2009 Research Report: Center for Economic Studies and Research Data Centers

Studying Firm Organization
Historical Data Recovery

USCENSUSBUREAU

Helping You Make Informed Decisions

U.S. Department of Commerce
Economics and Statistics Administration
U.S. CENSUS BUREAU

2009 Research Report:
Center for Economic Studies
and Research Data Centers

U.S. Department of Commerce
Gary Locke,
Secretary

Rebecca M. Blank,
Acting Deputy Secretary

Economics and Statistics Administration
Rebecca M. Blank,
Under Secretary for Economic Affairs

U.S. CENSUS BUREAU
Robert M. Groves,
Director

ECONOMICS
AND STATISTICS
ADMINISTRATION

Economics and Statistics Administration

Rebecca M. Blank,
Under Secretary for Economic Affairs

U.S. CENSUS BUREAU

Robert M. Groves,
Director

Thomas L. Mesenbourg,
Deputy Director and Chief Operating Officer

William G. Bostic, Jr.,
Acting Associate Director for Economic Programs

William G. Bostic, Jr.,
Assistant Director for Economic Programs

Ron S. Jarmin,
Chief, Center for Economic Studies

Contents

CHIEF'S MESSAGE

The research we conduct at the Center for Economic Studies (CES) improves statistical programs, paving the way for new data products and more timely releases of data. The U.S. Census Bureau's Research Data Center (RDC) network lets us securely tap the expertise of external researchers at a growing number of sites.

In 2009, CES and RDC researchers continued to create new data products and improve existing products. For example, a beta version of the synthetic Longitudinal Business Database (LBD) is scheduled for release in 2010. The synthetic LBD will give researchers detailed data, while still protecting the confidentiality of individual establishment data.

CES researchers developed an enhanced set of worker characteristics and expanded the frame of jobs for Longitudinal Employer-Household Dynamics (LEHD) products. New beta Quarterly Workforce Indicator (QWI) tabulations that include worker race, ethnicity, and education are scheduled to be released in 2010. These improvements will allow data users to examine employment, wages, and job flows in LEHD products by the education level of the local workforce, as well as by worker race and ethnicity.

The recent financial crisis underscored the need for information on the financial structure of firms, and how that structure affects their behavior. This report takes a look at research on several topics in corporate finance, highlighting one of the many areas where microdata analyses can provide new insights.

Good research needs good data. A CES-led effort successfully recovered thousands of files of historical Census Bureau microdata about households and businesses. These recovered data will be invaluable in helping to explain the present and inform debates about the future.

Partnerships with researchers outside of the Census Bureau have been and will continue to be vital to our efforts to find new ways to use existing data. RDCs will open in early 2010 at the University of Minnesota in Minneapolis and at Stanford University in Palo Alto, California.

I thank everyone who contributed to this report. B.K. Atrostic, David Brown, and Cheryl Grim compiled and edited nearly all the material in the report. Many others, from both within and outside the Census Bureau, contributed to the report; they are acknowledged on the inside cover page.

Ron S. Jarmin, Ph.D.
Chief Economist and Chief of the Center for Economic Studies

Chapter 1.
A LOOK INSIDE

B.K. Atrostic, Center for Economic Studies

The Center for Economic Studies (CES) and the U.S. Census Bureau's network of Research Data Centers (RDCs) host research on a broad range of topics in demography, economics, geography, sociology, and other social sciences. Each year, our annual research report highlights findings from different topics and fields.

The first article in this issue summarizes research on several topics in corporate finance. Good research requires good data, and the second article in this issue describes the successful CES-led effort to recover thousands of files of historical Census Bureau microdata about households and businesses.

STUDYING FIRM ORGANIZATION

Whether corporate behaviors such as mergers and acquisitions, bankruptcy, and forming conglomerates that span multiple economic sectors are efficient is an important public policy question. Many research studies using publicly available data find the behaviors are inefficient. Vojislav Maksimovic and Gordon Phillips review the RDC research on this subject and find that the RDC researchers come to the opposite conclusion. Access to internal establishment-level data makes the difference. Publicly available data only track firms. Establishment-level data allow researchers to disentangle what is happening within the firm.

Firms can form and dissolve, adding or shedding their basic building block, the establishment. Comparing firm productivity before and after major changes—the only option using public data—does not allow for an apples-to-apples comparison.

The establishment-level data available through the RDCs allow researchers to compare the pre- and post-change productivity of individual establishments. RDC studies suggest that the mergers and acquisitions market, the bankruptcy process, and the way corporations decide to form conglomerates all improve productivity.

HISTORICAL MICRODATA RECOVERY

Social scientists will now have access to more microdata to help explain the present and inform debates about the future. CES recovered a wealth of historical microdata "trapped" on a Census Bureau Unisys computer that was scheduled to be decommissioned and not replaced.

Thousands of files containing data from as early as 1953 were recovered. The recovered business data encompass nearly all sectors of the economy, including manufacturing, mining, retail, wholesale, services, construction, transportation, and agriculture. Decennial Census data for Puerto Rico and monthly supplements to the Current Population Survey were also recovered.

The project is already paying off. For example, CES researchers are using the data developed in the 1980s for the renowned economic researcher Zvi Griliches. These data extend CES holdings of the Survey of Industrial Research and Development as far back as 1957 for many large firms.

However, many of the other files will first require significant work—essentially data archaeology—to deduce record layouts and file structures. Developing these data far exceeds CES' own resources. To make the recovered data ready for use, CES actively seeks partners within the research community.

Chapter 2.
2009 NEWS

B.K. Atrostic, Center for Economic Studies

- CES organized or participated in a number of important conferences in 2009. See Text Box 2-1.

- Producing new information from existing data is a major CES activity. A new version of our OnTheMap tool was released in 2009. See Text Box 2-2.

- The CES Web site will change in 2010. Preliminary information is in Text Box 2-3.

Text Box 2-1.
2009 CONFERENCES

LOCAL EMPLOYMENT DYNAMICS (LED) PARTNERSHIP WORKSHOP

The LED program held its 2009 Partnership Workshop, "A Decade of Partnership and Innovation," at the Brookings Institution, in Washington, DC, on March 5, 2009. A business meeting of LED partners followed on March 6. Presentations and more information are available at <http://lehd.did.census.gov /led/library/workshops.html>.

LED is a voluntary federal-state partnership that integrates data on employees and data on employers with multiple other data sources. LED produces new and improved labor market information about the dynamics of the local economy and society, while strictly protecting the confidentiality of individuals and firms that provide the data.

LED data users and Longitudinal Employer-Household Dynamics (LEHD) staff made presentations on:

- LED and economic recovery
- LED and emergency management

- Best practices in LED
- OnTheMap in action

SYNTHETIC DATA CONFERENCE

Public and private decision-makers rely on detailed information in public-use microdata (PUM) files to answer important questions. However, growing computing power and the increasing numbers of external databases make it harder to maintain confidentiality. Future PUM files may have to limit the number of variables or the detail available, meaning less information would be available for public and private decision-making.

One possible remedy would be to use synthetic microdata. In synthetic data, some or all of the original source data are replaced with synthetic values generated by sampling from appropriate probability models. Researchers across the country, including Census Bureau researchers, have been collaborating through the Census Bureau's secure Research Data Center (RDC) network to develop cutting-edge synthetic data.

Photo by Lauren Brenner

Stefan Bender of the Institute for Employment Research in Germany talks about using synthetic data July 31 at Census Bureau headquarters.

"Synthetic data products give our data users the detailed information they need while protecting the confidentiality of our respondents. I am a huge supporter of this research," said Deputy Director Tom Mesenbourg in his opening remarks at the "Workshop on Synthetic Data and Confidentiality Protection" at Census Bureau headquarters July 31.

Nearly 150 participants, from 38 institutions, heard 17 presentations. Workshop sponsors included the National Science Foundation and the Internal Revenue Service (IRS). The Center for Economic Studies (CES), RDC researchers, and other Census Bureau researchers were featured prominently in the workshop.

Workshop presentations assessed existing products and described products under development. Several authors discussed general methodologies for constructing synthetic datasets and for testing how well they produce valid analyses and protect confidentiality. Researchers gave progress reports on developing a partially synthetic file of linked employer-employee data from the LEHD program and on the feasibility of creating a synthetic decennial census PUM file. Outside perspectives from external researchers, the IRS, the National Center for Health Statistics, and the Institute for Employment Research in Nuremberg, Germany, rounded out the workshop.

"Good solutions come from situations where the old solution doesn't work," said Donald Rubin, John Loeb Professor of Statistics at Harvard University.

More information on the workshop is at <www.vrdc.cornell .edu/news/nsf-census-irs -workshop2009/program/>.

CAED TOKYO CONFERENCE

Seventeen Center for Economic Studies (CES) or RDC researchers were authors or coauthors of seven research papers presented at the conference. Ron Jarmin and Shawn Klimek served on both the Executive and Scientific Committees for the 2009 CAED conference.

The CAED was held in Tokyo, Japan, October 2–4, 2009. The CAED provides a rare opportunity for data producers and users, as well as policymakers, to learn about the latest research results based on the analysis of firm-level data.

Jarmin gave one of the keynote addresses, "What Can We Learn by Analyzing Business Location Using Establishment and Firm Data?" in a symposium on "The Role of Intangible Assets in the Improvement of Firm Performance." More information is available at the conference Web site <http://gcoe.ier .hit-u.ac.jp/CAED/>.

RDC CONFERENCE

The 2009 Joint U.S.-Canadian Census Research Data Center Conference was held at Cornell University, Ithaca, NY, on October 5, 2009. The New York RDC (Cornell) organized and hosted the conference. The event was sponsored by the Cornell Institute for Social and Economic Research at Cornell University, Ithaca, New York.

Researchers from U.S. and Canadian RDCs presented 23 research papers and a number of poster sessions on topics including:

- Studying migrants and migration in Canada and the United States: evidence from national census data

- Determinants of productivity

- Measuring health, health insurance, and health outcomes in Canada and the United States

- Labor market mobility

- Using confidential data to improve social science measurement

- Spillovers in the determination of earnings

- The nature, determinants and effects of employee layoffs

- Regional economics

The conference agenda and presentations are at <http://ciser .cornell.edu/pub/RDC2009 ConferencePresentations.shtm>.

SECRETARY LOCKE VISITS CES

Department of Commerce Secretary Gary Locke toured CES during his visit to the U.S. Census Bureau on April 8, 2009. Accompanied by Deputy Director Thomas Mesenbourg, Locke met with CES Chief Ron Jarmin. This was the first time a Commerce secretary visited CES.

CONNECTICUT JOINS LOCAL EMPLOYMENT DYNAMICS (LED)

The state of Connecticut joined the LED partnership. LED now consists of 51 partners, including the District of Columbia, Puerto Rico, and the U.S. Virgin Islands.

LONGITUDINAL EMPLOYER HOUSEHOLD DYNAMICS (LEHD) TURNS 10

The LEHD program marked the end of its first decade in October 2009. The program began at CES in late 1998 and was formally established at the Census Bureau in 1999. Key founders and contributors to the LEHD program were recognized at a lunch during the March 2009 LED Partnership Workshop.

BRONZE MEDAL

Decennial census microdata files for 1970 through 2000 are now available through the Research Data Center (RDC) program to researchers with approved projects. Formats are more consistent and documentation is improved for all years. Researchers can do significant preparatory work before entering an RDC because much of the documentation is available to the public (Gardner, 2009).

Text Box 2-2.
ONTHEMAP VERSION 4 RELEASED

The U.S. Census Bureau released OnTheMap Version 4. OnTheMap, a free, publicly accessible Web application provides information on jobs and workers in the United States at an unprecedented level of geographical detail.

Version 4 includes a number of important new features and enhancements including: the addition of Ohio, 2 more years of data (2007 and 2008), improved user interface, import/export of shapefiles and KML/KMZ, and more.

Version 4 also includes updated documentation on how to get started, sample analyses, system requirements, FAQs, and other information. OnTheMap can be accessed directly through its Web site <http://lehdmap4.did.census.gov/themap4/>.

OnTheMap is also supported by the Employment and Training Administration of the U.S. Department of Labor and the state partners under the Local Employment Dynamics partnership with the Census Bureau.

B.K. Atrostic and Todd Gardner of CES, and Marie Pees of the Population Division, led the internal Census Bureau effort to make historical decennial census data available through the RDCs. Partnerships with academic research institutions, particularly the Minnesota Population Center, the Inter-University

Photo by Lauren Brenner

B.K. Atrostic (center right) and Todd Gardner (center left) of CES, and Marie Pees of the Population Division (not pictured), receive a Bronze Medal Award from Deputy Director Tom Mesenbourg (far left) and then Associate Director for Economic Programs Harvey Monk (far right).

REDESIGNED WEB SITE COMING SOON

In 2010, the main Center for Economic Studies (CES) Web site will change its look and address. The new Web site will:

- Share a common look and feel with the rest of the U.S. Census Bureau

- Provide more user-friendly information about CES programs

Some things will remain the same:

- The link for the CES proposal management system where researchers upload proposals and post-project certifications, and reviewers upload proposal reviews <www.ces.census .gov/index.php/ces/formlogin>.

- The link for the LEHD program <http://lehd.did.census .gov/led/> and products such as OnTheMap and Quarterly Workforce Indicators.

Once we have a schedule for the changeover, we will inform users multiple ways. We are looking forward to our redesigned Web site. We hope our researchers and partners find it easier to learn about CES and our programs.

Consortium for Political and Social Research based at the University of Michigan, and the Maryland Population Research Center, made improved documentation available. For their contributions to this effort, Atrostic, Gardner, and Pees received the Bronze Medal Award, the highest honor given by the Census Bureau.

RESEARCH PROGRAM

In 2009, 41 new RDC projects started and 22 new projects using Census Bureau data were approved. See Appendix 3-A.

Projects requesting Agency for Healthcare Research and Quality (AHRQ) and National Center for Health Statistics (NCHS) data continued to be popular. There were 19 projects reviewed and approved by AHRQ and/or NCHS, depending on the data requested. See Appendix 3-B. Researchers at CES and the RDCs published

30 professional papers in 2009. See Appendix 2. CES issued 44 Discussion Papers. See Appendix 4.

CES GROWS

All parts of CES grew in 2009. CES hired an unprecedented eight economists and three information technology specialists. CES also reorganized internally to better integrate the LEHD program, which joined CES in 2008. We welcome the new staff and look forward to their contributions.

To better accommodate researchers, two new RDC locations were under development at the University of Minnesota and at Stanford University in California in 2009. Both opened in 2010.

DEVELOPING NEW RESEARCHERS

An intellectual network of researchers trained in using

Census Bureau data improves our research and data products. Many graduate students who work on RDC projects as research assistants become RDC researchers after beginning their professional careers. Two growing CES initiatives are expanding the network of new researchers.

CES instituted a formal mentorship program in 2008 to assist graduate students actively engaged in dissertation research in economics or a related field at an RDC. CES assigns staff economists as mentors. Participants receive additional mentoring through invitations to visit CES, where they meet CES researchers and present research. The mentorship program has taken off. Six PhD students participated in the program as of the end of 2009. More information is available from the CES Web site <www.ces.census.gov>.

In the past, graduate students learned while they worked as research assistants on projects with CES researchers. CES formalized this practice into a training program for student interns. Interns are paired with CES staff who both supervise their work and train them in creating and using nonpublic microdata files. In 2009, CES had 11 student interns.

REFERENCE

Gardner, Todd. 2009. "Expanded and Enhanced Decennial Census Data." In 2008 Research Report: Center for Economic Studies and Research Data Centers. <www.ces.census.gov>.

Chapter 3.
STUDYING FIRM ORGANIZATION: THE EFFICIENCY OF CORPORATE ASSET ALLOCATION AND THE MERGER AND ACQUISITION MARKET

Vojislav Maksimovic and Gordon Phillips, University of Maryland

The finance literature poses a number of important questions that cannot be addressed without the appropriate data. Such questions include the efficiency of the merger and acquisition market, the effectiveness of the bankruptcy process, and the rationality of firms' choices of combinations of industries in which to operate.

These questions are at the core of our understanding of corporate governance institutions and their functioning. Do these institutions act in the shareholders' interest? The answers also have important implications for competition, as intraindustry mergers reduce the number of competitors in the market. Do such mergers provide offsetting benefits to the economy, such as productivity gains?

Addressing the questions raised by changes in corporate identity requires longitudinal information about a representative sample of firms, their financial information, as well as data on the establishments that belong to those firms. Commercially available data are currently not up to the task. They do not effectively track the changes in corporate structure, which assets they operate over time, which they acquire or divest, and which they shut down or open up. Moreover, it is extremely difficult to obtain useful financial data on privately held U.S. corporations.

> ### Text Box 3-1.
> ### LINES OF BUSINESS
>
> COMPUSTAT, the database most commonly used by researchers to study corporate diversification, contains data on firms' separate lines of business (segments). Groups of activities representing at least 10 percent of a firm's sales, assets, or profits are reported separately. Thus, the maximum number of different industries that can be observed for any firm in the data is 10, so the true degree of diversification cannot be determined.
>
> Firms decide which activities are grouped into each line of business, and these decisions vary across firms, making cross-firm comparisons difficult. It is also hard to track firms' changes in diversification, as they frequently change the number of lines of business they report, even when there has been no real change in their operations. Hyland (1997) estimates that up to a quarter of reported changes in the number of lines of business stem from changes in reporting policy rather than the actual level of diversification. Bens, Berger, and Monahan (2009) show that firms make these decisions strategically, e.g., aggregating lines of business to hide unprofitable lines.

The U.S. Census Bureau through the Center for Economic Studies (CES) and its network of Research Data Centers (RDCs) provides a way for researchers to access such rich datasets. Census Bureau establishment-level data allow researchers to understand how firms organize themselves and make micro-level decisions; that is, to disentangle what is happening within the firm. Researchers approved to access the data can address questions about firm organization, mergers and acquisitions, bankruptcy, and whether public and private firms behave differently. Research based on establishment-level data is yielding important insights into the inner workings of corporations.[1]

This chapter discusses the advantages of Census Bureau data over other corporate databases for addressing these questions and summarizes findings of our and other researchers' work using the data. Our studies suggest that the mergers and acquisitions market, the bankruptcy process, and conglomerate firm formation tend to improve productivity.

[1] See Appendix 1 about CES and RDCs. Researchers must have approved projects to access Census Bureau microdata. For more information on the project proposal process, see the CES Web site <www.ces.census.gov>.

IMPORTANT ADVANTAGES TO USING NONPUBLIC CENSUS MICRODATA

In addressing questions about corporate asset allocation and reallocation, researchers face the usual challenges in applied work—identifying the effect of interest and disentangling the variables driving mergers and diversification. Compared to other applied work, the difficulties are greater here because the unit of analysis can change during the period of study. Unlike a real person, who has a definite identity, a corporation can, and often does, change the composition of its assets, the industries in which it operates, its management team, and its financing methods.

The Census Bureau's rich longitudinal microdata provide several advantages. Consider, for example, measuring the effect of some event (e.g., a change of control or a demand shock) on performance. Firms may buy and sell assets in response to the event. The usual firm-level analysis using commercially available datasets compares the performance of the firm before and after the event. However, the composition of the firm changes in response to the event, confounding before vs. after comparisons.

Such comparisons are especially problematic for firms entering bankruptcy or engaging in mergers, as assets divested, closed, or purchased are typically much different from the other assets the firm owns. Census Bureau data allow researchers to follow the individual establishments before and after an event.

A second advantage of Census Bureau microdata is that industry classification codes are assigned at the establishment level, providing a much more detailed picture of firms' diversification than is provided in commercially available datasets such as the COMPUSTAT segment files (see Text Box 3-1). Unlike COMPUSTAT data, Census Bureau establishment-level industry coding only changes when actual operations change, and the number of reported industries is not capped at 10.

Corporations listed on stock exchanges (publicly traded corporations) are the focus of nearly all financial research because data on unlisted (privately held) companies are not publicly available. The nonpublic Census Bureau data, however, cover both listed and unlisted companies. Combining commercially available COMPUSTAT data with nonpublic census microdata, Davis et al. (2007) reports that unlisted companies employ 71.4 percent of the workforce in 2000 and have very different growth patterns than listed companies. This suggests that results based on listed companies may not apply to unlisted firms.

Most of the studies reviewed in this chapter rely on the Longitudinal Research Database (LRD), a longitudinally linked version of the Census Bureau's Annual Survey of Manufactures (ASM).[2] Observations are at the establishment level.

Establishments assign a four-digit Standard Industrial

Classification (SIC) code to their output. Researchers can compare the productivity of every establishment owned by the firm against other establishments in the industry. The extent of multi-establishment firms' operations can be measured by industry on an annual basis and establishments can be followed over time even when owners change.

BANKRUPTCY NOT ASSOCIATED WITH INEFFICIENT ASSET REALLOCATION

Some of the advantages of the LRD can be seen in the Maksimovic and Phillips (MP) (1998) study on the efficiency of the U.S. bankruptcy process. The process is designed to give firms in financial distress the opportunity to restructure their debt and sell or close some of their assets, thereby regaining solvency. Creditors desiring immediate payment, however, may pressure firms to sell assets that are more valuable in those firms than under anyone else's ownership, reducing productivity. It is therefore important to understand whether bankruptcy works as intended.

The previous literature has attempted to address these questions by examining how firms perform before and after bankruptcy. However, firms may control very different sets of assets before and after the process. It is more meaningful to compare the same assets' performance over time.

In MP (1998) we address bankruptcy efficiency with detailed LRD establishment-level data

---

[2] The exception is Villalonga (2004).

Table 1.
Establishment Productivity Does Not Decline During Bankruptcy

Number of years in Chapter 11 [1]	Average year −1	Change				
		Year −1 to 0	Year −1 to 1	Year −1 to 2	Year −1 to 3	Year −1 to 4
< 1 year, n=47	−0.293 * (−2.14)	0.068 (0.31)				
1 year, n=54	−0.287 * (−2.19)	0.187 (0.96)	0.312 (1.48)			
2 years, n=27	−0.086 (−0.67)	−0.110 (−0.55)	0.252 (1.18)	0.240 (0.23)		
3 years, n=13	0.286 (1.44)	−0.266 (−0.86)	−0.172 (−0.63)	−0.162 (−0.53)	0.001 (0.01)	
4 or more, n=56.	−0.078 (−0.71)	−0.023 (−0.21)	0.148 (1.18)	0.087 (0.88)	0.107 (1.02)	0.176 (1.55)

* Significantly different from zero at the 5 percent level, using a two-tailed *t*-test. [1] Establishments leave Chapter 11 either because the firm emerges from bankruptcy, or the establishments are sold off or closed down.

