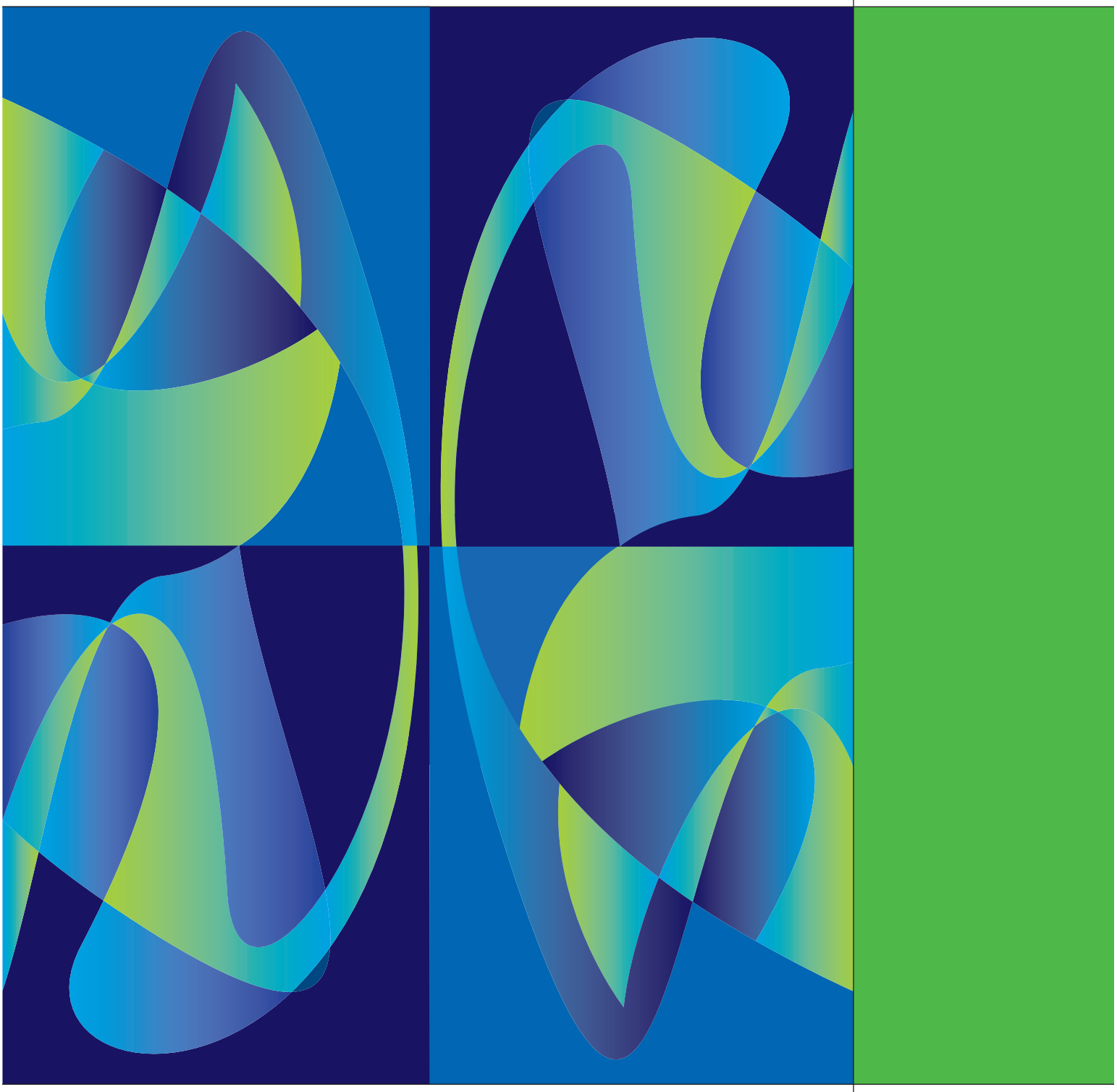
Research at the Center for Economic Studies and the Research Data Centers: 2005

Issued May 2006



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RESEARCH AT THE CENTER FOR ECONOMIC STUDIES AND THE RESEARCH DATA CENTERS: 2005

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A MESSAGE FROM DANIEL WEINBERG, PH.D.
Chief of the Center for Economic Studies and Chief Economist

This report is dedicated to the memory of Robert H. McGuckin III, one of my predecessors as Director of the Center for Economic Studies (CES). Please see the tribute following my message.

