reason the number of small business will grow is that the risk/reward calculus influencing potential entrepreneurs has shifted. The restructuring and internationalization of large firms has diminished the availability of "lifetime" jobs with dependable, career-growth potential. The risk of job loss in large companies has risen enough to prompt many self-motivated persons to view entrepreneurship as no more risky than working for a large multinational. Further, technological developments have eased entry and broadened the businesses in which it is possible.

The growth in the number of small businesses, coupled with the increasing globalization of large ones, means that to reach full employment, government policies will increasingly need to be targeted at smaller businesses, or to a subset thereof. Related policies to improve job quality, raising real wage levels, will also require a small business orientation, if that is where the growth and job potential is. What are the data requirements for sound policy decisions on this subject?

Many of the questions that need to be addressed to develop a policy that will foster growth in both jobs and their quality can be answered with properly structured macro data. A basic requirement is macro data sets that are cross classified by business size. Not many such series are available, or if so, are compiled infrequently. One, available once every five years, is value added by major industrial sector broken down by whether it is produced by companies with 500 or more employees or by those companies with fewer employees. The ability to estimate such series by business size should not have to wait for the passage of five-year periods. Then there are the many series such as prices and productivity that cannot be disaggregated by business size at all. More series should be structured to be amendable to disaggregation. Several underlying sampling frames currently in use would permit this disaggregation.

But, as Phillips points out, macro data needs are not the only ones. Micro data, merging real and financial variables for each firm, would be particularly useful for tracing the factors contributing to small business success or failure, and for answering many other questions. The usefulness of such data for many purposes would be enhanced if they were longitudinal. Finally, it is important that micro data sets be accessible to researchers.

While the government has a responsibility to provide data such as those described, because of their policy relevance, there is likely to be a continuation of private sector development of such data as well. Proprietary business data bases will grow. The demand for them will be driven primarily by marketing needs.

That such data are not now available reflects, in part, the obstacles faced in compiling them. The biggest is the lack of accurate sampling frames, partly due to lags in the recording of births and deaths. Analysts need, also, to agree on more precise and implementable definitions of births and deaths. Also needed is agreement on the definition of the unit of observation for business data. Small businesses seem to lend themselves to using the company rather than the establishment as the unit of observation.