Note: This table presents industry-adjusted total-factor productivity (TFP) levels and growth, separately by number of years the establishments are in Chapter 11. These are establishments in firms that declared Chapter 11 between 1978 and 1989. Only establishments in low-growth industries are included, where low-growth industries are those in the bottom quartile of the distribution of change in 10-year shipments at the three-digit SIC code level. The industry adjustment is done by subtracting the industry average TFP from the establishment's TFP, where industry is defined at the four-digit SIC code level. Industry-adjusted TFP is then standardized by dividing the TFP by the standard deviation of TFP in the establishment's four-digit industry. The numbers in parentheses are *t*-statistics for significant differences from zero.

from a sample of 1,195 establishments of 302 firms that sought the protection of Chapter 11 of the U.S. bankruptcy code between 1978 and 1989. We use a panel of over 50,000 LRD establishments belonging to both public and private nonbankrupt firms as controls. The data enable us to track changes in the composition of firms as they sell and close establishments. Thus, our evaluation of reorganizations is not subject to the sample selection bias arising from using firm-level data.

We measure how establishment productivity and cash flows (proxied by value of shipments minus materials, energy, and labor costs) evolve under Chapter 11 bankruptcy. Table 1 shows the productivity results for bankruptcies in low-growth industries (ones in the lowest quartile of growth between

1978–1989) in the year prior to entering Chapter 11. The table shows establishments' relative productivity (compared to the industry average) from the year prior to entering Chapter 11 through 4 years after entering Chapter 11. Each row of the table refers to establishments staying in Chapter 11 for a certain number of years and follows them over time.

In low-growth industries there is little evidence that establishment-level productivity declines while firms in Chapter 11 operate them, as none of the productivity changes are statistically significantly negative. In MP (1998) we show that broadly similar results hold for high-growth industries, with the exception that firms remaining in bankruptcy for 4 or more years

experience a statistically significant decline in productivity.[3]

To test whether Chapter 11 and nonbankrupt firms make different decisions about selling establishments, we estimate a statistical model predicting whether an establishment will be sold or closed. The probability that an establishment with given characteristics is sold or closed is qualitatively similar whether the owner is bankrupt or not. Bankruptcy status, per se, does not explain why bankrupt firms have a higher probability of selling assets than other firms. Rather, firms entering bankruptcy more frequently own establishments with characteristics associated with sale or closure, such as low productivity.

[3] Please see the source publications for details and specific exceptions to the qualitative interpretations of the results cited in this chapter.

We find little evidence that the bankruptcy process, even when prolonged, leads to inefficient restructuring or bad disposal decisions.

RATIONAL WITHIN-FIRM ALLOCATION OF RESOURCES

The distribution of firms' activities across industries is a key research focus in corporate finance. Managers' choices about this distribution may not always be in shareholder interests. Managers may desire earnings stability to achieve bonus targets or reduce the possibility of being fired by boards focused on last quarter's earnings. Firms can smooth earnings by entering new industries. They may have little experience in the new industries, however. Though shareholders may also desire earnings stability, they could achieve it more efficiently by investing in a portfolio of single-industry firms, each an expert in its field.

Closing poorly performing lines of business can entail painful layoffs, resistance from division chiefs, and admitting defeat. To avoid this, managers may wish to redirect cash flows generated from profitable lines toward the loss-making ones. Such actions can reduce firms' overall profitability, damaging shareholders.

Researchers have tried to uncover the extent to which these potential conflicts of interest actually occur. The seminal papers on the distribution of firms' activities across lines of business are Lang and Stulz (1994) and Berger and Ofek

(1995). These researchers disaggregate multi-industry (conglomerate) firms into their constituent industry lines of business using COMPUSTAT data. They value these lines by comparing their Tobin's q (market value divided by replacement value of assets, a common performance indicator) to that of single-industry firms in the same industries. They find that the typical conglomerate is undervalued and selling at a discount compared to a collection of comparable single-industry firms.

The conglomerate discount presents a puzzle, as it implies that shareholder wealth would be greater if more firms were organized as single-industry firms. Many subsequent papers have confirmed the presence of a conglomerate discount.

A major concern with this research is that it is based on COMPUSTAT data that are sub-ject to the measurement problems discussed in the first section above. Villalonga (2004) finds that the results are highly sensitive to how diversification is measured.

When using COMPUSTAT data to measure firm diversification, Villalonga obtains the standard result that diversified firms trade at a discount compared to single-industry firms. She reclassifies the firms' diversification using the Census Bureau's Business Information Tracking Series (BITS) dataset.[4] After reclassification, diversified firms trade at a significant premium over single-

industry firms. This calls into question the previous research.

In MP (2002) we use the LRD to directly measure how the productivity of diversified firms' lines of business (measured at the three-digit SIC level) varies by the number of lines and each line's relative size within the firm. Figure 1 below summarizes the data for two- to five-segment firms in the U.S. manufacturing sector for the years 1979–2002.[5] The segment numbers refer to the ranks of a firm's lines of business based on production, with number 1 being the highest-producing segment.

Controlling for the number of lines of business in a diversified firm, industry-adjusted productivity decreases as the line's relative size within the firm falls. This is consistent with a model where firms spread their operations across a range of industries in which they have a comparative advantage and decreasing returns to scale. But the results may also reflect conflicts of interest like those mentioned above. Large, productive firms can waste resources by diversifying into industries in which they do not have a comparative advantage.

To distinguish between these interpretations, MP (2002) examines how firms respond to industry demand shocks. According to a simple neoclassical model, firms should build up the lines of business in which they have a comparative advantage and that have received a positive demand

---

[4] Unlike the LRD, a manufacturing sector database, BITS covers both manufacturing and nonmanufacturing establishments.

[5] Maksimovic and Phillips (2002) shows the results for firms with more than five segments as well, and the pattern is similar.

Figure 1.
Firms' Largest Lines of Business Are Their Most Productive

Segment total-factor productivity relative to lowest-productivity segment category
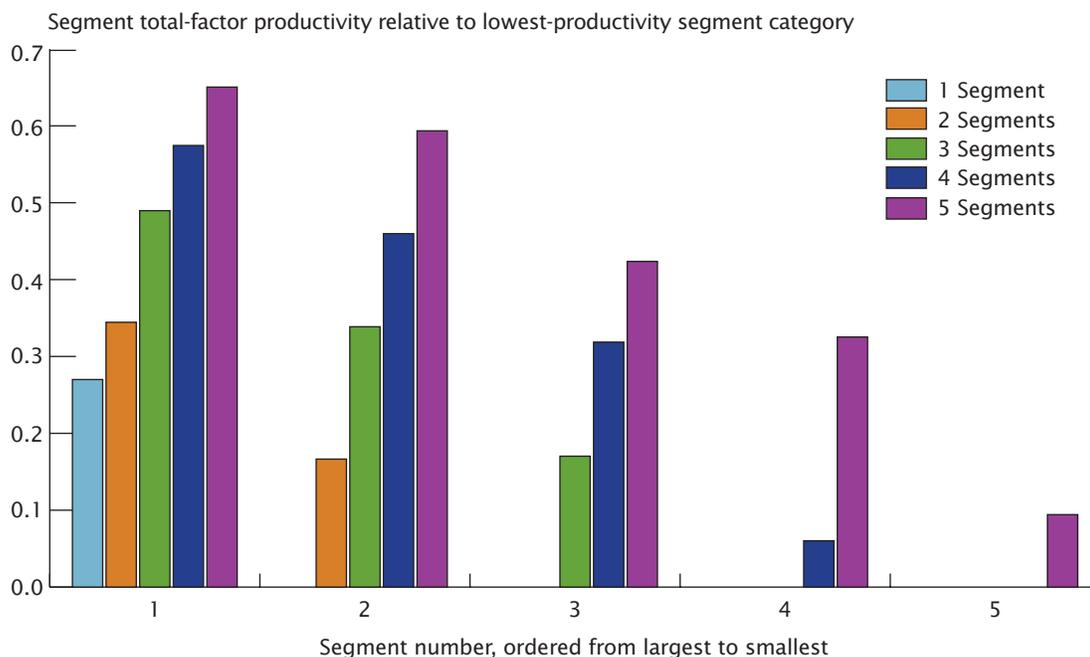
Source: Maksimovic and Phillips (2002).

shock. They should disinvest in spheres in which they are not efficient and that have received a negative demand shock. Our results are consistent with this model.

Also using the LRD, Schoar (2002) finds related results. She examines firms after they purchase plants and finds that acquired-establishment productivity increases after the acquisition. The productivity of the firms' other establishments declines, suggesting that managers reallocate time from existing establishments to new establishments. She calls this a "new toy" effect and suggests that this is indicative of managerial decision-making inconsistent with

shareholder interests. However, our interpretation is that a "new toy" effect is also consistent with diseconomies of scope, so that management allocates time optimally to higher return diversifying activities at the expense of their past ones.

In MP (2008) we study how multi-industry and single-industry firms' sales expand in industries at different stages in the industry life cycle. We find that single-industry firms tend to grow by increasing the size of their existing establishments and starting new establishments, whereas acquisitions of other firms' establishments are more important for multi-industry firms' growth. These

differences are greatest in high-growth industries. Moreover, multi-industry firms use cash flows generated in some lines of business to relax financing constraints in other lines that do not generate enough cash flows to fund the optimal level of investment.

PROFIT-MAXIMIZING MERGERS AND ASSET REALLOCATION ACROSS FIRMS

The central question financial economists ask about mergers and acquisitions is: Do mergers increase the value and productivity of corporations? Analysis of this question immediately raises a series of subsidiary

issues. When are firms sold in their entirety and when do firms just trade assets, such as establishments, with each other? What happens after a merger—do the acquirers typically operate the assets they buy, or is a merger the first step in a series of restructuring moves? Why do acquisitions cluster by time and industry? Do listed firms participate differently than unlisted firms?

Here we highlight the role of the market for partial-firm sales, which cannot be analyzed using commercially available firm-level data. Using the LRD in MP (2001), we find that during the 1974–1992 period, an annual average of 1.94 percent of all manufacturing establishments change ownership in partial-firm transactions. This is comparable to the 1.95 percent rate at which manufacturing establishments change ownership in all-firm mergers and takeovers over the period. Similar rates of partial-firm sales occur in both growing and declining industries. Conglomerates dominate in the partial firm market—sellers operate in an average of 10 four-digit SIC industries and buyers in 8.

We find that establishments in productive lines of business are less likely to be sold, especially when the industry is expanding. Most importantly, an establishment's probability of being sold is higher if the firm has more productive operations in other industries. The probability of being sold increases further if the more productive operations are in growing industries. These patterns are consistent

with profit maximization rather than a model where managers avoid painful restructuring by retaining and subsidizing inefficient establishments using resources generated by more successful divisions.

We find that the likelihood that an establishment is sold goes up as the share of the firm's output produced by the establishment's line of business decreases. The finding is consistent with the notion that diversified firms divest from their smallest and least productive divisions and redeploy their assets.

We track who buys establishments and firms and find that more productive firms are more likely to be buyers. Examining purchased establishments before and after purchase, we find that productivity increases with the difference between the buyer's productivity and the purchased establishment's productivity.

Yang (2008) investigates why mergers cluster by time and industry. According to her theoretical model, firms expand when productivity rises and contract when it falls. They can expand through investing in new assets or through external acquisition of other firms' assets. The relative price of other firms' assets compared to new investment is higher if other firms in the industry also wish to expand. Growth via acquisitions is thus more likely if firms' productivity growth is heterogeneous, i.e., when not all firms wish to expand at the same time.

Using the LRD, Yang finds results consistent with the model. If

all firms in an industry experience similar changes in cost and demand conditions, firms adjust their size via changes in the size of their establishments or by opening or closing establishments. In contrast, if changes in cost and demand conditions vary considerably across firms in the industry, firms adjust via asset trades—firms with rising productivity buy assets and those with falling productivity downsize.

We also find that acquirers in mergers do not mechanically keep all the assets of the target that they acquire. Rather, they readjust their boundaries to account for their comparative advantage and the opportunity cost of keeping the assets. Maksimovic, Phillips, and Prabhala (2008) shows that acquirers of listed firms sell about 27 percent of the purchased establishments within 3 years after the acquisition. The sold establishments tend to be ones in the purchased firm's peripheral divisions. Productivity increases after the acquisition in establishments that are kept, but not in the establishments that are sold. This pattern is consistent with the hypothesis that acquirers keep the assets they can exploit efficiently, and they maintain managerial focus by selling or closing the assets that they cannot exploit efficiently.

PRIVATE EQUITY AND PRODUCTIVITY

The relative strengths of the Census Bureau data are also highlighted in Davis et al. (2009). The authors link Census Bureau data to private data

from CapitalIQ and Dealogic. CapitalIQ and Dealogic are providers of company information and analytical tools. CapitalIQ and Dealogic have specialized in tracking private equity deals on a worldwide basis since 1999, and through extensive research, have backfilled transactions prior to 1999. The linked data permit analysis of the impact of private equity buyout—investment transactions by which the ownership equity of a company or a majority share of the stock of the company is acquired by a private equity group—on productivity.

Previous attempts at answering these questions have serious limitations. First, they rely on small samples or on surveys with incomplete and perhaps selective responses, raising doubts as to whether the data accurately reflect the experiences of firms acquired by private equity groups. Second, the underlying data offer little scope to control for changes at comparable firms. Third, studies typically focus on the company-wide performance of firms backed by private equity and are therefore unable to distinguish the productivity effects of continuing, entering, and exiting plants as well as those that are acquired or divested.

The authors are able to examine U.S. private equity transactions from 1980 to 2005, following 4,500 firms and more than 200,000 establishments before and after acquisition by private equity groups. Davis et al. (2009) examines the productivity effects of private equity

transactions by linking these data to the LRD. The authors find private equity groups act as a catalyst for reallocation through the intensification of entry, exit, acquisition, and divestitures of establishments. They find that this intensification of reallocation yields a substantial productivity growth differential (about 2 percent) within 2 years following the transaction. About two-thirds of this differential is due to improved productivity among continuing establishments of the firm (including the effects of shifting resources from less to more productive establishments) and about one-third due to net entry. The contribution of net entry is dominated by the closure of underperforming establishments.

LISTED FIRMS PRODUCE BIGGER PRODUCTIVITY GAINS IN CORPORATE MERGER AND ACQUISITION MARKET

Access to Census Bureau data on both publicly listed and privately held firms allows us to fill an important gap in the mergers and acquisitions literature. In Maksimovic, Phillips, and Yang (2009) we examine the participation of public and private firms in merger waves and their outcomes. Figure 2 below displays the incidence of public and private firm acquisitions of establishments across time.

The figure shows that public firms are more active acquirers than private firms and are more cyclical in their acquisition decisions.

Public firms are also more sensitive to macroeconomic factors like credit spreads and industry equity returns. Establishments acquired by public firms enjoy larger productivity gains than those acquired by private firms. The improvement is greater if the acquisition occurs when acquisition activity is high, especially when the acquirer is a public firm.

We show that the results are not driven solely by the fact that public firms have better access to capital. Using productivity from 5 and 10 years prior to the acquisition, we document that more productive firms select to become public and participate more in productivity-increasing acquisitions. The results are consistent with the notion that better firms become public in anticipation of accessing capital in public markets when buying opportunities arise.

CONCLUSIONS

Many important questions vexing policy makers and researchers have gone unanswered due to limitations in publicly available data. Questions such as whether the merger and acquisition market is efficient or has been a waste of corporate resources continue to be debated. Other questions that have been the focus of research and policy debate include whether the bankruptcy process is efficient and whether conglomerate firms operating in multiple industries do so productively.

The good news is that the detailed databases at CES enable

Figure 2.
Establishment Acquisitions Over Time by U.S. Public and Private Manufacturing Firms, 1977–2004

Industry merger waves (right scale)

Proportion of establishments acquired

Public buyer (left scale)

Private buyer (left scale)

Number of 3-digit merger waves
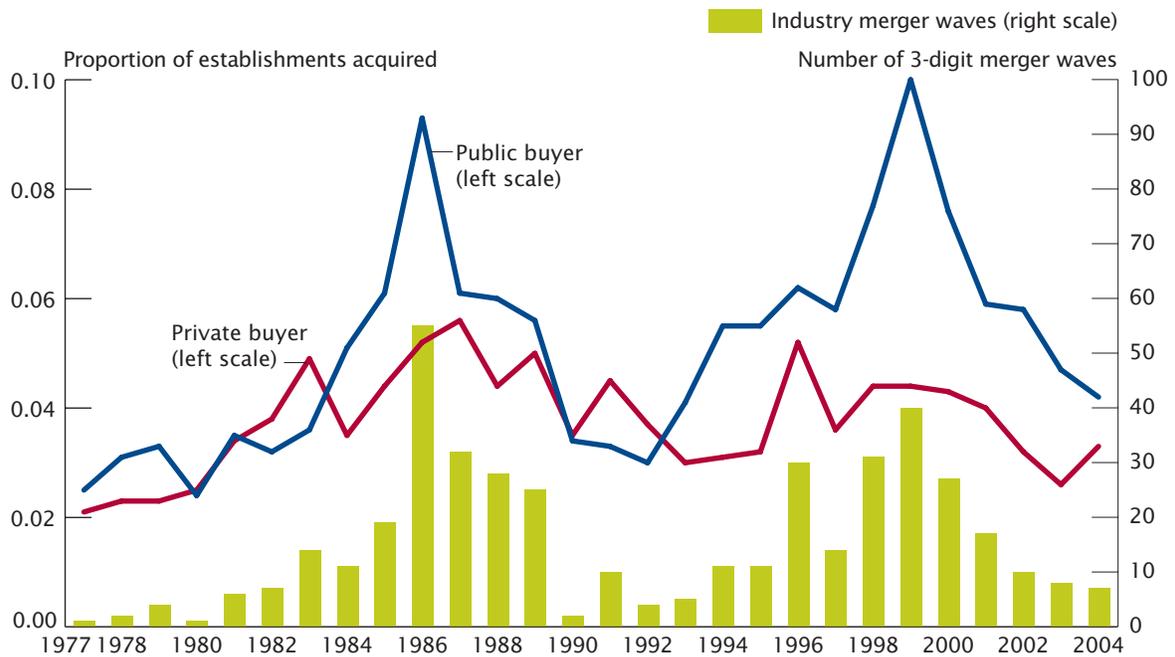
Note: An industry is in a merger wave if its acquisition rate in the year is at least one standard deviation above its mean rate.
Source: Maksimovic, Phillips, and Yang (2009).

researchers to address questions about firm organization, mergers and acquisitions, bankruptcy, and how public and private firms behave differently. The research is already yielding important insights into the inner workings of corporations. Once nonpublic Census Bureau microdata are used to look inside the firm, many of the potential inefficiencies suggested by firm-level data disappear.

Our research shows that the organization of firms across multiple industries and the direction

and timing of corporate asset sales in the merger and acquisition market is consistent with an efficient allocation of resources within the firm. These patterns have important implications for how a firm grows and transacts in the market for corporate assets. We are also gaining a better understanding about why mergers occur in waves, the efficiency of the bankruptcy process, and how productivity, macro-level factors, and credit availability affect firm investments and asset reallocation decisions.

REFERENCES

Bens, Daniel, Philip Berger, and Steven Monahan. 2009. "Discretionary Disclosure in Financial Reporting: An Examination Comparing Internal Firm Data to Externally Reported Segment Data." Center for Economic Studies Discussion Paper CES-09-28.

Berger, Philip G., and Eli Ofek. 1995. "Diversification's Effect on Firm Value." *Journal of Financial Economics*, 37(1): 39–65.

Davis, Steven J., John Haltiwanger, Ron Jarmin, and Javier Miranda. 2007. "Volatility and Dispersion in Business Growth Rates: Publicly Traded versus Privately Held Firms." In *NBER Macroeconomics Annual 2006*, ed. Daron Acemoglu, Kenneth Rogoff, and Michael Woodford, 107–156. Cambridge, Massachusetts: The MIT Press.

Davis, Steven J., John Haltiwanger, Ron Jarmin, Josh Lerner, and Javier Miranda. 2009. "Private Equity, Jobs and Productivity." In *Globalization of Alternative Investments Working Papers Volume 2: The Global Economic Impact of Private Equity Report 2009*, ed. Anuradha Gurung and Josh Lerner, 27–43. Geneva, Switzerland: World Economic Forum.

Hyland, David C. 1997. "Why Firms Diversify: An Empirical Examination." PhD diss. Ohio State University.

Lang, Larry H. P., and René Stulz. 1994. "Tobin's q, Corporate Diversification, and Firm Performance." *Journal of Political Economy*, 102(6): 1248–80.

Maksimovic, Vojislav, and Gordon Phillips. 1998. "Asset Efficiency and Reallocation Decisions of Bankrupt Firms." *Journal of Finance*, 53(5): 1495–1532.

Maksimovic, Vojislav, and Gordon Phillips. 2001. "The Market for Corporate Assets: Who Engages in Mergers and Assets Sales and Are There Efficiency Gains?" *Journal of Finance*, 56(6): 2019–65.

Maksimovic, Vojislav, and Gordon Phillips. 2002. "Do Conglomerate Firms Allocate Resources Inefficiently Across Industries? Theory and Evidence." *Journal of Finance*, 57(2): 721–67.

Maksimovic, Vojislav, and Gordon Phillips. 2008. "The Industry Life Cycle, Acquisitions and Investment: Does Firm Organization Matter?" *Journal of Finance*, 63(2): 673–708.

Maksimovic, Vojislav, Gordon Phillips, and N. R. Prabhala. 2008. "Post-Merger Restructuring and the Boundaries of the Firm." <www.smith.umd.edu/faculty/gphillips/Papers/Boundaries.pdf>.

Maksimovic, Vojislav, Gordon Phillips, and Liu Yang. 2009. "Private and Public Merger Waves." <www.smith.umd.edu/faculty/gphillips/papers/PrivatePublicMergerWaves.pdf>.

Schoar, Antoinette. 2002. "Effects of Corporate Diversification on Productivity." *Journal of Finance*, 57(6): 2379–2403.

Villalonga, Belén. 2004. "Diversification Discount or Premium? New Evidence from the Business Information Tracking Series." *Journal of Finance*, 59(2): 479–506.

Yang, Liu. 2008. "The Real Determinants of Asset Sales." *Journal of Finance*, 63(5): 2231–62.