Hurricane Katrina devastated lives, homes, and businesses in large parts of the Gulf Coast. The disaster highlighted the value of having a robust microdata analysis capability for business data. Ron Jarmin and Javier Miranda were able, *in a matter of days*, to produce valuable maps of affected business establishments for relatively small geographic areas by overlaying information from the U.S. Census Bureau's Business Register on the Federal Emergency Management Agency's disaster maps. You can find the results on the Census Bureau's hurricane page <www.census.gov /Press-Release/www/2005 /katrina.htm>. Unfortunately, it also highlighted a shortcoming of that Register—not all establishments were geocoded to the block. Work is under way to remedy that shortcoming.

Collaboration with researchers using the Research Data Center (RDC) network has proven invaluable in making improvements to Census Bureau programs. For example, researchers interested in environmental data are collaborating with Census Bureau staff to make major improvements to the next Pollution Abatement Costs and Expenditures (PACE) Survey, a survey carried out by the Census Bureau for the Environmental Protection Agency, and in the survey's edit and imputation procedures. The researcher group has been assembled from past PACE RDC users and will significantly improve the data from the next survey.

Unfortunately, we believe that the RDC network is underutilized. In 2005, only 19 new projects began. The RDC network expanded to nine sites with the opening of the New York City RDC in March 2006. With the huge number of universities and associated social science faculty in the New York metropolitan area, we hope to see an upsurge in proposals in the near future. Yet the RDC system has capacity for many more good research studies that could yield benefits to the Census Bureau *and* produce state-of-the-art, groundbreaking, publishable, high quality, academic research. So why does capacity outstrip demand?

Slow proposal review and strict interpretations of the criteria used to evaluate proposals are considered major obstacles by the research community and have reduced the number of research proposals submitted. The Census Bureau is working with its RDC partners to meet some of those concerns. CES has already improved the information available about the review process. Our new Management Information System lets researchers go online and track where their research proposal is in the review process. But complex proposals (such as those requiring linked household datasets) are still likely to have long review times.

The key to accelerating the review cycle is to strengthen proposals by ensuring they are well written and address each of the five required standards (provide a benefit to the Census Bureau, be of scientific merit, be feasible, require nonpublic data, and meet all confidentiality protection and disclosure avoidance requirements). CES will continue to provide examples of exemplary research proposals through its network of RDC administrators. Researchers can search this 2005 and the 2000–2004 reports for abstracts of approved projects, and CES will provide a separate searchable database of approved abstracts. CES created and will update a list of methodological research projects specified by Census Bureau staff that would benefit the Census Bureau. Because many proposals founder on the rock of a convincing statement of benefits to the Census Bureau, CES posted on its Web site the Data Stewardship Executive Policy Committee-approved document, *Writing Benefits Statements for Projects Accessing Confidential Data.* Researchers should also contact the relevant Census Bureau analysts in advance of proposal submission to learn what aspects of

their research would most benefit Census Bureau programs.

We also need to do a better job of capturing and disseminating the results of the research undertaken in the RDC system to the research community and the Census Bureau. This report is one means to do so. By focusing this year's report on recent research in just a few areas, we hope to convey both the breadth and depth of research possible and the success of the research program to date. We hope you find this approach useful. Another dissemination mechanism is our discussion paper series—2005 marked the year with the highest production to date (30 papers). Please see our Web site for the complete list: <www.ces.census.gov>. All research carried out at RDCs must be represented by a submission to our discussion paper series.

Please feel free to contact me with other suggestions on how to improve the RDC program; my email address is <Daniel.H.Weinberg@census.gov>.