Chapter 4.
RECOVERY OF HISTORICAL U.S. CENSUS BUREAU MICRODATA: SUCCESS TO DATE

B.K. Atrostic, Randy Becker, Todd Gardner, Cheryl Grim, and Mark Mildorf, Center for Economic Studies

Additional years of microdata from the Annual Survey of Manufactures (ASM), Survey of Industrial Research and Development (SIRD), and the Current Population Survey are just a few examples of the valuable data recently recovered by the Center for Economic Studies (CES). See Text Box 4-1 for highlights of recovered data.

Historic data from over 2,500 tapes were recovered before the Census Bureau's Unisys mainframe computer was decommissioned in 2010. In the 2008 Research Report, CES noted the many household and business files to be recovered and sought the help of the research community (Becker and Grim, 2009 and Gardner, 2009). Without the intensive recovery effort led by CES during the last half of 2009, important information would have been lost forever.

Text Box 4-1.
RECOVERED DATA: HIGHLIGHTS

The economic and demographic data recovered from the Unisys will be valuable additions to the data already available at the Center for Economic Studies (CES) and the Research Data Centers (RDCs).

Most files will require additional work before they can be used for research purposes, and some may require approval by sponsoring agencies. Examples of data recovered from the Unisys include:

- Earlier years of series already available at CES
  · Censuses of Mining, Retail, Wholesale, and Services
  · Annual Survey of Manufactures (ASM)
  · Survey of Industrial Research and Development (SIRD)
  · Survey of Minority-Owned Business Enterprises
  · Commodity Transport Survey (now called the Commodity Flow Survey)
  · Decennial Census data
    ~ Puerto Rico sample and complete count files
    ~ U.S. Possessions sample and complete count files
  · Selected Current Population Survey (CPS) March Supplements

- Series not currently available at CES
  · Agriculture Surveys and Censuses
  · Annual Survey of Oil and Gas
  · Heating Fuel Survey
  · Water Use Survey
  · Survey of Construction
  · Income Surveys Development Program
  · CPS Supplements for months other than March

- New variables for series already available at CES
  · Census of Manufactures (CM) special inquiries data
  · ASM Central Administrative Office data
  · ASM and CM data flags

- Historical analysis files (see Text Box 4-2)
  · Industrial Time Series data
  · Linked CM/SIRD data created for Zvi Griliches

Photo by Lauren Brenner

Occupying 336 square feet, the Unisys IX Clearpath 4400 and 6 tape drives were purchased by the Census Bureau in 1995.

The recovered files have the potential to bring new data series to CES, extend existing data series at CES by a decade or more, and fill gaps in existing data. This potential has already been proven for the ASM and SIRD. See Text Box 4-2.

The 2009 recovery effort built on work that had been going on at a much lower intensity for nearly two decades. See Text Box 4-3.

Innovative on-the-fly solutions to problems that hampered earlier data recovery efforts let CES surmount a series of technical, operational, and administrative challenges that each threatened to halt the recovery in mid-process.

While CES led the recovery effort, success on this scale required help from many partners. The project got off the ground because of the strong support of C. Harvey Monk, Jr., then Associate Director for Economic Programs at the Census Bureau.

We also appreciate the support of the Census Bureau's Computer Services Division. They granted us additional time to access the Unisys machine and graciously allowed us to use their office facilities.

Text Box 4-2.
NEWLY AVAILABLE HISTORIC DATA: THE MANUFACTURING SECTOR

The data recovery project has already borne fruit. Annual Survey of Manufactures (ASM) data dating as far back as 1954 have been recovered, and as many as 15 years of additional historical data from the Survey of Industrial Research and Development (SIRD) have been recovered for large firms.[1]

The oldest microdata available to researchers at the Center for Economic Studies (CES) and in the Research Data Centers (RDCs) as of December 2009 were manufacturing data from the 1963 Census of Manufactures (CM). Extending the manufacturing microdata series provides opportunities to study the evolution and behavior of plants and industries over longer time periods and more business cycles.

Industrial Time Series Data

In the 1960s, Census Bureau staff created a longitudinal microdata file using the ASM. Internally, the file was referred to as the Industrial Time Series (ITS). They began with a pilot study using data from 1954–1961. They selected 25 industries containing about 2,500 establishments (Conklin, 1964).[2]

---

[1] The recovered data have not been fully converted into research-ready format nor have the data gone through exhaustive checks for completeness.

[2] Most of the selected industries were capital-intensive and many were primary metals industries.

Text Box 4-2.—Con.

Research papers using the data from the pilot study show early evidence of the value of longitudinally linked microdata. Jordan (1965) studies the measurement of capacity utilization, and Schaffer (1968) looks at changes in the structure of manufacturing employment.

CES recovered not only the original pilot study data, but also what we believe to be the 1954–1964 linked ASM data covering all manufacturing industries discussed in Kallek (1982).

The ITS data were abandoned when a new, and ultimately very successful, project to link manufacturing data began in the early 1980s (Kallek, 1982). This project was led by Nancy Ruggles and Richard Ruggles and developed the Longitudinal Establishment Database, a predecessor to the manufacturing microdata available at CES today (Atrostic, 2009).

The ITS data were not included in the 1980s project because of anticipated difficulties in linking to the more recent 1972 data. Given the computing capabilities and other data sources available now, there is a good probability these data can be linked to the currently available manufacturing data at CES.[3]

Griliches R&D Data

In the mid-1960s, Zvi Griliches—famed Harvard University economist, then at the University of Chicago—was approached by the Census Bureau and the National Science Foundation to work on a project analyzing historical data on industrial R&D.

Griliches led efforts to develop a longitudinally-linked dataset containing 1957–1965 company-level data from the Survey of Industrial Research and Development (SIRD) matched to data from the 1958 and 1963 CM and Enterprise Statistics (ES). Griliches (1980) details this effort and discusses limitations of the data. Using these

linked data, he found a positive relationship between investments in R&D and company productivity.

Griliches returned to the Census Bureau to extend his work in the early 1980s. Unfortunately, the data from his original project had been lost (Griliches, 1986).

With Census Bureau staff doing the hands-on data work, Griliches designed a new dataset. The new dataset contained 1957–1977 firm-level data from the SIRD matched to data from the 1962, 1967, and 1977 ES and data from the 1967 and 1972 CM. The sample was limited to certainty companies from the 1972 SIRD and contains approximately 1,100 companies.

Griliches highlights three findings in his 1986 paper: (1) investments in R&D make a positive contribution to productivity growth; (2) basic research is a more important contributor to productivity than other types of R&D; and (3) privately-financed R&D expenditures appear to be more effective at the company-level than federally-financed R&D expenditures.

The data underlying the findings in Griliches (1986) were recently recovered from the Unisys machine as part of the historical data recovery project.[4] CES currently has data from the SIRD going back to 1972. The addition of the Griliches sample extends our historical information for many large R&D companies back to 1957.

While the Griliches sample is limited to large companies and key SIRD variables (e.g., total R&D expenditures, number of scientists and engineers), up to 15 additional years of data will now be available for many large R&D companies. The recovered data have been converted into SAS datasets. Foster and Grim (2010) use these newly recovered data to extend the period covered in their analysis of research and development back to the 1950s.

_____

[3] See Becker and Grim (2009) for more information on other sources of available historical manufacturing microdata.

[4] The recovered data do not include the 1977 ES data.

Text Box 4-3.
RECOVERING HISTORICAL MICRODATA: A LONG HISTORY

Before 1998: Microdata recovered from Unisys computers were the source of major CES products, such as the original Longitudinal Research Database (LRD) (Atrostic, 2009 and McGuckin and Pascoe, 1988).

1998–2007: Recovering files became harder. Staff with the necessary skills and institutional memory retired. The Unisys machine became increasingly fragile, prone to crashes, and difficult to bring back on line.

Important data from several censuses and surveys were nevertheless retrieved and some made available for research. Among the data recovered were microdata for the 1960–1990 decennial censuses (Gardner, 2009); the 1955, 1956, and 1965–1971 Annual Survey of Manufactures (Becker and Grim, 2009); and the 1973–1978 Pollution Abatement Costs and Expenditures survey (Becker, 2007).

But moving the thousands of files remaining on the Unisys remained a low priority. CES would need to identify which of those files existed nowhere else, and only one person at CES had extensive experience on 1100/2200 Unisys mainframes.

2008–2009: When the Census Bureau announced the Unisys machine would be decommissioned in late 2008, CES was able to delay the decommissioning.

2009: CES reached out to the research community. The research potential of microdata remaining on the Unisys were described in a presentation by B.K. Atrostic at the National Bureau of Economic Research Productivity Program meeting in March 2009, and articles by Becker and Grim, and Gardner in the 2008 CES Research Report. CES actively solicited the views of our Research Data Center partners and, through them, the broader research community. Strong positive feedback and concrete support gave CES efforts new life.

Over a decade ago, then-CES researcher, Al Nucci (1998) wrote of the significant technical and institutional challenges in moving historical microdata to modern computing systems:

"In principle, it ought to be a relatively straightforward exercise to obtain these data (i.e., a copy from archival tapes). This is not the case. The Census Bureau's legacy mainframe is a nonstandard UNISYS (a descendant of the earlier UNIVAC computers). Further, the Census Bureau enhanced the capabilities of these computers with a proprietary file system. Hence the migration of data from earlier years not only has the more traditional problem of missing or incomplete file documentation and deteriorating tape files but requires the use of specialized software, often specially written for each file.

Further, the skills required for these tasks are no longer common at the [Census] Bureau and becoming increasingly rare as time progresses, in addition to the continuing diminution of Census Bureau institutional memory on the contents of earlier files and at their creation."

Photo by Lauren Brenner

One of many drawers full of paper data storage register files, which contain vital information for the recovery of data files stored on the Unisys.

CES assembled team members from a number of professions and divisions across the Census Bureau. Partners from the Research Data Center (RDC) system and the broader research community also joined the data recovery team. See Text Box 4-4.

Recovery is only the first step in creating usable research microdata files. CES programmers are working to develop processes that should greatly streamline the last steps of converting the data from legacy formats and character sets to more readily accessible formats, such as ASCII or SAS datasets. After the conversion is completed, substantial work will remain to assess the data and make them consistent with data already at CES.

Decommissioning the Unisys closed a long and significant chapter in Census Bureau computing history. Some of the recovered files were likely initially processed on the Census Bureau's UNIVAC I computer, first used by the Census Bureau in 1951. See Text Box 4-5.

DATA RECOVERY PROCESS

The data recovery team overcame significant challenges to recover data from the Unisys:

- Identifying data to be recovered
- Moving data from the Unisys
- Keeping the Unisys running

Identifying Data to be Recovered

The first challenge was to create a list of "rescue worthy" data files on the Unisys.

Information about data stored on the Unisys, such as data storage forms, record layouts, and lists of computer tapes for each "data storage submission" are stored in a paper file called a "register." A data storage register may represent an entire economic census with scores of tapes holding several different files and millions of records, or part of a survey with a single tape holding a single file with only a few hundred records.

Text Box 4-4.
THE DATA RECOVERY TEAM

Center for Economic Studies
B.K. Atrostic
Randy Becker
Jason Chancellor
Joshua Coates (intern)
Henry Cross (intern)
Todd Gardner
Cheryl Grim
Mark Mildorf
Rose Taylor
Ya Jiun Tsai

Demographic Surveys Division
Zelda McBride
Sue Peters

Economic Statistical Methods and Programming Division
Connie Christensen
Stephen Jarvis
Keith Paterno
Robert Penrod
Daniel Vacca

Population Division
Marie Pees

Research Data Center Partner Support
Baruch College, CUNY System
University of California, Berkeley
University of Michigan Interuniversity
  Consortium for Political and Social Research
University of Minnesota Population Center

Photo by Lauren Brenner

Center for Economic Studies (CES) Assistant Division Chief for Research Support, Mark Mildorf, with the Unisys in January 2010. As the only CES member of the data recovery team with prior experience on a Unisys, Mark led the charge to download data.

Text Box 4-5.
THE UNISYS: END OF COMPUTING ERA THAT BEGAN WITH UNIVAC I

Decommissioning the Census Bureau's Unisys Clearpath 4400 Mainframe will end a thread of computer usage reaching back to the 1950s. The Census Bureau purchased UNIVAC I, serial number 001, in 1951. It was the first commercial electronic general-purpose data processing computer.

However, the lineage of the Unisys Clearpath is better traced back to the UNIVAC 1100 series of mainframe, specifically the UNIVAC 1105 and 1107 models.

In 1958, the Census Bureau acquired the first two UNIVAC 1105 computers ever sold. In 1963, the Census Bureau purchased two UNIVAC 1107 computers.[1]

Since then, the Census Bureau has had one or more 1100 or 2200 series mainframes in near continual operation.

The Unisys Clearpath 4400 is in the same family line as the UNIVAC 1107, sharing hardware characteristics (such as the 36 bit word) and using the same family of operating systems.

The Census Bureau's UNIVAC I was retired in 1964. The UNIVAC 1105s were retired in 1967, and the UNIVAC 1107s were replaced in 1971. The Unisys Clearpath 4400 is the last Unisys mainframe in operation at the Census Bureau. The Unisys Corporation discontinued support of the Clearpath as of December 31, 2009, and it was decommissioned in 2010.
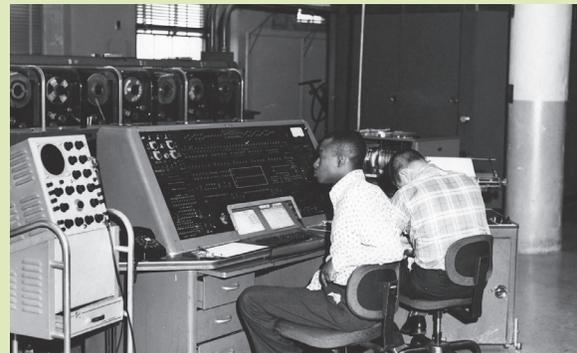
Photo by U.S. Census Bureau, Public Information Office

Built by Remington-Rand, using more than 5,600 computer vacuum tubes; 18,000 crystal diodes; and 300 relays, UNIVAC was the world's first commercial computer.

---

[1] For more information, see the CNN news article "50th Anniversary of the UNIVAC I," available at <http://archives.cnn.com/2001/TECH/industry/06/14/computing.anniversary/>.

CES researchers examined over 2,000 registers. Consulting with other subject-matter experts as needed, they set priorities for recovery and created electronic scans of hundreds of important registers.

Moving Data From the Unisys

After the data to be recovered were identified, much work remained. The next step was to move data from the Unisys to a modern computer system.

Moving data from the Unisys was a complicated process with many technical challenges. See Text Box 4-6.

The data had to be converted from a variety of formats to a format that could be copied from the Unisys and read on a modern computer. Initially, the unstructured data were read in variable-by-variable and loaded into SAS datasets. This procedure proved to be painstakingly slow.

The data recovery team made a major change to this procedure in late October 2009 to emphasize transferring data from the Unisys as quickly as possible. The creation of research-ready SAS datasets was deferred.

This change, together with process improvements and increased staffing, led to a dramatic improvement in the flow of data from the Unisys. In the 6 months prior to the change in processing, the data recovery team moved economic data from approximately 20 registers from the Unisys. In the 4 months

following the change, the data recovery team moved data from over 490 economic registers.

Moving data files from the Unisys was a major production effort. Over 2,500 tapes were processed. The resulting 7,000-plus data files were then copied from the Unisys to Linux computers.

Keeping the Unisys Running

No account of the data recovery effort would be complete without noting the vital role played by Rose Taylor, a retired Census Bureau employee with over 25 years of experience with the Unisys.

Brought back as a contractor, Taylor was essential in keep-

Photo by Lauren Brenner

Rose Taylor, a retired Census employee and key member of the data recovery team, with the Unisys in January 2010.

Text Box 4-6.
TECHNICAL CHALLENGES TO THE DATA RECOVERY EFFORT

Listed below is a small subset of the technical issues that made the data recovery effort such a challenging exercise.

1. *The Unisys operating environment.* Expertise with the Unisys 1100/2200 series is now rare at the Census Bureau. Most of the data recovery work was done by people who had never previously logged on to a Unisys. Of the Center for Economic Studies staff involved with the recovery effort, only one had prior experience on a Unisys, and that experience ended in 1982.

2. *Legacy character sets.* Although some of the data recovered were in the ASCII character set, the vast majority of the data were in the less familiar FIELDATA character set. Developed in the 1950s by the Department of Defense, the FIELDATA character set was only used widely in commercial computing on the Unisys 1100/2200 series. EBCDIC data and data in the Excess-3 character set, a character set not widely used since the 1960s, were also recovered.

3. *Completely unstructured data.* All of the data recovered were stored in files that did not enforce any data structure. To enable users to properly interpret the data, hardcopy record layouts—road maps of the data—were prepared when these files were initially created. In many cases, the record layouts were lost, requiring the data recovery team to develop and implement new methods to move the data off of the Unisys.

4. *Unique record and file formats.* Much of the data were stored in CENsus Input Output (CENIO) files. CENIO is a unique Census Bureau-developed file structure. Data were also retrieved from "Algol Direct Access files" and a "save file" from a System 2000 database.

---

ing the Unisys running and recovering data.

With Taylor, CES regained expertise in recovering and restarting the machine following frequent system crashes and in managing the flow of computing jobs to avoid conditions leading to crashes. She also understood how programmers had stored files on the Unisys. She solved many puzzles that would have slowed or completely stymied the recovery.

Without Taylor's expertise, it is likely that CES would only have been able to retrieve a handful of files, rather than thousands.

Role of RDC Partners

Help from our RDC partners was also very important to the success of the data recovery project. Our partners at the Berkeley, Michigan, Minnesota, and New York (Baruch) RDCs completed important groundwork to speed the process of converting data pulled from the Unisys into SAS datasets. Our Michigan and Minnesota RDC partners were also instrumental in acquiring the services of Rose Taylor.

MOVING FORWARD

CES needs partners to convert the recovered data files into formats useful for research. Data from hundreds of registers have been successfully copied

from the Unisys. However, as of March 2010, relatively little of the data from the recovered registers has been converted into SAS datasets. Further processing is required to convert the remainder of the recovered data to modern formats.

Record layouts are not available for some data files. These cases will require additional analysis to reconstruct the record layout. File conversion is potentially a painstaking process, but the end result should be to make detailed data available to analyze important economic and social issues.

Researchers interested in partnering with CES to develop these data should contact the authors or send an e-mail to <CES.Data.Recovery.List@census.gov>.

REFERENCES

Atrostic, B.K. 2009. "The Center for Economic Studies 1982–2007: A Brief History." Center for Economic Studies Discussion Paper CES-WP-09-35.

Becker, Randy. 2007. "New Developments With the Pollution Abatement Costs and Expenditures (PACE) Survey." In *Research at the Center for Economic Studies and the Research Data Centers: 2006.* <www.ces.census.gov>

Becker, Randy and Cheryl Grim. 2009. "Recovering Historical Manufacturing Microdata." In *2008 Research Report: Center for Economic Studies and Research Data Centers.* <www.ces.census.gov>

Conklin, Mawell R. 1964. "Time Series for Individual Plants from the Annual Survey of Manufactures and Related Data." Presented at a Joint Session of the American Economic Association and the American Statistical Association on December 30, 1964.

Foster, Lucia, and Cheryl Grim. 2010. "Characteristics of the Top R&D Performing Firms in the U.S.: Evidence from the Survey of Industrial R&D." Center for Economic Studies Discussion Paper CES-WP-10-33.

Gardner, Todd. 2009. "Expanded and Enhanced Decennial Census Data for Research." In *2008 Research Report: Center for Economic Studies and Research Data Centers.* <www.ces.census.gov>

Griliches, Zvi. 1980. "Returns to Research and Development Expenditures in the Private Sector." In *New Developments in Productivity Measurement and Analysis*, ed. John W. Kendrick and Beatrice N. Vaccara, 419–462. Chicago and London: NBER/University of Chicago Press.

Griliches, Zvi. 1986. "Productivity, R&D, and Basic Research at the Firm Level in the 1970s." *American Economic Review*, 76(1): 141–154.

Jordan, Willis K. 1965. "The Measurement of Performance Potential in Manufacturing Establishments." Bureau of the Census Working Paper No. 18.

Kallek, Shirley. 1982. "Objectives and Framework." In *Workshop on the Development and Use of Longitudinal Establishment Data*. U.S. Government Printing Office, Washington, DC.

McGuckin, Robert H. and George A. Pascoe Jr. 1988. "The Longitudinal Research Database (LRD): Status and Possibilities." *Survey of Current Business*, 68(11): 30–37.

Nucci, Alfred R. 1998. "The Center for Economic Studies Program to Assemble Economic Census Establishment Information." *Business and Economic History*, 27(1): 249–256.

Schaffer, William A. 1968. "Changes in the Structure of Manufacturing Employment." Bureau of the Census Working Paper No. 26.

Appendix 1.
ABOUT THE CENTER FOR ECONOMIC STUDIES (CES) AND THE RESEARCH DATA CENTERS (RDCs)

Text Box A-1.1.
THE CENTER FOR ECONOMIC STUDIES (CES)

CES supports core functions of the U.S. Census Bureau—providing relevant, reliable, and useful information about the society and economy of the United States—through its three programs:
- Economic Research
- Research Data Centers (RDCs)
- Longitudinal Employer-Household Dynamics (LEHD)

Table A-1.1.
CES PROGRAMS

Economic Research	Research Data Centers (RDCs)	Longitudinal Employer-Household Dynamics (LEHD)
Conducts research in economics and other social sciences: - Produces CES discussion papers series - Publishes in leading professional journals	Provide secure access to restricted-use microdata for researchers with approved projects (see Text Box A-1.2)	Produces public-use information combining select federal, state, and Census Bureau data on employers and employees
	Partner with leading research organizations (see Appendix 6)	Works with states under the Local Employment Dynamics (LED) Partnership (see Appendix 7)
Creates public-use microdata from existing data, including: - *Business Dynamics Statistics*: Tabulations on establishments and firms, 1976–2005 - *Synthetic Longitudinal Business Database*: Synthetic data on establishments and firms, 1976–2005	Operate in 9 locations: - Boston - California (Berkeley) - California (UCLA) - Census Bureau Headquarters (CES) - Chicago - Michigan - New York (Baruch) - New York (Cornell) - Triangle (Duke)	Main products: - Quarterly Workforce Indicators (QWI): Workforce statistics by demography, geography, and industry for each state - OnTheMap: User-defined maps and data on where workers live and work - Industry Focus: Information about a particular industry and its workers
Administers Research Data Centers (RDCs): - Staffs RDCs - Reviews and makes decisions on proposals - Creates and maintains the proposal management system		

Text Box A-1.2.
WHAT IS A RESEARCH DATA CENTER (RDC)?

RDCs are U.S. Census Bureau facilities, staffed by a Census Bureau employee, which meet all physical and computer security requirements for access to confidential data. At RDCs, qualified researchers from academia, federal agencies, and other institutions with approved projects receive restricted access to Census Bureau data files that are not publicly available.

The Center for Economic Studies (CES) judges each proposal against five standards:
- Potential benefits to the Census Bureau.
- Scientific merit.
- Clear need for restricted data.
- Feasibility with data available in the RDC system.
- No disclosure risk.

Proposals meeting these standards are reviewed by the Census Bureau's Office of Analysis and Executive Support. Proposals approved by the Census Bureau may also require approval by the federal agency sponsoring the survey or supplying the administrative data.

Researchers must become Special Sworn Status (SSS) employees of the Census Bureau. Like career Census Bureau employees, SSS employees are sworn for life to protect the confidentiality of the data they access. Failing to protect confidentiality subjects them to significant financial and legal penalties. The RDC system and the CES proposal process are described in detail on the CES Web site <www.ces.census.gov>.

Selected confidential data from the Agency for Healthcare Research and Quality (AHRQ) and the National Center for Health Statistics (NCHS) can be accessed in the RDCs. Proposals must meet the requirements of AHRQ (AHRQ, 2009) or NCHS (NCHS, 2009).

References

Agency for Healthcare Research and Quality. 2009. Restricted Data Files available at the data centers. <www.meps.ahrq.gov/mepsweb/data_stats/onsite_datacenter.jsp>.

National Center for Health Statistics. 2009. Research Data Center. <www.cdc.gov/rdc>.

Text Box A-1.3.
CENTER FOR ECONOMICS STUDIES (CES) PARTNERS

CES relies on networks of supporters and partners within and outside the U.S. Census Bureau. Our primary partners are listed below. All of our partners make vital contributions, and we thank them.

Census Bureau business and household program areas. CES and the Research Data Centers (RDCs) receive ongoing help from many areas of the Census Bureau that produce business and household data. This help takes many forms, including:

- Microdata:
    o Additions and expansions of data available to RDC researchers in 2008 are listed in Appendix 5.
    o Census Bureau business and household datasets that are part of the Longitudinal Employer-Household Dynamics (LEHD) data infrastructure.

- Expert knowledge of the collection and processing methodologies underlying the microdata.

- Reviews of RDC research proposals, particularly for household data.

RDC partners. CES currently operates nine RDCs across the country in partnership with a growing roster of prominent research universities and nonprofit research organizations. Our RDC partners are recognized in Appendix 6.

LEHD partners. The LEHD program produces its public-use data products through its Local Employment Dynamics partners. Partners as of June 2009 are acknowledged in Appendix 7.

Other Census Bureau partners. Colleagues in the Economic Directorate's Administrative Staff who provide administrative support to CES are recognized in Appendix 8. CES also benefits from colleagues in several other Census Bureau divisions who support our computing infrastructures.

Appendix 2.
CENTER FOR ECONOMIC STUDIES (CES) STAFF AND RESEARCH DATA CENTER (RDC) PUBLICATIONS AND WORKING PAPERS

[Term inside brackets indicates work by CES staff or the main RDC involved]

PUBLICATIONS

Abowd, John M., Fredrik Andersson, Kevin L. McKinney, Marc Roemer, Bryce Stephens, and Lars Vilhuber. 2009. "The LEHD Infrastructure Files and the Creation of the Quarterly Workforce Indicators." In *Producer Dynamics: New Evidence from Micro Data*, ed. Timothy Dunne, J. Bradford Jensen, and Mark Roberts. Chicago, IL: The University of Chicago. [Cornell]

Abowd, John M., Kevin L. McKinney, and Lars Vilhuber. 2009. "The Link between Human Capital, Mass Layoffs, and Firm Deaths." In *Producer Dynamics: New Evidence from Micro Data*, ed. Timothy Dunne, J. Bradford Jensen, and Mark Roberts. Chicago, IL: The University of Chicago. [Cornell]

Becker, Randy A., and Ronald J. Shadbegian. 2009. "Environmental Products Manufacturing: A Look Inside the Green Industry." *The B.E. Journal of Economic Analysis & Policy*, 1(9). [CES]

Benedetto, Gary, and Simon Woodcock. 2009. "Distribution-Preserving Statistical Disclosure Limitation." *Computational Statistics & Data Analysis*, 53(12): 4228–4242. [Cornell]

Bernard, Andrew B., J. Bradford Jensen, Stephen Redding, and Peter K. Schott. 2009. "The Margins of U.S. Trade." *American Economic Review Papers and Proceedings*, 99(2): 487–493. [Boston]

Bernard, Andrew B., J. Bradford Jensen, and Peter K. Schott. 2009. "Importers, Exporters, and Multinationals: A Portrait of Firms in the U.S. that Trade Goods." In *Producer Dynamics: New Evidence from Micro Data*, ed. Timothy Dunne, J. Bradford Jensen, and Mark Roberts. Chicago, IL: The University of Chicago. [Boston]

Bernard, Andrew B., Stephen Redding, and Peter K. Schott. Forthcoming. "Multi-Product Firms and Product Switching." *American Economic Review*. [Boston]

Burkhauser, Richard, Shuaizhang Feng, and Stephen Jenkins. 2009. "Using the P90 /P10 Index to Measure U.S. Inequality Trends with Current Population Survey Data: A View From Inside the Census Bureau Vaults." *The Review of Income and Wealth*, 55(1): 166–185. [Cornell]

Burkhauser, Richard, and Jeff Larrimore. 2009. "Using Internal Current Population Survey Data to Reevaluate Trends in Labor Earnings Gaps By Gender, Race, and Education Level." *Monthly Labor Review*, 132(8): 3–18. [Cornell]

Caetano, Gregorio. 2009. "Identification and Estimation of the Marginal Willingness to Pay for School Quality in U.S." PhD diss. University of California at Berkeley. [Berkeley]

Chemmanur, Thomas, Shan He, and Debarshi Nandy. Forthcoming. "The Going Public Decision and the Product Market." *Review of Financial Studies*. [Boston]

Davis, Steven J., Jason Faberman, John Haltiwanger, Ron Jarmin, and Javier Miranda. Forthcoming. "Business Volatility, Job Destruction and Unemployment." *American Economic Journal: Macroeconomics*. [CES]

Davis, Steven J., John Haltiwanger, Ron Jarmin, C.J. Krizan, Javier Miranda, Al Nucci, and Kristin Sandusky. 2009. "Measuring the Dynamics of Young and Small Businesses: Integrating the Employer and Nonemployer Universes." In *Producer Dynamics: New Evidence from Micro Data*, ed. Timothy Dunne, J. Bradford Jensen, and Mark Roberts. Chicago, IL: The University of Chicago. [CES]

Decressin, Anja, Tomeka Hill, Kristin McCue, and Martha Stinson. 2009. "The Role of Fringe Benefits in Employer and Workforce Dynamics." In *Producer Dynamics: New Evidence from Micro Data*, ed. Timothy Dunne, J. Bradford Jensen, and Mark Roberts. Chicago, IL: The University of Chicago. [CES]

Dunne, Timothy, Shawn D. Klimek, Mark Roberts, and Yi Xu. 2009. "The Dynamics of Market Structure and Market Size in Two Health Services Industries." In *Producer Dynamics: New Evidence from Micro Data*, ed. Timothy Dunne, J. Bradford Jensen, and Mark Roberts. Chicago, IL: The University of Chicago. [CES]

Eisfeldt, Andrea, and Adriano Rampini. 2009. "Leasing, Ability to Repossess, and Debt Capacity." *Review of Financial Studies*, 22(4). [Chicago]

Ellison, Glenn, Edward Glaeser, and William Kerr. Forthcoming. "What Causes Industry Agglomeration? Evidence from Coagglomeration Patterns." *American Economic Review*. [Boston]

Glaeser, Edward, and William Kerr. 2009. "Local Industrial Conditions and Entrepreneurship: How Much of the Spatial Distribution Can We Explain?" *Journal of Economics and Management Strategy*, 18(3): 623–663. [Boston]

Glaeser, Edward, William Kerr, and Giacomo Ponzetto. Forthcoming. "Clusters of Entrepreneurship." *Journal of Urban Economics*. [Boston]

Haltiwanger, John, Ron Jarmin, and C.J. Krizan. Forthcoming. "Mom and Pop Meet Big-Box: Complements or Substitutes?" *Journal of Urban Economics*. [CES]

Hipp, John. 2009. "Specifying the Determinants of Neighborhood Satisfaction: A Robust Assessment in 24 Metropolitan Areas." *Social Forces*, 88(1): 395–424. [Triangle]

Hsieh, Chang-Tai, and Peter Klenow. 2009. "Misallocation and Manufacturing TFP in China and India." *Quarterly Journal of Economics*, 124(4): 1403–1448. [Chicago]

Hubbard, Thomas, and Luis Garicano. 2009. "Specialization, Firms, and Markets: The Division of Labor Within and Between Law Firms." *Journal of Law, Economics and Organization*, 25(2): 339–371. [Chicago]

Jarmin, Ron, Shawn D. Klimek, and Javier Miranda. 2009. "The Role of Retail Chains: National, Regional, and Industry Results." In *Producer Dynamics: New Evidence from Micro Data*, ed. Timothy Dunne, J. Bradford Jensen, and Mark Roberts. Chicago, IL: The University of Chicago. [CES]

Jarmin, Ron and Javier Miranda. 2009. "The Impact of Hurricanes Katrina, Rita and Wilma on Business Establishments." *Journal of Business Valuation and Economic Loss Analysis*, 4(2). [CES]

Kerr, William, and Ramana Nanda. 2009. "Democratizing Entry: Banking Deregulations, Financing Constraints, and Entrepreneurship." *Journal of Financial Economics*, 94(1): 124–149. [Boston]

Kerr, William, and Ramana Nanda. Forthcoming. "Banking Deregulations, Financing Constraints and Firm Entry Size." *Journal of the European Economic Association*. [Boston]

Nguyen, Sang V., and Michael Ollinger. 2009. "Mergers and Acquisitions, Employment, Wages and Plant Closures in the U.S. Meat Product Industries." *Agribusiness*, 25(1): 70–89. [CES]

Pierce, Justin R. 2009. "Trade Policy and Performance: Evidence from Manufacturers." PhD diss. Georgetown University. [CES]

Zawacki, Alice, Christine Eibner, and Elaine Zimmerman. Forthcoming. "Older Workers' Access to Employer-Sponsored Retiree Health Insurance, 2000–2006." *Journal of Labor Research*. [CES]

WORKING PAPERS

Abowd, John, Francis Kramarz, Sebastien Perez-Duarte, and Ian Schmutte. "A Formal Test of Assortative Matching in the Labor Market." Center for Economic Studies Discussion Paper CES-09-09. [Cornell]

Abraham, Katharine, John Haltiwanger, Kristin Sandusky, and James Spletzer. 2009. "Exploring Differences in Employment Between Household and Establishment Data." Center for Economic Studies Discussion Paper CES-09-09. [CES]

Angrist, Joshua, Stacey Chen, and Brigham Frandsen. 2009. "Did Vietnam Veterans Get Sicker in the 1990s? The Complicated Effects of Military Service on Self-Reported Health." Center for Economic Studies Discussion Paper CES-09-19. [Boston]

Arzaghi, Mohammad, Ernst Berndt, Jim Davis, and Alvin Silk. 2009. "Economic Factors Underlying the Unbundling of Advertising Agency Services." Center for Economic Studies Discussion Paper CES-09-15. [CES]

Atrostic, B.K. 2009. "The Center for Economic Studies 1982–2007: A Brief History." Center for Economic Studies Discussion Paper CES-09-35. [CES]

Bailey, Martha, Brad Hershbein, and Amalia Miller. 2009. "The Opt-In Revolution: Contraception, Women's Labor-Supply and the Gender Gap in Wages." Unpublished. [Michigan]

Balasubramanian, Natarajan, and Jagadeesh Sivadasan. 2009. "NBER Patent Data-BR Bridge: User Guide & Technical Documentation." Unpublished. [Chicago]

Becker, Randy A. 2009. "On Spatial Heterogeneity in Environmental Compliance Costs." Center for Economic Studies Discussion Paper CES-09-25. [CES]

Becker, Randy A., and John Tang. 2009. "U.S. Trade in Toxics: The Case of Chlorodifluoromethane." Center for Economic Studies Discussion Paper CES-09-29. [CES]

Benedetto, Gary, and Simon Woodcock. 2009. "Partial Synthesis of the Longitudinal Employer-Household Dynamics (LEHD) database." Unpublished. [Cornell]

Bens, Daniel, Philip Berger, and Steven Monahan. 2009. "Discretionary Disclosure in Financial Reporting: An Examination Comparing Internal Firm Data to Externally Reported Segment Data." Center for Economic Studies Discussion Paper CES-09-28. [Chicago]

Bernard, Andrew B., J. Bradford Jensen, Stephen Redding, and Peter K. Schott. 2009. "The Margins of U.S. Trade (Long Version)." Center for Economic Studies Discussion Paper Series CES-WP-09-18 and National Bureau of Economic Research Working Paper No. 14662. [Boston]

Bernard, Andrew B., Stephen Redding, and Peter K. Schott. 2009. "Multi-Product Firms and Trade Liberalization." Center for Economic Studies Discussion Paper CES-09-21. [Boston]

Bernard, Andrew B., Stephen Redding, and Peter K. Schott. 2009. "Testing for Factor Price Equality in the Presence of Unobserved Factor Quality Differences." Center for Economic Studies Discussion Paper CES-09-22. [Boston]

Borga, Maria, Ned Howenstine, Marilyn Ibarra, and Jennifer Koncz. 2009. "Experimental State-Level Estimates of U.S. Exports of Selected Services." Report for the International Trade Administration under Agreement No. 07-PAY-071-MA. [CES RDC]

Burkhauser, Richard, Shuaizhang Feng, Stephen Jenkins, and Jeff Larrimore. 2009. "Measuring Inequality Using Censored Data: A Multiple Imputation Approach." Center for Economic Studies Discussion Paper CES-09-05. [Cornell]

Burkhauser, Richard, Shuaizhang Feng, Stephen Jenkins, and Jeff Larrimore. 2009. "Recent Trends in Top Income Shares in the USA: Reconciling Estimates from March CPS and IRS Tax Return Data." Center for Economic Studies Discussion Paper CES-09-26. [Cornell]

Campbell, Benjamin, Martin Ganco, April Franco, and Rajshree Agarwal. 2009. "Who Leaves, Where to, and Why Worry? Employee Mobility, Employee Entrepreneurship, and Effects on Source Firm Performance." Center for Economic Studies Discussion Paper CES-WP-09-32. [Chicago]

Celik, Sule, Chinhui Juhn, Kristin McCue, and Jesse Thomson. 2009. Understanding Earnings

Instability: How Important are Employment Fluctuations and Job Changes?" Center for Economic Studies Discussion Paper CES-09-20. [CES]

Cetorelli, Nicola. 2009. "Credit Market Competition and the Nature of Firms." Center for Economic Studies Discussion Paper CES-09-07. [New York]

Davis, Lucas. 2009. "The Effect of Power Plants on Local Housing Values and Rents." Unpublished. [Michigan]

Delgado, Mercedes, Michael Porter, and Scott Stern. 2009. "Clusters and Entrepreneurship." Unpublished. [Boston]

Drucker, Joshua. 2009. "Trends in Regional Industrial Concentration in the United States." Center for Economic Studies Discussion Paper CES-09-06. [Triangle]

Dunne, Timothy, Shawn D. Klimek, Mark Roberts, and Yi Xu. 2009. "Entry, Exit, and the Determinants of Market Structure." Center for Economic Studies Discussion Paper CES-09-23. [CES]

Dynarski, Susan, Jon Gruber, and Danielle Li. 2009. "Cheaper By the Dozen: Using Sibling Discounts at Catholic Schools to Estimate the Price Elasticity of Private School Attendance." NBER Working Paper No. 15461. [Boston]

Fichman, Robert, and Nigel Melville. 2009. "Electronic Networking Technologies, Innovation Misfit, And Plant Performance." Unpublished. [Michigan]

Foster, Lucia, Ron Jarmin, and Lynn Riggs. 2009. "Resolving the Tension Between Access and Confidentiality: Past Experience and Future Plans at the U.S. Census Bureau." Center for Economic Studies Discussion Paper CES-09-33. [CES]

Frandsen, Brigham. 2009. "Long Term Effects of Military Service on the Distribution of Earnings." Center for Economic Studies Discussion Paper CES-09-17. [Boston]

Garicano, Luis, and Thomas Hubbard. 2009. "Earnings Inequality and Coordination Costs: Evidence from U.S. Law Firms." Center for Economic Studies Discussion Paper CES-09-24. [Chicago]

Gervais, Antoine. 2009. "Product Quality and Firm Heterogeneity in International Trade." Unpublished. [Boston]

Gervais, Antoine, and J. Bradford Jensen. 2009. "Are Services Tradable? Evidence from U.S. Microdata." Unpublished. [Boston]

Glaeser, Edward, William Kerr, and Giacomo Ponzetto. 2009. "Clusters of Entrepreneurship." Center for Economic Studies Discussion Paper CES-09-36. [Boston]

Hallak, Juan Carlos, and Jagadeesh Sivadasan. "Firms' Exporting Behavior under Quality Constraints." Center for Economic Studies Discussion Paper CES-09-13. [Michigan]

Haltiwanger, John, Ron Jarmin, and C.J. Krizan. 2009. "Mom-and-Pop Meet Big-Box:

Complements or Substitutes?" Center for Economic Studies Discussion Paper CES-09-34. [CES]

Hellerstein, Judith, Melissa McInerney, and David Neumark. 2009. "Neighbors and Co-Workers: The Importance of Residential Labor Market Networks." Center for Economic Studies Discussion Paper CES-09-01. [CES]

Hellerstein, Judith, Melissa McInerney, and David Neumark. 2009. "Spatial Influences on the Employment of U.S. Hispanics: Spatial Mismatch, Discrimination, or Immigrant Networks?" Center for Economic Studies Discussion Paper CES-09-03. [CES]

Hortacsu, Ali, and Chad Syverson. 2009. "Why Do Firms Own Production Chains?" Center for Economic Studies Discussion Paper CES-09-31. [Chicago]

Houtenville, Andrew, William Erickson, and Melissa Bjelland. 2009. "Complex Survey Questions and the Impact of Enumeration Procedures: Census/American Community Survey Disability Questions." Center for Economic Studies Discussion Paper CES-09-10. [Cornell]

Hsieh, Chang-Tai, and Peter Klenow. 2009. "Misallocation and Manufacturing TFP in China and India." Center for Economic Studies Discussion Paper CES-09-04. [Chicago]

Hyatt, Henry. 2009. "The Effect of Wage Insurance on Labor

Supply: A Test for Income Effects." Center for Economic Studies Discussion Paper CES-09-37. [CES]

Kerr, William, and Ramana Nanda. 2009. "Banking Deregulations, Financing Constraints and Firm Entry Size." National Bureau for Economic Research Working Paper No. 15499. [Boston]

Kim, E. Han, and Paige Ouimet. 2009. "Employee Capitalism or Corporate Socialism? Broad-Based Employee Stock Ownership." Center for Economic Studies Discussion Paper CES-09-44. [Michigan, Triangle]

Krizan, C.J., and Adela Luque. 2009. "The Micro-Dynamics of Skill Mix Changes in a Dual Labor Market: The Spanish Manufacturing Experience." Center for Economic Studies Discussion Paper CES-09-12. [CES]

Maksimovic, Vojislav, Gordon Phillips, and Liu Yang. 2009. "Private and Public Merger Waves." Unpublished. [CES RDC]

Murray, Sara. 2009. "Valuing Localized Externalities." 2009 Allen Starling, Jr. Best Senior Thesis. [Chicago]

Nguyen, Sang V., and Alice Zawacki. 2009. "Health Insurance and Productivity: Evidence from the U.S. Manufacturing Sector." Center for Economic Studies Discussion Paper CES-09-27. [CES]

Ono, Yukako, and Anna Paulson. 2009. "Bank Crises and Investor Confidence: Learning from the Experience of U.S. Immigrants." Unpublished. [Chicago]

Osili, Una Okonkwo, and Anna Paulson. 2009. "Bank Crises and Investor Confidence." Center for Economic Studies Discussion Paper CES-09-02. [Chicago]

Petrin, Amil, Kirk White, and Jerome Reiter. 2009. "The Impact of Plant-level Resource Reallocations and Technical Progress on U.S. Macroeconomic Growth." CES Discussion Paper CES-09-43. [Triangle]

Pierce, Justin. 2009. "Plant-Level Responses to Antidumping Duties: Evidence from U.S. Manufacturers." Center for Economic Studies Discussion Paper CES-09-38. [CES]

Pierce, Justin, and Peter K. Schott. 2009. "Concording U.S. Harmonized System Categories Over Time." Center for Economic Studies Discussion Paper CES-09-11 and National Bureau of Economic Research Working Paper No. 14837. [Boston and CES]

Pierce, Justin, and Peter Schott. 2009. "A Concordance Between Ten-Digit U.S. Harmonized System Codes and SIC/NAICS Product Classes and Industries." Center for Economic Studies Discussion Paper CES-09-41 and National Bureau of Economic Research Working Paper No. 15548. [CES]

Rawley, Evan T., and Timothy S. Simcoe. 2009. "Information Technology, Capabilities and Asset Ownership: Evidence from Taxicab Fleets." Center for Economic Studies Discussion Paper CES-09-39. [Berkeley]

Saldanha, Terence, Nigel Melville, Ronald Ramirez, and Vernon Richardson. 2009. "IT for Information-Based Partnerships: Empirical Analysis of Environmental Contingencies to Value Co-Creation." Center for Economic Studies Discussion Paper CES-09-42. [Michigan]

Schultz, Jennifer Feenstra, and David Doom. 2009. "Employer Health Benefit Costs and Demand for Part-Time Labor." Center for Economic Studies Discussion Paper CES-09-08. [Chicago]

Shadbegian, Ronald J., and Wayne B. Gray. 2009. "Spatial Patterns in Regulatory Enforcement: Local Tests of Environmental Justice." National Center for Environmental Economics 09-02. [Boston]

Silk, Alvin, and Charles King III. 2009. "Concentration Levels in the U.S. Advertising and Marketing Services Industry: Myth vs. Reality." Center for Economic Studies Discussion Paper CES-09-16. [Boston]

Sivadasan, Jagadeesh and Juan Carlos Hallak. 2009. "Firms' Exporting Behavior under Quality Constraints." Center for Economic Studies Discussion Paper CES-09-13. [Michigan]

Tang, John. 2009. "Entrepreneurship and Japanese Industrialization

in Historical Perspective."
Center for Economic Studies
Discussion Paper CES-09-30.
[CES]

Von Wachter, Till, Elizabeth
Handwerker, and Andrew
Hildreth. 2009. "Estimating
the "True" Cost of Job Loss:
Evidence Using Matched Data
from California 1991–2000."
Center for Economic Studies
Discussion Paper CES-09-14.
[Berkeley, New York]

Appendix 3-A.
ABSTRACTS OF PROJECTS STARTED IN 2009, U.S. CENSUS BUREAU DATA

Projects in this portion of the Appendix use data provided by the Census Bureau.