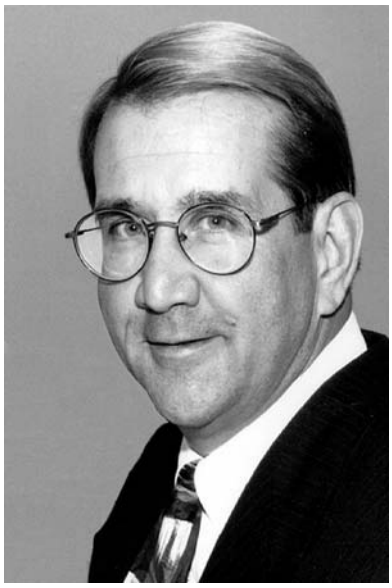
I would like to take this opportunity to mention that the Census Bureau, the Federal Reserve Bank of Chicago, and the Organization for Economic Cooperation and Development will be hosting the 2006 Comparative Analysis of Enterprise (Micro) Data (CAED) Conference in Chicago on September 18 and 19. The conference will highlight research done at CES, at the RDCs, and around the world. A description of the conference, along with the preliminary program, is available at <http://webserver01.ces.census.gov/index.php/CAED/1.00/conference_2006>. CES staff have played key roles in this year's conference. Ron Jarmin serves as chair of the CAED Executive Committee and is on the CAED 2006 Scientific Committee; Lynn Riggs has been instrumental in coordinating conference arrangements with the Chicago Fed. But as is usually the case with conferences, there is one key person whose countless hours of behind-the-scenes service make all the difference. For CAED 2006, that person is Shawn Klimek.

I would like to thank all who contributed to this report, particularly B.K. Atrostic and Cheryl Grim, who led the effort and wrote or edited much of it, and Ron Jarmin, C.J. Krizan, Jim Davis, Al Nucci, T. Lynn Riggs, Tennille Foster, and Ann Schatzer. I would also like to thank our RDC partners and administrators for their contributions.

April 26, 2006

IN MEMORIAM: ROBERT H. MCGUCKIN III

Director of the Center for Economic Studies, 1986–1996



1942–2006

Robert H. (Bob) McGuckin III was Director of the Center for Economic Studies (CES) of the U.S. Census Bureau from 1986 to 1996. Bob established the founding principles that still drive CES's research programs—develop longitudinal microdatasets of establishments and firms and make them available to the research community. In carrying out those principles, Bob guided development of the Longitudinal Research Database (LRD), began a program of economic research using the LRD and other business microdata, and opened the first Census Research Data Center in Boston. The LRD stimulated development of similar datasets in many countries around the globe. Under his leadership, the CES became a world leader in developing microdata approaches to economic theory and policy that lead to paradigm shifts in our understanding of the behavior of businesses and economies.

Bob was a pioneer in recognizing that understanding how the business side of the economy worked required analyzing microdata about businesses and producing statistics that describe their dynamics. The research on U.S. business dynamics that CES developed and sponsored during Bob's tenure revolutionized the way economists and statisticians measure, analyze, and think about the U.S. economy. Through this work, economists learned that the aggregate statistics measuring the U.S. business sector hid an incredibly dynamic underlying process. The entry and exit of firms and the pace of job creation and job destruction were much higher than the aggregate measures suggested. These "discovered" dynamics had important implications for the analysis of productivity growth, labor markets, firm investment decisions, the evolution of industries, etc. For example, CES studies allowed economists to develop a much deeper understanding of the producer dynamics that underlie U.S. productivity growth. The CES studies showed businesses are constantly reinventing and restructuring themselves and outputs and inputs are being reallocated away from less productive to more productive businesses. This process of creative destruction is central to the evolution of industry and aggregate productivity.

Bob's view on the importance of developing longitudinal business microdata has won out. Statistical agencies in the United States and around the world now regularly produce data series on business dynamics. These insights from CES studies stimulated many other countries to develop longitudinal firm-level datasets in a manner similar to those that developed under Bob's tenure at CES. The availability of these data enable an international community of researchers to carry on and expand the work pioneered by Bob and others at CES.