PLACE, RACE/ETHNICITY, AND ENTREPRENEURSHIP IN THE GLOBAL ERA: A COMPARATIVE ANALYSIS

Qingfang Wang—University of North Carolina Charlotte
David Wong—George Mason University

This study investigates how place, race, and ethnicity intertwine to produce the spatial division of ethnic enterprises in different types of metropolitan areas in the U.S.—established immigration gateways versus newly emergent immigration destinations. The project uses the Survey of Business Owners (SBO), Business Register, Longitudinal Business Database, and Decennial Long Form data to address the following questions: (1) what are the characteristics of ethnic entrepreneurs and ethnic enterprises and how do they differ by group and by region, and (2) how are ethnic minority owned enterprises socially and spatially embedded in each urban context, and (3) what are the impacts of place on the presence and performance of ethnic enterprises.

This project will benefit U.S. Census Bureau programs by an investigation of variation in survey nonresponse in the SBO across ethnic groups (sampling frames), across economic characteristics of firms, and across geographic areas. Thus this study will increase the Census Bureau's understanding of the quality of the SBO data, help improve imputations for nonresponse, and potentially help improve the sampling frame for the SBO.

The study will also aid the preparation of estimates and characteristics of the Hispanic and Asian sub-group populations and help minimize problems of missed and inaccurately represented subpopulations in the decennial census. Results from this project will help the Census Bureau to design and appropriately target bilingual forms, provide telephone assistance and telephone self-response options, and will thereby improve the accuracy and reduce the costs of conducting the census.

OLDER WORKERS' DISPLACEMENT AND MOBILITY

John M. Abowd—Cornell University
Kevin L. McKinney—U.S. Census Bureau
Lars Vilhuber—Cornell University

This project will compute novel statistics useful in the analysis of older workers' mobility and retirement decisions using individual data from the Health and Retirement Study (HRS) with indices created from the Longitudinal Employer-Household Dynamics (LEHD) infrastructure microdata. It will create refined employment opportunity indices based on detailed characteristics of the potential retirees.

Currently available statistics, such as the LEHD's Quarterly Workforce Indicators, provide detailed statistics by simple characteristics of the workforce, such as gender and age. This project will include additional characteristics in the computation of the employment opportunity indices. These include the respondents' previous industry-specific employment experience, the retirement decisions of similarly experienced individuals,

and the mobility decisions of similar individuals. There would be three new types of indices: (1) a "job matrix," which captures the geographic mobility patterns in employment; (2) a "mobility matrix," which captures residential geographic mobility; and (3) an "opportunity index," which is a person-specific convolution of these two matrices.

The observed job mobility patterns of LEHD individuals, and in particular of older workers, will be used to estimate industry mobility patterns of recently hired workers at a detailed geographic level of work locations, the job matrix. The critical research issue is to determine the level of integration at which the new indices will be combined with existing data to produce a model estimation and forecasting framework.

The observed geographic mobility of both LEHD and

HRS individuals will be used to compute migration patterns of older workers and recent retirees to new residence locations, the mobility matrix. The mobility matrix (conditional on the HRS individual's residence at any point in time) can be used to weight the job matrix (conditional on the HRS individual's current or previous job characteristics), thus obtaining a person-specific job opportunity index, which is then incorporated into the relevant model.

The utility of the proposed new indices, at the detailed and the aggregate level, will be assessed in a model-based framework. Using detailed demographic and geographic attributes of individuals, available on the HRS data with geographic supplement, models of the joint determination of geographic mobility, and retirement will be estimated and tested for independence of these two decisions.

LONG-DISTANCE MOBILITY PATTERNS ACROSS EDUCATION AND GENDER GROUPS OVER THE LIFECYCLE

Ofer Malamud—University of Chicago
Abigail Wozniak—University of Notre Dame

This project uses detailed longitudinal information from all waves of the National Longitudinal Surveys (NLS) to examine lifecycle migration patterns across education and gender groups. This will extend earlier work examining the causal role of a college education in subsequent geographic mobility to answer the important questions of why and how going to college increases long distance mobility. The project will also study gender differences in lifetime migration patterns, particularly the manner in which these have evolved across cohorts. Migration patterns for women may have changed along with the dramatic increase in education and labor force participation women experience over the latter half of the twentieth century. This project will determine whether that is the case and will explore mechanisms through which any changes in female migration patterns occurred.

Restricted versions of the NLS contain information on state of residence for every year an individual is observed in the survey, data that are essential to constructing measures of migration. The NLS also provide an array of information on family history, education and work experience, and personal characteristics that are important to understanding the conditions surrounding individual migration decisions.

The project will use longitudinal data to construct complete migration histories of a representative sample of U.S. residents, applying information in the migration histories to test ideas about which mechanisms explain the different rates of long distance moves across education and gender groups. The research will provide a detailed picture of lifecycle migration patterns and will compare migration trends observed in cross-sectional data with those observed in the NLS. The study of lifecycle migration will also provide important insight into a major cause of sample attrition, as respondents who move are often lost to subsequent data collection efforts. The analysis will explicitly examine the assumption that movers differ from nonmovers in important ways, giving insight into who is likely to be missing and why.

RETURNS TO SCALE IN U.S. MANUFACTURING AND CONSTRUCTION ESTABLISHMENTS

Lawrence Christianio—Northwestern University
Matthias Kehrig—Northwestern University

This project uses establishment-level data to estimate returns to scale in U.S. manufacturing and construction firms.

Understanding how the degree of returns to scale shapes the production of investment goods will be instrumental for the U.S. Census Bureau to understand establishment-level data. Constructing a comprehensive panel of manufacturing firms and estimating production functions can identify the degree of returns to scale at the establishment level. Regressing output on factor inputs will deliver the degree of returns to scale. Prices for equipment and structure investment behave very differently which suggests differential technologies and returns to scale. To pay special attention to that difference, the Census of Construction Industries is used to contrast construction firms to manufacturing establishments.

This project benefits the Census Bureau by correcting for measurement error, imputing capital stock for manufacturing establishments in the Annual Survey of Manufactures, seasonally adjusting older (annual) Plant Capacity Utilization data, and estimating capacity utilization for a large population of manufacturing plants that is not covered at present. This project will also deliver a precise estimate of the degree of returns to scale that is free from aggregation bias. This information is very relevant by helping to assess two competing theories of macroeconomic fluctuations. Understanding the source, nature, and transmission of fluctuations will not only advance the insight in the field of fluctuations but will also have neighboring fields in economics.

DYNAMIC MODELS OF REALLOCATION

Allan Collard-Wexler—New York University
KJann De Loecker—Princeton University

Reallocation can take several forms, such as greater investment in more productive plants, entry of plants using a newer technology such as mini-mills, or exit of plants exposed to international trade. Economists care about reallocation at the plant level because of its role in generating improvement in aggregate productivity.

In contrast to previous work on reallocation, this project will explicitly model the forward-looking choices of firms. When a firm decides to open a new ready-mix concrete plant, or shut down a steel mill because of foreign competition, it does so because it's expectation of the net present value of profits are greater than the cost of either shutting down the plant or opening a new one.

This project is composed of several separate subprojects designed to look at the forward-looking choices made by firms in different industries and how these generate reallocation. Changes in the ownership of establishments and establishing longitudinal links for firms over time will be used to evaluate the quality of the Master Business Register. The proposed analysis of changes in productivity will inform the quality of measurement of inputs and outputs in the economic census. In addition, several new estimates will be produced that relate to measurement error in productivity and the economic mechanisms driving reallocation of production towards more efficient units. This study will document the role of reallocation and entry and exit in shaping the productivity dispersion in the ready-mix concrete sector, as well as the role of measurement error of output and inputs in economic census questionnaires.

Changes in the ownership of plants will be examined to identify the quality of Employer Identification Numbers (EIN) in census data. Since multi-plant ownership is associated with lower exit rates, the ownership of plants matters. This project will provide insight into the decision of firms to sell off assets, as well as the entry and exit decisions of firms rather than plants. It will analyze the effect of trade on plants in the textile and steel sectors. These sectors have been exposed to substantial changes in the strength of international competition over the last 30 years, due principally to the elimination of tariffs and quotas. This analysis will shed light on how the trade environment affected the speed of reallocation of resources such as employment and physical capital across plants in these sectors of the economy and whether this resulted in aggregate productivity gains. Prices of imported steel and textiles will permit the researchers to decompose changes in sales to changes in both the price and quantity produced.

IDENTIFYING FIRM EFFECTS ON INTERNAL WAGE DISTRIBUTIONS

Jesse Rothstein—Princeton University
Eric Verhoogen—Columbia University
Till von Wachter—Columbia University

This project uses Longitudinal Employer-Household Dynamics (LEHD) data to investigate the hypothesis that firms compress wages. It will use merged data to construct measures of mass layoffs, individual displacement, and voluntary mobility among firms. The proposed testable hypotheses relate to the role of workers' ranks within their firms' wage distributions in predicting mobility decisions and wage changes, which requires use of the dense data about each firm's wage structure to construct measures of within-firm worker ranks.

The measurement of job transitions will provide several important benefits to the U.S. Census Bureau. The Quarterly Workforce Indicators (QWI) currently provide information on worker flows by worker characteristics and within fairly general (2-digit) industries, but the underlying data can support more disaggregated presentations. The project develops statistics that distinguish mass layoffs from other sources of worker flows and on the relation of the various types of flows to worker and plant characteristics. It explores the sensitivity of these measures to alternative methods for measuring displacement, and discusses options for incorporating statistics on mass layoffs into the QWI data.

The first step in development of prototype QWI extensions will be the creation of consistent time series of employment at each firm, taking account of spurious changes arising from data shortcomings. This will be used to identify firm events such as establishment closings and mass layoffs under several definitions. The research will also extend existing measures of worker separations and accessions and the new displacement statistics to describe their distributions across firm size and worker seniority categories—each important components of any assessment of the economic impact of these events.

EMPLOYER HEALTH INSURANCE OFFER DECISIONS IN AN ERA OF HIGH DEDUCTIBLE HEALTH PLANS

Christine Eibner—RAND Corporation
Alice Zawacki—U.S. Census Bureau

A recent development in employer-sponsored health insurance (ESI) is the introduction of consumer-directed health plans (CDHPs). These plans, which include health reimbursement arrangements (HRAs) and health savings accounts (HSAs), place more financial responsibility for health care decisions in the hands of the consumer with the goal of controlling health care costs. This project studies ESI offers of insurance, including offers of CDHPs and other types of plans, the number of plans offered, cost sharing decisions, and how CDHPs affect the overall mix of plans offered. This study uses the Medical Expenditure Panel Survey Insurance Component (MEPS-IC), which provides details on health insurance plans offered by employers. Data are also collected on characteristics of the establishment and its workforce.

To capture local market characteristics, the MEPS-IC data will be merged with external data sources including the Current Population Survey, Survey of Income and Program Participation, and Medical Expenditure Panel Survey-Household Component. This project will provide various benefits to the U.S. Census Bureau. The quality of the data will be better understood following comparisons between estimates using the MEPS-IC and other sources of information on ESI, including the Kaiser/Health Research and Educational Trust Employer Health Benefits Survey and the Robert Wood Johnson Employer Health Insurance Survey. This study will also examine the quality of a longitudinal database created using the MEPS-IC, while also creating a supplemental longitudinal dataset using synthetic panel methodology.

This project will create two new measures for the MEPS-IC: (1) a predicted premium for non-offering establishments, and (2) a quantity-adjusted premium for each health insurance plan type (e.g., health maintenance organization or any provider plan). Finally, this research will produce a number of new estimates using these newly created measures and merged data, including estimates of ESI offers using the predicted premium information, CDHP offers, number of plans offered, and cost sharing.

MINORITY MIGRANT DISPERSAL OVER 5 DECADES

William H. Frey—University of Michigan
Kao-Lee Liaw—McMaster University

This research evaluates migration processes associated with race-ethnic redistribution—both across and within large U.S. metropolitan areas over the period 1970–2000—to detect tendencies toward greater minority dispersal. The last 3 decades have shown a dramatic rise in the size and diversity of the nation's race and ethnic minority populations, but they have also shown these populations to be quite unevenly distributed across metropolitan areas as well as within them. The concentration of Hispanic and Asian populations in New York, Los Angeles, and a few other large metropolitan areas is related to their recent immigrant status and attachments to coethnic communities in those areas. Yet, recent Census 2000 results suggest their greater geographic dispersal. The African-American population, while less concentrated than these groups, has shown an increased tendency to relocate in the South, reversing a long-standing movement in the reverse direction. Within metropolitan areas, all three groups are more concentrated in central cities and selected inner suburb communities, than non-Hispanic Whites. Yet, all three have shown tendencies toward greater suburbanization, which have been more apparent in growing metropolitan areas that are attracting more minorities.

The migration processes underlying these inter-metropolitan, and intra-metropolitan minority redistribution patterns will be evaluated in this study using the 1970–2000 decennial censuses and the American Community Survey. The study will assess the extent to which these migration processes are leading to a greater dispersion of race and ethnic minorities both across and within large metropolitan areas.

THE DYNAMICS OF OWNER AGE AND BUSINESS PERFORMANCE

William D. Bradford—University of Washington

This study uses the Characteristics of Business Ownership (CBO), the Survey of Business Ownership (SBO), the Integrated Longitudinal Business Database (ILBD), and the Business Register (BR) to examine the relationship between age and entrepreneurship. This research derives from a common question among scholars and practitioners: What owner traits predict business performance (e.g., employment, sales, profits, survival)? This study contributes to this research by using census data to test the strength of owner age in predicting business performance and by measuring the extent to which this relationship changed between 1982 and 2002. This research will obtain sales, employees, other available firm data for 2002, and the survival experience of the firm through 2006, or the latest available year. This study will also link the firms to improve the measures of business survival beyond the snapshots taken in 1986 and 1996. This research will use the linked data for longitudinal analyses of owner age and business performance. This will contribute to the understanding of business formation, early lifecycle dynamics of firms and the precursors to job creation in the U.S. economy.

The project will create estimates of the impact of age of business owners on the performance of small businesses. It will also develop linkages between the SBO, the CBO, and the newly created ILBD. Using those linkages, it will enrich the 2002 SBO with variables which were not included in that survey, but were included in the earlier CBO surveys. This will enhance both the value of the 2002 SBO because of the inclusion of the new variables and the value of the earlier CBO surveys because of the existence of comparable data in another year. It will also enhance all three surveys by providing measures of firm survival and the transition from nonemployer to employer status.

OFFSHORE OUTSOURCING AND THE EFFECTS ON PLANT- AND FIRM-LEVEL OPERATIONS IN THE U.S. MANUFACTURING SECTOR

Alan Deardorff—University of Michigan
Jooyoun Park—University of Michigan
Jeff Smith—University of Michigan

This research will involve a reduced form analysis of the final outcome of outsourcing, including sales and employment changes. It investigates outsourcing's effects on prices and price-cost margins within the plants of outsourcing firms. Finally, it tests the hypothesis that offshore outsourcing decisions are driven by profit maximization. These effects and relationships are examined using U.S. Census Bureau data (Longitudinal Business Database, Census of Manufactures, Annual Survey of Manufactures, Business Register, and the Auxiliary Establishment File),

merged with Trade Adjustment Assistance (TAA) and Compustat North America information on outsourcing and a range of firm-level characteristics.

As the predominant purpose of this study is to increase the utility of Title 13, Chapter 5 data of the Census Bureau, research on the effects of offshore outsourcing will provide benefits to both the Census Bureau and its programs in three significant areas. The analysis of the correlation between census plant death dates and TAA plant closing data will make available new information on and improved census

capabilities in both measuring and predicting plant deaths. The research on offshore outsourcing necessitates the creation of a bridge between TAA data and census business datasets. Through linking census data to previously unavailable TAA variables, such as employee layoffs and plant closing dates, this bridge enhances census data. Lastly, the research will estimate the effects of offshore outsourcing on various plant-level characteristics, such as sales and employment and within-firm prices and price-cost margins.

MEASURING UNCERTAINTY OVER THE BUSINESS CYCLE

Nicholas Bloom—Stanford University
Max Floetotto—Stanford University
Nir Jaimovich—Stanford University

This project investigates the role of variations in the level of uncertainty as a key driver of the business cycle. The most important piece of this research is construction of time series measures of uncertainty.

This project is to inform the U.S. Census Bureau on four issues. One, the project will help to improve the quality of data produced by the Census Bureau. By constructing measures of volatility from census micro datasets and comparing these with external measures of volatility, the likely extent of measurement

error in the census datasets can be evaluated. Two, it will lead to an improved methodology for tabulating aggregate statistics derived from census data. The analysis will aim to highlight the significance of time variation in the dispersion of establishment-level data. The project would then lead to a recommendation to display aggregate variances at yearly intervals. Three, it will help to prepare estimates of nonresponse over the business cycle that are driven by fluctuations in volatility. To estimate changes in volatility over the business cycle, changes in data

imputation must be controlled for in the analysis. This project will spend considerable time evaluating the cyclical and industrial properties of nonresponse. Four, the project will help to improve survey estimation techniques by identifying periods of time and industries with higher levels of underlying volatility. If recessions change the response rate of establishments to the surveys, then the requisite increase in the amount of imputed data could generate cyclical bias.

INTERNAL CORPORATE GOVERNANCE AND PLANT-LEVEL PRODUCTIVITY

Xavier Giroud—New York University
Holger M. Mueller—New York University

This project will investigate how internal corporate governance, measured by the quality of headquarters' monitoring of individual plants, affects plant productivity and other plant-level attributes. The plant-level data used in this project are obtained from the Census of Manufactures, Annual Survey of Manufactures, and Longitudinal Business Database.

The researchers will develop two measures of internal corporate governance. The first measure is the distance (physical distance or traveling time) between headquarters and individual plants. The second measure for the quality of monitoring is the "industry closeness" between the plant and headquarters. This measure reflects the idea that headquarters understands better, and thus finds it easier to monitor, a plant that operates in an industry with which headquarters is familiar.

Plant productivity will be measured by total factor productivity, operating margin, and labor productivity. Three main types of regressions will be estimated. The first type of regression looks at the direct (cross-sectional) relationship between productivity and internal corporate governance. The second type of regression examines whether the productivity gains (or losses) after a change of ownership can be explained by the difference in internal corporate governance. The third type of regression investigates if and how internal corporate governance amplifies (or mitigates) plant-level productivity shocks (state labor laws, natural disasters, oil and electricity shocks, opening of airports and golf courses in a neighborhood of the plant). Finally, plant-level measures of internal corporate governance will be aggregated into firm-level measures of internal corporate governance (e.g., the "weighted average distance" between headquarters and the firm's plants) that can be used to investigate the role of internal corporate governance at the firm level (e.g., for equity prices or the conglomerate discount).

CHANGES IN FIRM PENSION POLICY: THE CASE OF CASH BALANCE PLAN CONVERSION

Joel Cobb—University of Michigan
Kandice A. Kapinos—University of Michigan

This study investigates the determinants of private pension plan conversions from traditional defined benefit plans to hybrid cash balance plans during the 1990s. It examines whether there are systematic differences in the types of firms and plans that converted. It also examines the endogenous relationship between the likelihood of conversion (on pension plan type, in general) and employee turnover. The project utilizes data from several sources for this analysis. Information on pension plan characteristics comes from the annual 5500 forms which most private sector firms file each year in accordance with the Internal Revenue Service, Department of Labor, and Pension Benefit Guaranty Corporation (PBGC). From the PBGC also comes information on plan terminations. These data are linked to the Longitudinal Employer-Household Dynamics data, which provide information about establishment-level characteristics of the workforce. Firm level data from Compustat provide several important firm-level characteristics. The research intends to improve the link between the Form 5500 data and the Business Register. It will also compare data from the Longitudinal Business Database and Economic Surveys to Form 5500 data in order to evaluate the strengths and weaknesses of each dataset in studying firm human resource policies. It will also establish evidence on the determinants of employer provided pension plan policy changes and provide estimates of population characteristics relating to changes in employer provided pension plan coverage rates.

SYNTHETIC DATA GENERATION FOR SMALL AREA ESTIMATION

Trivellore E. Raghunathan—University of Michigan
Joseph W. Sakshaug—University of Michigan

Demand for small area estimates to support formulating and implementing important research questions and findings is ever increasing. The U.S. Census Bureau regularly collects information from small geographic areas and is therefore in a unique position to meet some of this demand. However, releasing geographic identifiers at the small-area level may increase the risk of disclosing respondent identities and attributes.

Current disclosure limitation practices involve: (1) suppressing geographical details for small areas that fail to meet a predefined population threshold (e.g., 100,000), and (2) releasing restricted small-area data through a limited number of Research Data Centers. Neither of these approaches fully satisfies the growing demand for small area data that is being fueled by a variety of researchers, analysts, decision-makers, and administrators. To help fulfill the growing demand for public use, small-area census data, this project tests a new method for generating fully-synthetic micro-datasets that will permit public release of small-area geographical details (i.e., county identifiers) and, hence, small-area estimation with enhanced protection against disclosure.

Using the 2005–2007 American Community Survey (ACS) data as a test bed, the research aims at producing public-use synthetic data files. In addition, the research will evaluate the quality of the inferences made from synthetic data by comparing small-area estimates with the synthetic data and the observed data. Specifically, this project will benefit the Census Bureau by testing a new method for tabulating census data for small geographic areas. The fully synthetic data approach proposed improves upon current methods of analyzing small-area data, which often require knowledge of complex indirect estimation techniques, linking administrative data, and specialized statistical software to achieve adequate statistical power. This approach will generate synthetic data values that preserve the statistical properties of the observed data values and facilitate use of direct estimation techniques and standard statistical software, while enhancing data confidentiality protection. In addition, this project will involve the estimation of population characteristics to test the quality of the inferences made from the synthetic data and, if the synthetic data are released to the public, will allow a variety of data users to prepare their own customized set of estimates.