The second fundamental principle that guided Bob during his tenure at CES was that the microdata on businesses and firms should be made accessible to the research community. Bob initiated and oversaw the development of the Census Bureau/National Science Foundation Research Data Center (RDC) network that now consists of nine sites across the United States. At the RDCs, researchers can access confidential Census Bureau firm-level and household-level datasets for approved research projects. These projects provide new insights into the workings of the U.S. economy and society, and the behavior of U.S. businesses and households, and improve Census Bureau data programs. This access made possible the richer understandings of the workings of U.S. businesses and society that are

"*Bob McGuckin's contributions to the research and statistical communities are enormous. During his tenure, the Center for Economic Studies developed and sponsored research on U.S. business dynamics that has revolutionized the way economists think about and study the U.S. economy. Through his work, economists have learned that the U.S. business sector is incredibly dynamic with a high pace of entry and exit by businesses and an associated pace of job creation and job destruction. The studies he pioneered also showed that much of U.S. productivity growth is associated with this churning of businesses and jobs.*"

– John Haltiwanger, Chief Economist of the U.S. Census Bureau from 1997–1999 and currently Professor of Economics at the University of Maryland.

"*Bob believed he could revolutionize economics. Time has shown that Bob was correct. He also pioneered major changes in the field of macroeconomics.*"

– Kenneth Troske, Sturgill Professor of Economics and Director of the Center for Business Economic Research at the University of Kentucky.

described in this and other CES Research Reports. Improving Census Bureau data by expert use of our data remains a guiding principle of the CES mission.

After leaving CES in 1996 to join the Conference Board in New York City as Director of Economic Research, Bob continued his research on business dynamics and sources of productivity growth. He established one of the first international databases that could allow researchers to make country-by-country comparisons of productivity growth and living standards in more than 100 countries. His recent research focused on economic restructuring in China and its impact on business performance, and on the role of research and development, and information communication technologies (ICT), on productivity trends, pinpointing the impact ICT had on the trend of U.S. macroeconomic productivity growth.

Bob published many articles in top academic journals, including *Review of Economics and Statistics*, *The Rand Journal of Economics, Economic Inquiry*, *Journal of Business and Economic Statistics*, and the *International Journal of Industrial Organization*. He also wrote and lectured widely on industrial organization, economic indicators, and the impact of ICT on economic performance. At the time of his death in 2006, Bob was a director of the American Arbitration Association and the Council of Professional Associations on Federal Statistics, and on the editorial board of the newly established *Journal of Business Cycle Measurement and Analysis*. During his career he served as an advisor to numerous government, professional, and research organizations.

Prior to working at the Census Bureau, Bob held several positions with the Antitrust Division of the U.S. Department of Justice from 1974 to 1986, including Assistant Director of the Economic Policy Office and Director of Research for the Economic Analysis Group. He was the Victor H. Kramer Fellow at the University of Chicago School of Law during the 1978–1979 academic year. Prior to working for the Department of Justice, he was Assistant Professor of Economics at the University of California at Santa Barbara from 1970 to 1976. He received his Ph.D. in Economics from the State University of New York at Buffalo in 1970 and his B.A. (cum laude) in Mathematics from Ithaca College in 1965.

Chapter 1.
INTRODUCTION

Research at the Center for Economic Studies (CES) and the Research Data Centers (RDCs) uses internal U.S. Census Bureau data on businesses and households to address current and emerging issues about the U.S. economy and population. Our report on research conducted at CES and the RDCs between 2000 and 2004 identified 20 major research themes. This report for 2005 focuses on just three: international trade, entrepreneurship, and the location of businesses and people. For each theme, a summary of findings from recent CES and RDC research gives a sense of the depth to which a topic can be addressed using internal Census Bureau data. Taken together, the summaries suggest the breadth of topics that can be addressed using such data.

Recent CES and RDC research showed that many kinds of businesses engage in international trade, thereby changing the stylized facts on which trade theory has been based. However, that research was based only on manufacturing firms that export. New research shows that many firms that export do not import, and vice versa, and relatively few firms do both. Extending the analysis beyond manufacturing shows that most firms engaged in international trade are in retail and wholesale trade and services.