By using synthetic data with small area identifiers, data users will be able to produce small area estimates for levels of geography that are not currently permitted without restricted data access. The method offers additional justification for releasing these data to the public because the synthetic data approach offers increased data confidentiality protections and appreciably reduces disclosure risks. This innovation would likely increase the sheer volume of small-area estimates produced using census data.

UNDERSTANDING FIRM INVESTMENT

John Asker—New York University
Joan Farre-Mensa—New York University
Alexander Ljungqvist—New York University

Understanding the determinants of firm investment is an important question at the heart of the economic discipline. The difficulty of empirically analyzing the factors that drive firm investment arises from the fact that investment is highly volatile throughout the business cycle and responds to a wide variety of global and local economic shocks. One of the main open questions regarding the determinants of firm investment is how equity income taxation affects a firm's cost of capital and thus its incentives to invest. This research uses the tax cuts in dividends and capital gains included in the Jobs and Growth Tax Relief Reconciliation Act of 2003 in order to shed light on this question. This project uses data from the Census of Manufactures, the Annual Survey of Manufactures, the Annual Capital Expenditures Survey, and the Survey of Industrial Research and Development to construct a panel of plants spanning from 1994 to 2007. Other U.S. Census Bureau data will be employed in order to match the census datasets with other American and international databases.

The main assumption is that only firms incorporated in the United States, and thus with a majority of shareholders subject to U.S. tax law, will be potentially affected by a decrease in the cost of capital induced by the 2003 equity income tax cuts. The analysis will control for those plant and firm characteristics identified as determinants of investment and will be able to attribute any differences in investment between plants that only differ in the country of incorporation of their parent firms to the effects of changes in equity income taxation, effectively differencing away those determinants of investment related to the business cycle and other local and global economic shocks that impact profitability.

Census microdata also allows for quantification of the effect of those other variables identified as potential determinants of investment. The focus on a time period around a sizeable tax reform represents a unique opportunity to obtain estimates less subject to severe measurement error, given that changes in taxation induce firms to reevaluate their investment levels in order to reflect the new economic environment. The analysis of investment can shed light on how constant capital expenditures are across time, and thus help design imputation strategies for nonresponse in capital expenditures survey questions. The link between census datasets and several international databases will provide financial information for those foreign-incorporated companies that own plants in the United States. This link will enable an assessment of the quality of the ownership data contained in the census files and can be useful to analyze the characteristics of multinational companies that own plants in the United States.

USING ESTABLISHMENT-LEVEL, LONGITUDINAL DATA TO EXAMINE THE EFFECT OF EMISSIONS ON HEALTH OUTCOMES

Janet Currie—Columbia University
Lucas W. Davis—University of Michigan

Exposure to environmental emissions may be an important determinant of health outcomes, but it is difficult to obtain scientific evidence on this point given the infeasibility of conducting randomized experiments. This research examines the relationship between emissions and health outcomes using establishment-level data in the Longitudinal Business Database (LBD) and linked establishment-level surveys (the Census of Manufactures, the Annual Survey of Manufactures, the Census of Mining, the Census of Transportation, Communications, and Utilities, and the Census of Wholesale Trade) merged with publicly-available information about emissions. The research design will exploit the precise record of establishment openings and closings in the LBD to identify effects on health outcomes. The first objective of this project is to evaluate the accuracy of establishment openings and closings in the LBD by merging the LBD with establishments in the Environmental Protection Agency's Toxic Release Inventory (TRI). The second objective of the project is to generate new estimates of the effect of industrial emissions on human mortality. The U.S. Census Bureau's National Longitudinal Mortality Study (NLMS) is a database designed for studying the effects of demographic and socio-economic characteristics on mortality rates. The estimates will help realize the objective of the NLMS, helping the Census Bureau better understand the role of environmental factors as a determinant of human mortality, as well as to better understand the extent to which industrial emissions have been a confounding factor in existing studies of mortality using the NLMS.

ANALYSIS OF THE CHILD CARE MARKET IN THE UNITED STATES

Maria D. Fitzpatrick—Stanford University
Caroline M. Hoxby—Stanford University

Early childhood activities such as preschool and day care have been receiving considerable attention in recent years as avenues for providing child care and promoting school readiness. In part, this is because female labor force participation has changed dramatically in recent decades, fostering interest in the role of children in female decisions about work. This research project studies the child care market in the United States. It links existing datasets to create a unique resource for examining the supply and demand of child care, the labor market for child care workers, how parental decisions about investments of resources (such as labor supply, fertility and education) interact with decisions about child care, and how government involvement (e.g., through regulation and funding intervention) affects the market for child care. The analysis uses multivariate regression and other descriptive statistical procedures (such as cross tabulations and means) to investigate the market for child care.

EXPLORING DETERMINANTS OF MANUFACTURING ESTABLISHMENT PERFORMANCE

David Cheney—SRI International
Andrea Fernandez-Ribas—Georgia Institute of Technology
Christopher Ordowich—SRI International
Philip Shapira—Georgia Institute of Technology
Jan Youtie—Georgia Institute of Technology

This research project aims to improve the quality of U.S. Census Bureau data and to increase knowledge about the determinants of manufacturing establishment performance. These objectives will be accomplished by linking an external dataset of establishments receiving business assistance between 1999 and 2007 to census datasets. The project uses the external dataset of business assistance recipients to both validate and improve the quality of census data. The data will be used to identify limitations of the census sampling frame, measure data quality, estimate nonresponse bias, and improve imputations for nonresponse in census datasets. The business assistance dataset is valuable because it contains data at the same level of resolution and contains some of the same data elements as census datasets.

The project uses the linked datasets to explore determinants of establishment productivity not currently measured in census datasets. Specifically, the research explores how manufacturing establishment performance is affected by business assistance and how the effects vary across measurable dimensions. The analysis focuses on business assistance provided by the National Institute of Standards and Technology's Manufacturing Extension Partnership between 1999 and 2007. The project employs a variety of econometric approaches, primarily relying on an instrumental variables approach to estimate how measures of establishment performance such as productivity, output, and employment growth are affected by different types and levels of business assistance. Access to the census datasets is required to provide a valid control group and to provide key performance and control variables for this analysis.

THE HUMAN FACTOR IN CORPORATE RESTRUCTURING DECISIONS

Geoffrey Tate—University of California at Los Angeles
Liu Yang—University of California at Los Angeles

This study analyzes the link between the characteristics of firms' labor forces (the human factor) and corporate restructuring decisions, such as plant closure and acquisitions. Specifically, it will analyze whether the labor composition and the wage structure of a plant or firm affects its probability of being shut down or of becoming a takeover target, and how factors such as experience, human capital, and wages explain the cross-sectional differences in worker retention decisions and firm performance following an acquisition or plant closure.

The project uses employee information from the Longitudinal Employer Household Dynamics (LEHD) Program, firm-level information from the Longitudinal Business Database (LBD), financial data from Compustat and information on corporate restructuring from the SDC Platinum Mergers and Acquisitions database. Additional data on manufacturing industries includes plant-level information from the Annual Survey of Manufactures and the Census of Manufactures to construct sharper estimates of changes in plant-level productivity around restructuring events.

The project will evaluate the consistency of various databases maintained by the U.S. Census Bureau and analyze the implications of any inconsistencies on census published statistics. Accurate information on corporate restructuring is especially important for time series and worker statistics, such as those produced by the LEHD program. Moreover, since the SDC data documents the time when restructuring becomes effective in the legal sense and census databases record the time when real changes are made (in terms of labor and capital), comparing these two sources will provide valuable information on the length of the integration process.

Statistics on the changes in workforce composition and the change in the wage distribution after restructuring will be produced. Econometric models will estimate the effects of employee characteristics and the wage distribution on the likelihood of plant closure or takeover.

EVALUATING AND ENHANCING THE MEDICAL EXPENDITURE PANEL SURVEY-INSURANCE COMPONENT (MEPS-IC) AS A SOURCE OF INFORMATION ON EMPLOYER HEALTH INSURANCE OFFERINGS

Jessica Banthin—Agency for Health Care Research and Quality
Philip Cooper—Agency for Health Care Research and Quality
Edward Miller—Agency for Health Care Research and Quality
Thomas Selden—Agency for Health Care Research and Quality
Jessica Vistnes—Agency for Health Care Research and Quality

This project will develop links between the MEPS-IC and the MEPS-Household Component (MEPS-HC), as well as between the MEPS-IC and the Longitudinal Employer Household Dynamics-Individual Characteristics File (LEHD-ICF). These links will be constructed for the years 1996–2004 and will enhance the data by examining nonresponse to MEPS IC and evaluating possible methods to impute MEPS-IC variables that are not currently included in imputation procedures. Currently, the procedures for imputing missing or invalid values exist only for variables included in the MEPS-IC published estimates because developing these procedures requires resources. In the process of constructing the linked data sets, comparisons will also be made across these three nationally representative datasets: the MEPS IC, the MEPS HC, and the LEHD-ICF.

This project will prepare estimates that model establishment offers of insurance, take-up rates, plan choice, total premiums, and employer premium contributions as a function of establishment and workforce characteristics. The researchers will examine multivariate models and bivariate associations to determine whether these newly imputed variables (e.g., percent over age 50) are predictive of these outcomes. They will evaluate the usefulness of the newly imputed variables in producing new estimates. They will also examine newly linked LEHD-ICF variables (e.g., race, citizenship and education) to see if they are predictive of outcomes of interest. This will provide evidence of the potential value of adding these new variables to the MEPS IC survey.

This project will inform the U.S. Census Bureau about both employer behavior and also the linked behavior of employers and their employees with respect to the following topics: the effect of current tax subsidies on employer sponsored insurance, the revenue effects and incidence of reforms that cap tax subsidies, the effect of "tax price" on establishment and worker behavior, and the effect of reforms on establishment and worker behavior.

DYNAMICS OF WORKPLACE WAGES, RETURNS TO R&D AND THE ECONOMIC IMPACT OF SCIENCE AND ENGINEERING WORKERS

Erling Barth—Institute for Social Research, Oslo
Alex Bryson—National Institute of Economic and Social Research
Brigham Frandsen—Massachusetts Institute of Technology
Richard Freeman—Harvard University
Gerald Marschke—Harvard University
Joshua Mitchell—Harvard University
Andrew Wang—Massachusetts Institute of Technology
Jialan Wang—National Bureau of Economic Research

The purpose of this research project is to improve understanding of the quality of Title 13, Chapter 5 data on employment and wages, and to prepare estimates of the dynamics of workplace wages and their relation to overall changes in the wage distribution, the economic return to Research and Development (R&D) (both private and social), and the role of science and engineering workers on innovation, knowledge transmission, and economic growth.

The project compares employment and wages across the data files of the Longitudinal Business Database (LBD), the economic census, and the Longitudinal Employer Household Dynamics (LEHD) Employer Characteristics File. Cross comparison of employment and wages from the three separate sources will establish whether reporting variance can be duplicated across sources, methods for the allocation of firm based R&D expenditure to establishments, and investigate recall bias for employment measures in the economic census. Recall bias will be quantified for economic census respondents that report March 12 employment that has a closer match to fourth quarter LEHD employment or first quarter LEHD employment for the following year, in comparison to first quarter LEHD employment for the March 12 period of the economic census year. Fourth quarter or first quarter of the following year employment is closer to the timing of when economic census survey forms are mailed out. The extent of recall bias will be related to firm characteristics, for example as captured by worker turnover statistics in the Quarterly Workforce Indicators.

The project will produce population estimates of establishment and individual wage distributions and wage dynamics. The project will also produce population estimates of the effect of R&D activity on firm productivity. As a complement to the firm based analyses, the research will investigate wage distributions over time, coming fromthe perspective of the worker and using the Current Population Survey. The data will allow the following of workers from firm to firm and measure the R&D content of their working experience. Finally, the project will provide population estimatesof the impact of unions, innovation, firm volatility, and financial distress on employment and wages.

Appendix 3-B.
ABSTRACTS OF PROJECTS STARTED IN 2009, AGENCY FOR HEALTHCARE RESEARCH AND QUALITY (AHRQ) AND NATIONAL CENTER FOR HEALTH STATISTICS (NCHS) DATA

Projects in this portion of the Appendix use data provided by the Agency for Healthcare Research and Quality (AHRQ) or data provided by the National Center for Health Statistics (NCHS). Under authority of the Economy Act, the Center for Economic Studies hosts projects in Research Data Centers using data provided by AHRQ or NCHS. AHRQ or NCHS is solely responsible for selecting projects and for conducting disclosure avoidance review.

STRESS AND MORTALITY (NCHS)

Natalie Bau—National Bureau for Economic Research
David Cutler—National Bureau for Economic Research

Substantial research suggests that chronic stress has a negative health impact, potentially leading to cardiovascular problems, metabolic disorders, and even memory loss. Stress research indicates that the waist-to-hip ratio (WHR), which the National Health and Nutrition Examination Survey (NHANES III) records, is a possible measure of chronic stress. The publicly available NHANES III data have permitted the researchers to assess chronic stress in relation to a variety of variables such as monthly family income, education level, and race. Regression models indicate that stress, in the form of WHR, may be correlated with socioeconomic status. Although a few studies have linked WHR with cardiovascular disease, the ultimate health impact of stress/WHR remains little understood. However, using the mortality-linked file for the NHANES III, this project will attempt to quantify the relationship between WHR and increased mortality, particularly the relationship between WHR and deaths due to cardiovascular disease.

THE RELATIONSHIP BETWEEN EDUCATION AND ADOLESCENT BEHAVIOR: EVIDENCE FROM VARIATIONS IN SCHOOL ENTRY AGE AND COMPULSORY SCHOOLING LAWS (NCHS)

Kathleen Wong—University of California, Irvine

Descriptive statistics presented by the government health agencies such as the Centers for Disease Control (CDC) and Morbidity and Mortality Weekly Reports (MMWR) suggest that good health is positively correlated with education. However, it is not clear if the statistics are describing a causal relationship between the two. This paper seeks to add to the existing evidence in the health literature by studying how education is associated with both positive and negative health behaviors. In addition to conducting a two-stage least squares analysis, which uses changes to state statutes regarding school entry and compulsory schooling laws, the proposed study will also examine a reduced-form method to determine how changes to compulsory schooling laws that increase the length of time adolescents stay in school affected their health behaviors. And in the light of the vast disparities in health status across groups, separate regressions will be conducted on individuals when they are grouped according to their race/ethnicity to determine if the link between health and education varies amongst different groups.

This study will use data collected from individual interviews regarding their health behaviors from the National Health Interview Surveys (NHIS). Surveys first began asking questions regarding health behaviors in 1997 and have continued to do so every year since. Thus, the dataset will consist of pooled cross-sectional surveys spanning from 1997 to 2006. Although demographic data are drawn from the household, family, person, and sample adult files, most of the health variables come from the sample adult file. Between 1997 and 2006, 313,982 sample adults over the age of 18 were surveyed. However, analysis will focus on individuals between the ages of 18 and 30, of which there are a total of 67,805. Within the sample adult files, respondents selected to participate in this portion of the interview are asked about a variety of health behaviors, both positive (regular exercise, routine visits to the doctor, dentist, and optometrist) and negative (smoking, heavy drinking, and being overweight).

RISING TOY IMPORTS AND BLOOD LEAD LEVELS IN CHILDREN (NCHS)

Kanaka Shetty—Stanford University

As has been widely documented, blood lead levels have declined dramatically in U.S. children since the 1970s. Concern remains over additional sources of lead, most prominently in remaining lead paint in older homes and remaining environmental lead exposure. However, in the past year, numerous reports of imported toys containing lead or lead paint led to several publicized recalls and elicited concern from parents, particularly over toys imported from China (which accounted for 80 percent of the U.S. toy market in 2006). This project aims to explore the actual health impact of imported toys, which has received little attention. The research will determine whether rising toy imports have been associated with changes in blood lead levels in U.S. children over time. It will use the National Health and Nutrition Examination Survey (NHANES III, 1999–2000, 2001–2002, and 2003–2004) and measures of U.S. toy imports (obtained from the United Nations Commodity Trade Statistics Database). This study's results could inform current decision-making regarding regulation, sales and quality controls by the general public, government agencies, and private corporations.

ANNUAL VS. MONTHLY SELF-REPORTS OF HEALTH INSURANCE COVERAGE: IMPLICATIONS FOR ESTIMATES OF THE EFFICACY OF THE STATE CHILDREN'S HEALTH INSURANCE PROGRAM (NCHS)

Thomas Buchmueller—University of Michigan
Sean Orzol—University of Michigan

Over the past two decades there has been a dramatic expansion in public health insurance for children. As a consequence, over a quarter of all children in the United States are enrolled in either Medicaid or a separate State Children's Health Insurance Program (SCHIP) plan, and the percentage of children who are uninsured is substantially lower than the rate for adults. A main objective of expanding public health insurance coverage for children is to increase timely and appropriate access to health care. A large literature documents a positive relationship between insurance coverage and various measures of health care utilization for children. Most studies in this area use data from annual surveys in which insurance coverage is measured at a point in time and utilization is measured by retrospective reports. An important concern with such data is that an individual's insurance coverage at the time of the survey may not match up with his or her coverage during the period for which utilization is recorded. This issue is significant not only from the perspective of research methodology, but from a substantive policy perspective as well. There is reason to be concerned that children who transition on and off public insurance or between public and private coverage will suffer in terms of access to timely and appropriate care. This study uses data from the 1993, 1996, 2000, and 2004 waves of the public-use Survey of Income and Program Participation (SIPP) to analyze the relationship between insurance coverage and health care utilization among children. A main focus of the analysis will be to test for differences between children with continuous insurance over a period of a year and children with changes in coverage. We will examine the effects of subannual measurement by comparing alternative insurance measures created using the public-use SIPP data and by comparing the SIPP to the confidential version of the National Health Interview Survey with state identifiers.

SPATIO-TEMPORAL MODELING OF HEALTH RELATED INCIDENTS (NCHS)

Sijut Ghosh—North Carolina State University
Michael Porter—SPADAC

The main objective of the project is to develop rigorous and appropriate statistical methods for analyzing environmental epidemiological data collected over time and across different geographic domains. These types of data need to be analyzed in order to determine important aspects of national environmental policy, aspects that protect the health of citizens, and prevent damage to infrastructure and the environment. The project will develop a statistical framework and methodology for integrated analysis of spatial temporal survey data on specific types of health related incidents related to environmental agents and exposures. The research will attempt to use the best available spatial and temporal information about the environmental agents to better estimate the hypothesized increased rate of adverse health events, such as Chronic Obstructive Pulmonary Disease (COPD), with increased exposure levels. In addition, the spatio-temporal analysis will be used to identify the constituents of the environmental agents that are the most significant in influencing the health effects.

EFFECTS OF THE STATE CHILDREN'S HEALTH INSURANCE PROGRAM (SCHIP) ON ACCESS TO MEDICAL CARE AND USE OF MEDICAL SERVICES (NCHS)

Hua Wang—Cornell University

This project uses data from the 1997–2002 National Health Interview Survey (NHIS) to examine effects of the SCHIP program on medical care access and use for eligible children. The study design is based on variation in timing of SCHIP implementation across states. The research estimates the total effect of SCHIP implementation using state, state/county and time fixed effects models, and estimates differences in the outcomes between children with public coverage and their uninsured counterparts using instrumental variables. Preliminary results suggest that among low-income children (whose family income is below 300 percent the federal poverty level), SCHIP implementation significantly increased their medical services use; publicly insured children had significantly improved medical care access and use compared to uninsured children.

The preliminary estimates are not accurate because some of the low-income children may not be eligible for the SCHIP program and, therefore, not be affected by SCHIP at all. The analysis merges sample SCHIP eligibility indicators that Urban Institute researchers imputed for children in the 1997–2002 NHIS. This permits estimating the effects of the SCHIP program on medical care access and use for the SCHIP target population children eligible for the program. This study will add to the knowledge of effectiveness of the SCHIP program at the national level and contribute to the policy debate on SCHIP policies.

HEALTH OUTCOMES FOR NONELDERLY PERSONS WITH DISABILITIES AND VETERANS (AHRQ)

Austin Frakt—VA Boston Healthcare System
Lisa Lezzoni—Harvard Medical School
Steven Pizer—VA Boston Healthcare System

This project uses a common methodological framework to study insurance status and health outcomes for two populations: (1) working-age persons with substantial functional impairments, and (2) nonelderly veterans who may also have functional impairments. These populations are at elevated risk for suffering poor outcomes due to lack of insurance. They are also an important population for policy-makers to understand because their use of "safety net" (Medicaid, Medicare, Veterans Administration) financed services is likely to be high. The health care financing decisions of individuals in these populations are directly relevant to future adjustments to Medicaid, Medicare, and VA eligibility policy and benefit levels.

This project will use the Medical Expenditure Panel Survey (MEPS) to analyze the insurance and outcomes experiences of these populations. The large body of research on the uninsured nonelderly documents poorer outcomes for individuals lacking health insurance. This project would attempt to quantify the effect of gaps in health insurance coverage on the health and functional outcomes of working-age persons with potentially disabling conditions. These effects could suggest the human consequences of policy decisions necessarily made in environments driven by tightening budgetary constraints. The project could offer specific estimates about health-related outcomes that could be arrayed alongside cost considerations to further inform policy discussions.

The research uses a common analytical approach to relate lack of insurance to health outcomes for non-elderly disabled and veteran populations. It employs existing survey data and other publicly available data to estimate statistical models using multiple years of MEPS data (1998–2005) linked to characteristics of state Medicaid programs, private Medicare plans, and other publicly available geographic data from the Area Resource File. The first objective is descriptive and focuses on quantifying basic characteristics of the population under study: uninsured veterans. The second and third objectives develop multivariate statistical models that will relate insurance status and VA use to health outcomes, controlling for observable and unobservable baseline characteristics.

INJURY AMONG THE FOREIGN BORN: THE EFFECTS OF ACCULTURATION, OCCUPATION, AND LOCATION (NCHS)

Katherine Hempstead—Rutgers University
Xiangjin Shen—Rutgers University

This study will add to knowledge of injury epidemiology and will also address the issue of assimilation and immigrant health. The research examines the prevalence of injury among the foreign born population, including fatal injury as well as nonfatal injury of various degrees of severity. It explores potential risk and protective factors for injury among the foreign born, such as age, gender, education, occupation, and location of residence. It assesses the impact of experience in the United States, including year of entry, citizenship status, and country of origin, on injury among the foreign born. It examines how the characteristics of injuries differ by nativity, including major mechanisms, types of injuries, and use of protective equipment.

This cross-sectional study employs the 2006 National Health Interview Survey (NHIS) file linked with the NDI, and will analyze noninstitutionalized civilian adults and children. Information on injuries sustained comes from the injury/poisoning file on the NHIS, including additional information on injuries received that did not result in medical treatment and which is available on the confidential file. The primary variable of interest is nativity. The prevalence of injury of varying severity by nativity will be calculated. Multivariate analysis will assess the significance of nativity on the probability of injury after controlling for other demographic characteristics, geographical location, and occupation. A second analysis is limited to the foreign-born population, and will assess the effect of "assimilation" variables on injury. Detailed information on year of entry, citizenship status, language used in interview, and country of origin is available from the confidential version of the NHIS. This information will be used to measure experience in the United States. Multivariate analysis will be used to assess the effect of experience in the United States on the probability of injury, controlling for confounders such as residence and labor force status. For these analyses, adults and children will be studied separately. A separate analysis of the employed population will examine the effect of nativity on occupational injury.

THE EFFECT OF HAVING A CHILD WITH SPECIAL HEALTH CARE NEEDS ON PARENTAL EMPLOYMENT AND PARENTAL INSURANCE STATUS (AHRQ)

Sally Stearns—University of North Carolina at Chapel Hill
Yuan You—University of North Carolina at Chapel Hill

Children with special health care needs (CSHCN) account for 13 percent of the pediatric population and a disproportionate share of the health care expenditures among the under 18 population. Previous research has shown that having a CSHCN can have important financial implications for the entire family unit; however, the relationship between having a child with special health care needs and parental employment and parental insurance status remains unclear. It is likely that parents of CSHCN in low wage occupations or those without access to employer sponsored insurance (ESI) may strategically choose to reduce their employment to secure access to public insurance coverage for their CSHCN.

This project uses household data from the 2000–2005 Medical Expenditure Panel Survey (MEPS) to examine the within family variability in the number of CSHCN over a 2 year period; whether having a child with special health care needs is associated with decreased parental employment for poor and near-poor families; and whether having a child with special health care needs is associated with familial access to and take up of employer sponsored health insurance for poor and near-poor families. For the first research question, descriptive analysis will be conducted to examine the overall within family variations and the proportions of changes due to different CSHCN conditions. For the second and third questions, analyses will be conducted at both individual and family level using logit models with area- and time-fixed effects. Social-demographic, economic, as well as familial and regional characteristics will be controlled. State identifiers from MEPS are needed to merge on the state level Medicaid eligibility information. The results of this study will augment current knowledge by exploring, in depth, the employment and ESI take-up status of parents of CSHCN. This study will also inform policy makers about some of the most important issues in the health services field, such as reducing poverty and improving access to health care for all Americans by addressing issues of employment choices and insurance coverage for low-income families.

COMMUNITY SOCIOECONOMIC STATUS AND HEALTH DISPARITIES IN LATER LIFE (NCHS)

Julie Phillips—Rutgers University
David Russell—Rutgers University

There is growing evidence that community socioeconomic context (e.g., rates of poverty and unemployment) affects the health and well-being of older residents, independently of individual socioeconomic position. This study seeks to expand upon previous research by evaluating whether community socioeconomic context accounts for, or conditions, social disparities in health among older adults. The research links tract-level data from the Census 2000, with a subset of respondents 60 years and older from the 2004 National Health Interview Survey (NHIS) to examine: (a) the independent explanatory significance of community socioeconomic context for health in later life (psychological distress, functional limitations, and perceived health); (b) whether community socioeconomic context mediates any observed disparities in health across age, gender, race /ethnicity, and living arrangement; and (c) the interaction between community socioeconomic context and social disparities in health. The research supports the National Institute of Health's strategic plan for eliminating health disparities by identifying social group differences in mental and physical health problems, and by understanding the more proximate community mechanisms linking social characteristics to health status among older adults.

MITIGATION BEHAVIOR AND THE COSTS OF OZONE POLLUTION (NCHS)

Joseph Shapiro—Massachusetts Institute of Technology

Environmental regulations must weigh the substantial costs of pollution abatement against the health and welfare benefits of clean air. These benefits depend in part on the costs that people incur on drugs to mitigate the harm of air pollution. Yet medical studies showing that air pollution exposure worsens health generally overlook such drug expenditures, and hence benefit-cost analyses based on these medical studies may understate the costs of pollution. This research uses daily U.S. data on pollution, mortality, and drug purchases to identify the health consequences of ozone exposure and to document the costs that people accept to mitigate the harms of air pollution. This research should provide important evidence for lawmakers designing and evaluating health and environmental policies, and it will contribute to a nascent health and economics literature on the importance of mitigation behavior in response to health threats.

SCHOOL ENTRY LAWS AND ADHD DIAGNOSIS AND TREATMENT (AHRQ, NCHS)

Melinda Morrill—North Carolina State University

This project investigates the link between relative age-for-grade and attention deficit disorder/attention deficit hyperactivity disorder (ADD/ADHD) diagnosis and treatment. The analysis uses a child's kindergarten eligibility as an instrument for relative age-for-grade. The research supplements ongoing National Center for Health Statistics (NCHS) projects that use the National Health Interview Survey. Work employs data from NCHS and the Agency for Healthcare Research and Quality as part of a joint project.

There is some concern that diagnosis for ADHD are not for underlying behavioral problems, but rather represents differences in behavior among children that are appropriate for their age. This research asks whether a child that is "young for their grade," and is hence relatively immature, is more likely to have been diagnosed with ADHD. Specifically, it exploits the sharp discontinuity in school enrollment generated by kindergarten eligibility laws, which are determined at the state-level. Children born just before the cutoffs will on average be young for their age, while children born just after the cutoff must, on average, wait a year to enter school, and therefore, will be the oldest children in their class. ADHD is an underlying neurological problem where incidence rates should not change dramatically from one birth date to the next. If diagnosis rates do shift appreciably based on small changes in birth dates, then the diagnosis is not based on underlying conditions, but rather behavior relative to peers in class.

The data will be used to test whether children born just prior to the kindergarten eligibility cut-off date have higher rates of ADHD diagnosis than children born just after those dates.

THE IMPACT OF THE BIRTH CONTROL PILL ON SEXUAL BEHAVIOR, FAMILY FORMATION, AND SOCIOECONOMIC OUTCOMES (NCHS)

Martha Bailey—University of Michigan
Emily Collins—University of Michigan
Melanie Guldi—Mount Holyoke College
Sayeh Nikpay—University of Michigan

Since Goldin and Katz first used changes in age of legal consent to the birth control pill to estimate the impact of this technology, the literature employing these changes has grown tremendously. This project uses a newly-revised comprehensive coding to compare and resolve discrepancies between alternative legal coding and estimation approaches, as well as to provide new estimates of the impact of the birth control pill on young women's sexual behavior, contraceptive use, marriage and childbearing decisions, and ultimate socioeconomic outcomes. In order to accomplish these aims, this project uses restricted data on date of birth, state of birth, state of residence, and when available, state of residence during childhood (age 6–16) for the 1976 and 1982 (if available), 1988, and 1995 cycles of the National Survey of Family Growth (NSFG). This project describes promising preliminary results and the need for these restricted data to answer important social science and public policy questions. The NSFG is the only nationally representative survey that contains information on cohorts who would have been affected by the law changes of interest.

SMOKE-FREE AIR LAWS, SECONDHAND SMOKE, AND CURRENT ASTHMA AMONG U.S. CHILDREN AND ADOLESCENTS (NCHS)

Melanie Pickett—Harvard School of Public Health

In children, exposure to secondhand smoke has been associated with asthma and respiratory tract infections, including bronchitis, pneumonia, and middle ear infections. Serum cotinine, a biomarker for secondhand smoke exposure, was measured in U.S. nonsmokers by the National Health and Nutrition Examination Survey (NHANES) from 1988–1994. Since then, cotinine levels have decreased by 68 percent in children, 69 percent in adolescents, and 75 percent in adults. Over this same time period, the number of smoke-free air laws in U.S. jurisdictions has increased from 2 in 1988 to 221 in 2003. Previous data from the 1999–2002 NHANES has shown that adults residing in U.S. counties with a smoke-free air law had up to a 90 percent reduction in the odds of having a detectable cotinine level compared to adults residing in areas without a smoke-free air law. This study examines whether a similar association exists among children and adolescents. The association between smoke-free air laws and asthma prevalence and severity is also examined.

Secondary data analysis will be conducted among non-smoking youths aged 3–19 using the 1999–2006 NHANES. The primary exposure will be smoke-free air law coverage, a variable created by classifying survey locations into three categories based on the amount of coverage by a smoke-free air law (extensive, limited, and no coverage). Two primary outcomes will be considered, exposure to secondhand smoke (as measured by serum cotinine) and asthma, including asthma severity. A logistic regression model is used to examine the likelihood of each outcome. In addition, a linear regression model is used to examine the change in cotinine level for each smoke-free air law category.

EMPLOYMENT STATUS AND FOOD STAMP PROGRAM PARTICIPATION AS DETERMINANTS OF EATING PATTERNS AMONG LOW INCOME HOUSEHOLDS (NCHS)

Partha Deb—Hunter College and Graduate Center, CUNY
Geetha Waehrer—Pacific Institute for Research and Evaluation

Time spent on food preparation is a powerful correlate of the quality of the food consumed. Yet little is known about how employment and its resulting time constraints alter household food production and consumption patterns of low income individuals, nor how food stamp participation interacts with employment to alter these patterns. This study examines whether food stamp participation alters working mothers' time inputs into food-related activities and ultimately, alters their eating patterns using time use data from the 2003–2006 American Time Use Survey and data on types and sources of food consumed using the 1999–2004 National Health and Nutrition Examination Survey. The analytical approach, a treatment effects models for nonlinear outcomes and multinomial treatments, will account for the endogeneity of program participation and employment status. The analysis estimates the extent to which participation in the food stamp program moderates the effect of maternal employment on the time intensity of food consumption and whether food stamp participation reduces the time-driven shift towards calories from prepared foods.

THE EFFECTS OF EDUCATIONAL QUALITY ON HEALTH IN LATER LIFE (NCHS)

Ezra Golberstein—Harvard Medical School

Considerable literature suggests that education policies may be among the most effective and feasible ways to improve population health and reduce health disparities. Although there is an extensive body of research on the relationship between educational attainment and health, very little is known about the effect of educational quality on health. This gap in the literature is especially salient because many of the policy options that are proposed to promote human capital accumulation actually target educational quality rather than educational quantity.

The primary goal of this project is to examine the impact of educational quality on health status later in life. The research will examine the impact of educational quality on later-life health outcomes, including mortality, health status, health behaviors, and disability, for Southern-born Blacks; and examine the impact of the convergence in Black and White school quality on health disparities in mortality, health status, health behaviors, and disability. The project analyzes the dramatic improvements in school quality in the southern United States between 1915 and 1966. During this time period, school quality improved in both White and Black schools and there was a significant convergence in school quality between White and Black schools. Regression models will be used to identify the impact of educational quality on adult health outcomes through changes within states over time in average school quality. The research will identify the impact of the convergence in Black and White school quality on health disparities from changes over time in the state-specific and cohort-specific difference in quality between Black and White schools.

The project uses data from the 1986–2000 National Health Interview Surveys (NHIS). These data have the significant advantage of having a restricted data link to state-of-birth and mortality information. Researchers will merge school quality measures with the NHIS data using year-of-birth and state-of-birth variables, and then estimate our regression models using an extensive set of health outcomes (including mortality) as dependent variables.

COUNTY-LEVEL VARIATION IN THE BLACK-WHITE DISPARITY IN HYPERTENSION PREVALENCE (NCHS)

Kiarri Kershaw—University of Michigan

African Americans have a higher prevalence of hypertension than any other race/ethnic group in the United States. In many studies, this association persists after adjustment for socioeconomic factors, leading some to conclude that Blacks are genetically predisposed to the disease. However, international studies have shown that the burden of hypertension varies widely among those of European and African descent. There is also evidence that the magnitude of the Black-White disparity varies across countries. The goal of this study is to characterize geographic variations in hypertension disparities within the United States. More specifically, the research intends to determine whether or not Black-White disparities in hypertension prevalence vary by county and if this variation is due to differences in racial residential segregation. The working hypothesis is that racial residential segregation will be associated with larger disparities in hypertension prevalence by concentrating neighborhood deprivation in predominantly Black neighborhoods. If residential segregation is associated with increased disparities in hypertension, then policies and interventions at the county level to promote the integration of neighborhoods, and the more equitable distribution of resources and services to low income neighborhoods, could potentially reduce hypertension disparities.

SYNTHETIC DATA GENERATION FOR SMALL AREA ESTIMATION (NCHS)

Joseph W. Sakshaug—University of Michigan
Trivellore E. Raghunathan—University of Michigan

Sample surveys are a crucial source of information about the state of public health and people's quality of life. Moreover, they provide an efficient way to identify and monitor illness and disability trends and track progress toward achieving the Center for Disease Control's (CDC) Health Protection Goals. Increasingly, this information is being demanded in the form of small area statistics to monitor health trends and support policy decisions in small geographic areas, including those that are typically underrepresented in large-scale data collection projects. However, the CDC is often prevented from releasing small area identifiers in public-use datasets because the data do not satisfy certain disclosure restrictions.

This research tests and evaluates a new method for generating public-use micro-level datasets that contain enough geographical detail to permit small area estimation without compromising the confidentiality of survey respondents. The method uses the observed survey data to fit a statistical imputation model that generates synthetic data records, which comprise the public-use data records. The synthetic data are generated to emulate the observed data and preserve important statistical properties of the observed data. Moreover, the synthetic data can account for the hierarchical clustering structure associated with multiple levels of geography; thus, permitting data users to perform various geographical analyses with a single dataset. Confidentiality protection is greatly enhanced because no actual data values are released to the public.

The proposed methodology is tested and evaluated using confidential data from the National Health Interview Survey. Synthetic versions of this data source will be generated for key variables relevant to national health objectives. Various parametric and non-parametric imputation models capable of handling different variable types will be investigated.

DOES THE PROFITABILITY OF AN OUTPATIENT SURGERY INFLUENCE WHERE IT IS PERFORMED? A LOOK AT AMBULATORY SURGERY CENTERS AND HOSPITALS (NCHS)

Charles Courtemanche—University of North Carolina at Greensboro
Michael Plotzke—Abt Associates, Inc.

Ambulatory Surgery Centers (ASCs) are small, typically physician owned healthcare facilities that specialize in performing outpatient surgeries and therefore compete against hospitals for patients. Physicians who own ASCs could potentially treat their most profitable patients at their ASCs and less profitable patients at hospitals, reducing hospitals' profit. This project investigates if the profitability of an outpatient surgery impacts where a physician performs the surgery. Data from the National Survey of Ambulatory Surgery show that higher profit surgeries do have a higher probability of receiving treatment at an ASC compared to a hospital. After controlling for the type of surgery performed, a 10 percent increase in a surgery's profitability is associated with a 1- to 2-percentage point increase in the probability the surgery is performed at an ASC. This project extends previous work in order to control for unobservable confounders at a more narrowly defined geographic level than region.

Appendix 4.
CENTER FOR ECONOMIC STUDIES (CES) DISCUSSION PAPERS: 2009

CES Discussion Papers are available at <www.ces.census.gov>.

09-44　"Employee Capitalism or Corporate Socialism? Broad-Based Employee Stock Ownership," by E. Han Kim and Paige Ouimet, 12/09.

09-43　"The Impact of Plant-Level Resource Reallocations and Technical Progress on U.S. Macroeconomic Growth," by Amil Petrin, T. Kirk White, and Jerome P. Reiter, 12/09.

09-42　"IT for Information-Based Partnerships: Empirical Analysis of Environmental Contingencies to Value Co-Creation," by Terence J. Saldanha, Nigel P. Melville, Ronald Ramirez, and Vernon J. Richardson, 12/09.

09-41　"A Concordance Between Ten-Digit U.S. Harmonized System Codes and SIC/NAICS Product Classes and Industries," by Justin R. Pierce and Peter K. Schott, 11/09.

09-40　"A Formal Test of Assortative Matching in the Labor Market," by John M. Abowd, Francis Kramarz, Sébastien Pérez-Duarte, and Ian M. Schmutte, 11/09.

09-39　"Information Technology, Capabilities and Asset Ownership: Evidence from Taxicab Fleets," by Evan Rawley and Tim Simcoe, 11/09.

09-38　"Plant-Level Responses to Antidumping Duties: Evidence from U.S. Manufacturers," by Justin R. Pierce, 10/09.

09-37　"The Effect of Wage Insurance on Labor Supply: A Test for Income Effects," by Henry Hyatt, 10/09.

09-36　"Clusters of Entrepreneurship," by Edward L. Glaeser, William R. Kerr, and Giacomo A.M. Ponzetto, 10/09.

09-35　"The Center for Economic Studies 1982–2007: A Brief History," by B.K. Atrostic, 10/09.

09-34　"Mom-and-Pop Meet Big-Box: Complements or Substitutes?," by John Haltiwanger, Ron Jarmin, and C.J. Krizan, 9/09.

09-33　"Resolving the Tension Between Access and Confidentiality: Past Experience and Future Plans at the U.S. Census Bureau," by Lucia Foster, Ron Jarmin, and Lynn Riggs, 9/09.

09-32　"Who Leaves, Where to, and Why Worry? Employee Mobility, Employee Entrepreneurship, and Effects on Source Firm Performance," by Benjamin A. Campbell, Martin Ganco, April M. Franco, and Rajshree Agarwal, 9/09.

09-31　"Why Do Firms Own Production Chains?," by Ali Hortaçsu and Chad Syverson, 9/09.

09-30　"Entrepreneurship and Japanese Industrialization in Historical Perspective," by John P. Tang, 9/09.

09-29　"U.S. Trade in Toxics: The Case of Chlorodifluoromethane (HCFC-22)," by Randy A. Becker and John P. Tang, 9/09.

09-28　"Discretionary Disclosure in Financial Reporting: An Examination Comparing Internal Firm Data to Externally Reported Segment Data," by Daniel A. Bens, Philip G. Berger, and Steven J. Monahan, 9/09.

09-27　"Health Insurance and Productivity: Evidence from the Manufacturing Sector," by Sang V. Nguyen and Alice M. Zawacki, 9/09.

09-26　"Recent Trends in Top Income Shares in the USA: Reconciling Estimates from March CPS and IRS Tax Return Data," by Richard V. Burkhauser, Shuaizhang Feng, and Jeff Larrimore, 9/09.

09-25　"On Spatial Heterogeneity in Environmental Compliance Costs," by Randy A. Becker, 9/09.

09-24　"Earnings Inequality and Coordination Costs: Evidence from U.S. Law Firms," by Luis Garicano and Thomas N. Hubbard, 9/09.

09-23 "Entry, Exit, and the Determinants of Market Structure," by Timothy Dunne, Shawn D. Klimek, Mark J. Roberts, and Daniel Yi Xu, 9/09.

09-22 "Testing for Factor Price Equality in the Presence of Unobserved Factor Quality Differences," by Andrew B. Bernard, Stephen J. Redding, and Peter K. Schott, 8/09.

09-21 "Multi-Product Firms and Trade Liberalization," by Andrew B. Bernard, Stephen J. Redding, and Peter K. Schott, 8/09.

09-20 "Understanding Earnings Instability: How Important are Employment Fluctuations and Job Changes?," by Sule Celik, Chinhui Juhn, Kristin McCue, and Jesse Thompson, 8/09.

09-19 "Did Vietnam Veterans Get Sicker in the 1990s? The Complicated Effects of Military Service on Self-Reported Health," by Joshua D. Angrist, Stacey H. Chen, and Brigham R. Frandsen, 8/09.

09-18 "The Margins of U.S. Trade (Long Version)," by Andrew B. Bernard, J. Bradford Jensen, Stephen J. Redding, and Peter K. Schott, 8/09.

09-17 "Long Term Effects of Military Service on the Distribution of Earnings," by Brigham R. Frandsen, 8/09.

09-16 "Concentration Levels in the U.S. Advertising and Marketing Services Industry: Myth vs. Reality," by Alvin J. Silk and Charles King III, 8/09.

09-15 "Economic Factors Underlying the Unbundling of Advertising Agency Services," by Mohammad Arzaghi, Ernst R. Berndt, James C. Davis and Alvin J. Silk, 8/09.

09-14 "Estimating the 'True' Cost of Job Loss: Evidence Using Matched Data from California 1991-2000," by Till M. von Wachter, Elizabeth Weber Handwerker, and Andrew K.G. Hildreth, 6/09.

09-13 "Firms' Exporting Behavior under Quality Constraints," by Juan Carlos Hallak and Jagadeesh Sivadasan, 5/09.

09-12 "The Micro-Dynamics of Skill Mix Changes in a Dual Labor Market: The Spanish Manufacturing Experience," by Adela Luque and C.J. Krizan, 5/09.

09-11 "Concording U.S. Harmonized System Categories Over Time," by Justin R. Pierce and Peter K. Schott, 5/09.

09-10 "Complex Survey Questions and the Impact of Enumeration Procedures: Census/American Community Survey Disability Questions," by Andrew J. Houtenville, William A. Erickson, and Melissa J. Bjelland, 4/09.

09-09 "Exploring Differences in Employment Between Household and Establishment Data," by Katharine G. Abraham, John Haltiwanger, Kristin Sandusky, and James Spletzer, 4/09.

09-08 "Employer Health Benefit Costs and Demand for Part-Time Labor," by Jennifer Feenstra Schultz and David Doorn, 4/09.

09-07 "Credit Market Competition and the Nature of Firms," by Nicola Cetorelli, 4/09.

09-06 "Trends in Regional Industrial Concentration in the United States," by Joshua Drucker, 4/09.

09-05 "Measuring Inequality Using Censored Data: A Multiple Imputation Approach," by Stephen P. Jenkins, Richard V. Burkhauser, Shuaizhang Feng, and Jeff Larrimore, 4/09.

09-04 "Misallocation and Manufacturing TFP in China and India," by Chang-Tai Hsieh and Peter J. Klenow, 2/09.

09-03 "Spatial Influences on the Employment of U.S. Hispanics: Spatial Mismatch, Discrimination, or Immigrant Networks?," by Judith K. Hellerstein, Melissa McInerney, and David Neumark, 1/09.

09-02 "Bank Crises and Investor Confidence," by Una Okonkwo Osili and Anna Paulson, 1/09.

09-01 "Neighbors and Co-workers: The Importance of Residential Labor Market Networks," by Judith K. Hellerstein, Melissa McInerney, and David Neumark, 1/09.

Appendix 5.
NEW DATA AVAILABLE THROUGH RESEARCH DATA CENTERS (RDCs) IN 2009[1]

Table A-5.1.
BUSINESS DATA

Data product	Description	New or updated years
Annual Retail Trade Survey	The Annual Retail Trade Survey (ARTS) provides detailed industry measures of retail company activities. The ARTS started in 1999 and covers retail companies with one or more establishments that sell merchandise and associated services to final customers. Companies provide data on dollar value of retail sales, sales taxes collected, inventories, method-of-inventory valuation, cost of purchases, and account receivables balances.	1996–2006
Current Industrial Report	The Current Industrial Report (CIR) program provides monthly, quarterly, and annual measures of industrial activity. The primary objective of the CIR program is to produce timely, accurate data on production and shipments of selected products. Data on inventories, orders, and consumption are also collected in a number of surveys.	1992–2008
Compustat Business Register Bridge File	The Compustat Business Register Bridge File links the March 2005 Compustat file to the Standard Statistical Establishment List, or Business Register at the firm level.	1976–2005
Foreign Trade Transaction Import Data	Foreign Trade Transaction Import Data contain information on U.S. imports of merchandise compiled primarily from automated data submitted through the U.S. Customs' Automated Commercial System. The data are also compiled from import entry summary forms, warehouse withdrawal forms, and Foreign Trade Zone documents required by law to be filed with the U.S. Customs and Border Protection. Data on imports of electricity and natural gas from Canada are obtained from Canadian sources.	2006–2007
Foreign Trade Transaction Export Data	Foreign Trade Transaction Export Data contain information on U.S. exports of merchandise from the United States to all countries, except Canada. The data are compiled from copies of Shipper's Export Declarations (SEDs) from qualified exporters, forwarders, and carriers. Each SED represents a shipment of one or more kinds of merchandise from one exporter to one foreign importer on a single carrier.	2006–2007
Foreign Trade Exporter Database	The Exporter Database is a set of files used to create the Profile of U.S. Exporting Companies. The files are created by matching yearly export transaction records to the company information from the Business Register.	2006–2007

---

[1] These tables do not include data products released after October 29, 2009, and do not include custom extract data made available to approved projects from the Census Bureau, National Center for Health Statistics, and Agency of Healthcare Research and Quality.

Data product	Description	New or updated years
Form 5500 Bridge File	The Form 5500 Bridge File links employee benefit plan records from Form 5500 filings for plans ending in years 1992–2006, to the 1992–2006 Business Register at the firm level. The bridge can be used to link user-provided public use Form 5500 plan records to census business data.	1992–2006
Integrated Longitudinal Business Database	The Integrated Longitudinal Business Database (ILBD) is a research dataset covering the roughly 20 million nonemployer businesses in the U.S. economy. The ILBD is constructed at the Center for Economic Studies. Currently, the ILBD contains the universe of all U.S. business establishments without paid employees with linkages that allow a full integration with employer businesses covered by the Longitudinal Business Database (LBD) and economic censuses. The ILBD can be used to investigate nonemployer business entry and exit, gross revenue flows, and transitions between nonemployer and employer status over time (when used in conjunction with the LBD).	1977, 1982, 1987, 1992, 1994–2005
Medical Expenditure Panel Survey—Insurance Component	The Medical Expenditure Panel Survey—Insurance Component collects data on health insurance plans obtained through employers. Data collected include the number and type of insurance plans offered, benefits associated with these plans, premiums, contributions by employers and employees, eligibility requirements, and employer characteristics.	2000, 2003, 2004, 2006, 2008
Standard Statistical Establishment Listing	Standard Statistical Establishment Listing files maintained at CES are created from the old Standard Statistical Establishment List (prior to 2002) and the new Business Register (2002 and forward).	2007

Table A-5.2.
HOUSEHOLD DATA[2]

Data product	Description	New or updated years
American Community Survey	The American Community Survey (ACS) is a nationwide survey designed to provide communities a constantly refreshed look at how they are changing. It will eliminate the need for the long form in the 2010 Census. The ACS collects information from U.S. households similar to what was collected on the Census 2000 long form, such as income, commute time to work, home value, veteran status, and other important data.	2007
American Housing Survey	The American Housing Survey collects data on the nation's housing, including apartments, single-family homes, mobile homes, vacant housing units, household characteristics, income, housing and neighborhood quality, housing costs, equipment and fuels, size of housing unit, and recent movers. National data are collected in odd numbered years, and data for each of 47 selected metropolitan areas are collected about every 4 years, with an average of 12 metropolitan areas included each year.	1995
Current Population Survey—March Supplement	The Current Population Survey—March Supplement collects data concerning work experience, several sources of income, migration, household composition, health insurance coverage, and receipt of noncash benefits.	2006–2008
Survey of Income and Program Participation	The Survey of Income and Program Participation collects information on source and amount of income, labor force information, program participation and eligibility data, and general demographic characteristics to measure the effectiveness of existing federal, state, and local programs; to estimate future costs and coverage for government programs, such as food stamps; and to provide improved statistics on the distribution of income in the country.	2004

[3] These demographic or decennial files maintained at CES and for the RDCs are the internal versions, and they provide researchers with variables and detailed information that are not available in the corresponding public-use files.

Table A-5.3.
LONGITUDINAL EMPLOYER-HOUSEHOLD DYNAMICS (LEHD) DATA[3]

Data product	Description	New or updated years
Business Register Bridge Extension	The Business Register Bridge Extension is an extension of the existing Business Register Bridge (BRB) link file between LEHD employer microdata and Business Register (BR) firm and establishment microdata. Since the concepts of "firm" and "establishment" differ between the LEHD employer microdata and the BR, the BRB provides a crosswalk at various levels of business-unit aggregation. The most detailed crosswalk is at the level of Employer Identification Number (EIN)–State–four-digit Standard Industry Classification (SIC) industry–county. The bridge includes the full list of establishments in the LEHD data and in the BR that are associated with the business units (e.g., EIN-four-digit SIC-State-County) in the crosswalk and measures of activity (e.g., employment, sales).The extension allows integration of census business data with LEHD data on employers and their employees for years after 2001. The extension differs somewhat from the original because of the transition from SIC to NAICS industry coding and because the Census Bureau's Business Register underwent a redesign in 2002. The Longitudinal Business Database (LBD) was used as the base list of census business units to make it straightforward to incorporate the longitudinal links, additional industry information, and identification of active establishments that are embodied in the LBD. The extension spans 1997–2004.	1997–2004

---

[2] Detailed information on how the LEHD files were constructed, documentation of variables, and some computer programs can be found in the technical documentation at <http://lehd.did.census.gov>.

Appendix 6.
RESEARCH DATA CENTER (RDC) PARTNERS

Boston Census Bureau RDC
Wayne Gray, Executive Director

National Bureau of Economic Research

California Census Bureau RDC (Berkeley)
Jon Stiles, Executive Director

University of California, Berkeley

California Census Bureau RDC (UCLA)
David Rigby, Executive Director

University of California, Los Angeles

Census Bureau Headquarters RDC (CES)
Lucia Foster, Assistant Division Chief for Research, Center for Economic Studies

Agency for Healthcare Research and Quality
Bureau of Economic Analysis
Federal Reserve Board of Governors
National Center for Health Statistics

Chicago Census Bureau RDC
Bhash Mazumder, Executive Director

Federal Reserve Bank of Chicago
Northwestern University
University of Chicago
University of Illinois
University of Notre Dame

Michigan Census Bureau RDC
Margaret Levenstein, Executive Director

University of Michigan
Michigan State University

New York Census Bureau RDC (Baruch, Cornell)
Diane Gibson, Baruch Executive Director
William Block, Cornell Research Director
Sanders Korenman, Research Director
John Abowd, Senior Advisor
Baruch College
City University of New York
Columbia University
Cornell University (RDC administered by CISER, William Block; Director)
Federal Reserve Bank of New York
Fordham University
National Bureau of Economic Research
New York University
Princeton University
Russell Sage Foundation
Rutgers University
Stony Brook University, State University of New York
University at Albany, State University of New York
Yale University

Triangle Census Bureau RDC
Gale Boyd, Executive Director

Appalachian State University
Duke University
East Carolina University
Elizabeth City State University
Fayetteville State University
North Carolina Agricultural & Technical State University
North Carolina Central University
North Carolina State University
University of North Carolina at Asheville
University of North Carolina at Chapel Hill
University of North Carolina at Charlotte
University of North Carolina at Greensboro
University of North Carolina at Pembroke
University of North Carolina Wilmington
University of North Carolina School of the Arts
Western Carolina University
Winston-Salem State University

Appendix 7.
LONGITUDINAL EMPLOYER-HOUSEHOLD DYNAMICS (LEHD) PARTNERS

LOCAL EMPLOYMENT DYNAMICS (LED) STEERING COMMITTEE

New England (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont)
John Dorrer, Director
Center for Workforce Research and Information
Maine Department of Labor

New York/New Jersey
Leonard Preston
Labor Market Information
New Jersey Department of Labor and Workforce Development

Mid-Atlantic (District of Columbia, Delaware, Maryland, Pennsylvania, Virginia, West Virginia)
Tim Kestner
Economic Information Services
Virginia Employment Commission

Midwest (Illinois, Indiana, Iowa, Michigan, Minnesota, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin)
Rick Waclawek
Labor Market Information and Strategic Initiatives
Department of Labor and Economic Growth

Mountain-Plains (Colorado, Kansas, Missouri, Montana, Utah, Wyoming)
Alexandra E. Hall
Colorado Department of Labor and Employment

Southeast (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee)
Robert Brown, Jr., Director
Labor Market Information
South Carolina Employment Security Commission

Southwest (Arkansas, Louisiana, New Mexico, Oklahoma, Texas)
Richard Froeschle

Labor Market and Career Information
Texas Workforce Commission

Western Region (Alaska, Arizona, California, Hawaii, Idaho, Nevada, Oregon, Washington)
Greg Weeks, Ph.D., Director (Cochair LED Steering Committee)
Labor Market and Economic Analysis
Washington Employment Security Department

FEDERAL PARTNERS

U.S. Department of Labor, Employment and Training Administration

U.S. Department of Health and Human Services, National Institute on Aging

STATE PARTNERS

State partner information as of October 2009.

Alabama
Jim Henry, Chief
Labor Market Information
Alabama Department of Industrial Relations

Alaska
Brynn Keith, Chief
Research and Analysis Section
Alaska Department of Labor and Workforce Development

Arizona
Lisa Danka, Assistant Deputy Director
Strategic Investment and Research
Arizona Department of Commerce

Arkansas
Mike Kennedy, Division Chief
Labor Market Information
Arkansas Department of Workforce Service

California
Steve Saxton, Chief
Labor Market Information Division
California Employment Development Department

Colorado
Alexandra Hall, Labor Market Information Director
Labor Market Information
Colorado Department of Labor and Employment

Connecticut
Roger Therrien, Director of Research
Connecticut Department of Labor

Delaware
George Sharpley, Labor Market Economist
Delaware Department of Labor

District of Columbia
John Kangethe, Ph.D., Acting Director
Office of Labor Market Research and Information
District of Columbia Department of
  Employment Services

Florida
Rebecca Rust, Director
Labor Market Statistics Center
Florida Agency for Workforce Innovation

Georgia
Rosa Hayes, Director
Workforce Information and Analysis
Georgia Department of Labor

Guam
Gary Hiles, Chief Economist
Bureau of Labor Statistics
Guam Department of Labor

Hawaii
Naomi Harada, Chief
Research and Statistics Office
Hawaii Department of Labor and
  Industrial Relations

Idaho
Bob Uhlenkott, Bureau Chief
Research and Analysis
Idaho Department of Labor

Illinois
Evelina Tainer Loescher, Ph.D., Division Manager
Economic Information and Analysis
Illinois Department of Employment Security

Indiana
Hope Clark, Ph.D., Director
Research and Analysis
Indiana Department of Workforce Development

Iowa
Jude Igbokwe, Ph.D., Division Administrator/Labor
  Market Information Director
Labor Market and Workforce Information Division
Iowa Department of Workforce Development

Kansas
Inayat Noormohmad, Director
Labor Market Information Services
Kansas Department of Labor

Kentucky
Lelia K. Todd, Manager
Research and Statistics Branch
Kentucky Office of Employment and Training

Louisiana
Michael "Dino" DeMarte, Director
Research and Statistics Division
Louisiana Workforce Commission

Maine
John Dorrer, Director
Center for Workforce Research and Information
Maine Department of Labor

Maryland
Carolyn J. Mitchell, Director
Office of Workforce Information and Performance
Maryland Department of Labor, Licensing
  and Regulation

Massachusetts
Rena Kottcamp, Director
Economic Research
Massachusetts Division of Unemployment
  Assistance

Michigan
Richard Waclawek, Director
Office of Labor Market Information and
  Strategic Initiatives
Michigan Department of Labor and
  Economic Growth

Minnesota
Steve Hine, Ph.D., Research Director
Minnesota Department of Employment and
  Economic Development

Mississippi
Mary Willoughby, Bureau Director
Mississippi Department of Employment Security

Missouri
William C. Niblack, Labor Market Information
  Manager
Missouri Economic Research and
  Information Center
Missouri Department of Economic Development

Montana
Todd Younkin, Chief
Research and Analysis Bureau
Montana Department of Labor and Industry

Nebraska
Phil Baker, Administrator
Nebraska Workforce Development—
  Labor Market Information

Nevada
Bill Anderson, Chief Economist
Research and Analysis Bureau
Nevada Department of Employment, Training,
  and Rehabilitation

New Hampshire
Rick Ricker, Director
Economic and Labor Market Information Bureau
New Hampshire Department of Employment
  Security

New Jersey
Yustina Saleh, Director
Labor Market and Demographic Research
New Jersey Department of Labor and
  Workforce Development

New Mexico
Herb Greenwall, Labor Market Information Contact
Economic Research and Analysis Bureau
New Mexico Department of Workforce Solutions

New York
Peter Neenan, Ph.D., Director
Research and Statistics Division
New York State Department of Labor

North Carolina
Elizabeth (Betty) McGrath, Ph.D., Director
Labor Market Information Division
Employment Security Commission of
  North Carolina

North Dakota
Duane Broschat, Manager
Labor Market Information Center
Job Service North Dakota

Ohio
Keith Ewald, Ph.D., Bureau Chief
Labor Market Information Bureau
Department of Job and Family Services

Oklahoma
Lynn Gray, Director
Economic Research and Analysis
Oklahoma Employment Security Commission

Oregon
Graham Slater, Administrator for Research
Oregon Department of Employment

Pennsylvania
Sue Mukherjee, Director
Center for Workforce Information and Analysis
Pennsylvania Department of Labor and Industry

Puerto Rico
Elda Ivelisse Pares, Director
Labor Market Information/
  Bureau of Labor Statistics
Puerto Rico Department of Labor and
  Human Resources

Rhode Island
Robert Langlais, Assistant Director
Labor Market Information
Rhode Island Department of Labor and Training

South Carolina
Robert O. Brown, Jr., Director
Labor Market Information
South Carolina Employment Security Commission
Rebecca Gunnlaugsson, Director
Division of Research
South Carolina Department of Commerce

South Dakota
Bernie Moran, Director
Labor Market Information Center
South Dakota Department of Labor

Tennessee
Joe Cummings, Director
Research and Statistics Division
Tennessee Department of Labor and
  Workforce Development

Texas
Mark Hughes, Director
Labor Market Information
Texas Workforce Commission

U.S. Virgin Islands
Gary Halyard, Director of Survey and Systems
Bureau of Labor Statistics
U.S. Virgin Islands Department of Labor

Utah
Stacey Joos, Director
Workforce Information
Utah Department of Workforce Services

Vermont
Andrew Condon, Chief
Economic and Labor Market Information
Vermont Department of Employment and Training

Virginia
Donald P. Lillywhite, Director
Economic Information Services
Virginia Employment Commission

Washington
Greg Weeks, Ph.D., Director
Labor Market and Economic Analysis
Washington Employment Security Department

West Virginia
Ben Parker, Director
Research, Information and Analysis Division
Workforce West Virginia

Wisconsin
Gary Denis, Labor Market Information Director
Division of Employment and Training
Department of Workforce Development

Wyoming
Tom Gallagher, Manager
Research and Planning
Wyoming Department of Employment

Appendix 8.
CENTER FOR ECONOMIC STUDIES (CES) STAFF LISTING: 2009

CES Staff as of December 2009 in **bold.**

* Indicates contractor.

Name	Position

CES Senior Staff

Jarmin, Ron	Chief Economist and Chief, CES
Atrostic, B.K.	Senior Economist and Special Assistant to the Division Chief
Foster, Lucia	Assistant Division Chief for Research
Holly, Brian	Project Review Coordinator
Kydd, Walter	Chief, LEHD Production and Development
Mildorf, Mark	Assistant Division Chief for Research Support
Riggs, T. Lynn	Lead RDC Administrator
Walker, George (Chip)	Communications and Marketing Consultant
Weng, Shigui	Chief, Data Staff
Wu, Jeremy	Assistant Division Chief for LEHD

Senior Research Fellows

Abowd, John	Senior Research Fellow
Haltiwanger, John	Senior Research Fellow

CES Research Staff

Bailey, Paul	Graduate Research Assistant
Becker, Randy	Senior Economist
Brown, J. David	Economist
Crane, Leland	Graduate Research Assistant
Davis, Ronald	Research Assistant
Deason, Lauren	Graduate Research Assistant
Dinlersoz, Emin	Economist
Fort, Teresa	Graduate Research Assistant
Grim, Cheryl	Economist
Hanczaryk, Paul*	Senior Research Statistician
Handley, Kyle	Graduate Research Assistant
Herritz, Joshua	Research Assistant
Klimek, Shawn	Senior Economist
Krizan, C.J.	Senior Economist
McCue, Kristin	Economist
Miranda, Javier	Economist
Nguyen, Sang	Senior Economist
Pierce, Justin	Economist
Reznek, Arnold	Disclosure Officer
Tang, John	Economist
Zawacki, Alice	Senior Economist

Longitudinal Employer-Household Dynamics (LEHD) Program

Chesser, David*	Economist
Ciccarella, Steve	Graduate Research Assistant
Fan, Chuncui*	Research Assistant
Garcia-Perez, Monica*	Graduate Research Assistant
Goetz, Chris	Graduate Research Assistant
Hyatt, Henry	Economist
Isenberg, Emily	Economist
Kutzbach, Mark	Economist
McKinney, Kevin	Economist
Moody, Erin	Graduate Research Assistant
Radhakrishnan, Uma	Economist
Sandusky, Kristin	Economist
Sousa, Liliana*	Research Assistant
Strain, Michael	Graduate Research Assistant
Vilhuber, Lars	Economist
Wang, Jack	Economist
Zhao, Chen	Graduate Research Assistant

Research Support Staff

Chancellor, Jason	Data Staff, Survey Statistician
Gardner, Todd	Data Staff, Survey Statistician
Goodloe, Mike	Data Staff, Survey Statistician
Ryan, David	Data Staff, IT Specialist (Data Management)
Singal, Anurag	Data Staff, IT Specialist (Data Management)
Tsai, Ya-Jiun	Data Staff, IT Specialist (Data Management)
Yates, Michele	Data Staff, Survey Statistician
Yates, William	Special Assistant to the Assistant Division Chief for Research Support

LEHD Quality Assurance Staff

Graham, Matthew	Geographer
Haywood, Heath	Geographer
Pitts, Robert*	GIS Analyst Project Manager
Tibbets, Stephen*	Economist
Van Rossum, Peter*	Geographer

LEHD Production and Development Staff

Li, Tao*	SAS Programmer
Ma, Cindy*	SAS Programmer
Mulato, Geronimo (Bong)*	System Engineer
Norwood, Camille*	SAS Programmer
Ramanathan, Nanda*	SAS Programmer
Sellars, Ryan*	Web Developer
Wang, Jun*	SAS Programmer
Zheng, Chaoling*	Webmaster

Research Data Center (RDC) Administrators

Andrus, Angela	Berkeley
Carter, J. Clint	Ann Arbor (Michigan)
Davis, James	Boston
Grider, Bert	Research Triangle (North Carolina)
Hyson, Rosemary	New York (Baruch)
Limehouse, Frank	Chicago
McKinney, Kevin	Los Angeles (UCLA)
Riggs, T. Lynn	Lead/Washington, DC (CES Headquarters)
Schmutte, Ian	New York (Ithaca)
Sousa, Liliana	New York (Branch), Acting

Administrative Staff

Anderson, Dawn	Division Chief Secretary
Becker, Patti*	Consultant
Brown, Holly	Secretary to the Assistant Division Chief for LEHD
Burchinal, Jen	Secretary
Coates, Joshua	Student Intern
Cross, Henry	Student Intern
Perez, Claudia	Secretary for LEHD Production and Development Staff
Rasmussen, Tyler	Student Intern
Schatzer, Ann	Secretary to the Project Review Coordinator
Titus, Annetta	Assistant to ADC for Research Support (detailed from Manufacturing and Construction Division)
Turner, Rebecca	Secretary to the Assistant Division Chief for Research
Wright, Deborah	Secretary to the Assistant Division Chief for Research Support

Economic Directorate Administrative Office

Conley, Anita	Administrative Assistant
DeGroat, Bonnie	Reimbursable Team
Farri, Vicki	Reimbursable Team Lead
Kiatta, Cheryl	Administrative Officer
Oliver, Deborah	Lead Financial Assistant
Scott, Thea	Administrative Officer, ADEP

Computer Services Division

Lessard, James	Customer Relationship Manager, Headquarters and RDCs
Stolba, Darrin	Customer Relationship Manager, LEHD

Census Bureau Staff Supporting Data Recovery Project

Ballenger, Mildred   IT Specialist
Christensen, Connie   IT Specialist
Jarvis, Stephen   IT Specialist
McBride, Zelda   Supervisory IT Specialist
Paterno, Keith   Supervisory IT Specialist
Pees, Marie   Senior Systems Analyst
Penrod, Robert   IT Specialist
Peters, Susan   IT Specialist
Taylor, Rose*   Systems Analyst
Vacca, Daniel   Supervisory IT Specialist