How businesses form, grow, change, and die is a long-standing CES and RDC research theme. Historically, longitudinal databases developed by CES researchers linking businesses over time included only businesses with employees. CES researchers are extending the linked microdata about economic units over time to include the nonemployer businesses that constitute about three-fourths of all U.S. businesses. The new Integrated Longitudinal Business Database makes it possible to follow nonemployer businesses as they become employers.

Where businesses and people locate—in rural or urban areas, near or far from others like themselves, etc.—was the focus of more than 25 papers published by CES and RDC researchers between 2000 and 2004, and of 7 CES Discussion Papers in 2005. The recent research on firm location asks whether firms tend to locate their headquarters and production facilities in the same or different areas, explores location decisions in industries other than manufacturing, and looks at some location decisions in narrowly defined industries, such as advertising, and areas, such as Manhattan. Businesses also may choose their locations because of the characteristics of workers in different locations. Finally, a series of papers explores alternative explanations for the observed tendency of individuals to locate near others who share some of their observable demographic characteristics.

Creating a community actively involved in using, critiquing, and improving Census Bureau data is one way that CES and RDC research yields benefits to the Census Bureau. Researchers who begin their careers using Census Bureau microdata potentially continue to do so, and to provide benefits to the Census Bureau, throughout their careers. In 2005, research at CES and the RDCs led to four new Ph.D. dissertations.

RESEARCH DATA CENTERS

RDCs are secure Census Bureau facilities staffed by a Census Bureau employee. The Census Bureau operates the RDCs in partnership with prominent research universities and nonprofit research organizations. CES's proposal review process judges each research proposal against standards designed to assure that the project has the potential to provide benefits to the Census Bureau, has scientific merit, is feasible with the available data, is consistent with Census Bureau policies, and does not pose risk of disclosure of confidential information.

The RDC system and the CES proposal process are described in detail on the CES Web site <www.ces.census.gov/>.

SUPPORTERS AND PARTNERS

The CES and RDC research programs rely on high-caliber professional support. The CES Data Staff regularly update the series in CES's holdings as new years of data become available, and add new data series. See the list of data series added in 2005 in Appendix 5. CES professional staff that manage the proposal and project processes are vital to the RDC research program. Because this report focuses on the products of research conducted at CES and in the RDCs, the work of these staff members is not described in detail. But the success of the CES and RDC research programs reflects their continuing contributions. The full CES staff roster is in Appendix 7 of this report.

The CES and RDC research programs also rely on the cooperation and support of the Census Bureau's business and household program areas. These groups provide the raw data from which researchers build databases to support their empirical work. Particularly for household data, the program areas review RDC research proposals, a vital step in assuring that approved RDC research projects hold the potential to benefit the Census Bureau, and serve as a technical resource for CES and RDC researchers. Their assistance allowed CES to increase the number of data series available through the RDC system.

The RDC network is a partnership with major universities and nonprofit institutions. The continuing support and active contributions of these institutional partners is essential to the successful functioning of the RDC system. The names of these partners are listed in Appendix 6. We look forward to working with all of them in the coming year.

Chapter 2.
INTERNATIONAL TRADE AND OUTSOURCING[1]

The economic impacts of trade with low-wage countries, the behavior of multinational corporations, and the wage gap between skilled and unskilled workers are examples of important questions about international trade that can be addressed by analyzing microdata. The Center for Economic Studies (CES) and Research Data Center (RDC) research programs have had a significant impact on both trade policy practitioners and theorists. New stylized facts and other empirical findings based on that microdata research are increasingly making their way into mainstream debates about international trade.[2] Exporters are more productive, use more equipment, are bigger, and have a longer life expectancy than most other companies. Recent theoretical trade papers in major economics journals, such as the *American Economic Review* and *Econometrica,* cite these results as motivating new directions in trade theory.[3]

However, large gaps remain in what we know about these firms and how they operate. Until recently, all the evidence has come from manufacturing firms that export. Little was known about nonmanufacturing exporters or about any firms that imported. CES and RDC research is at the forefront of a wave of new evidence about the kinds of firms that engage in international trade.

Figure 2.1
Firms Engaged in International Trade by Firm Type: 2000

Source: Bernard, Jensen, and Schott (2005a).

NEW STYLIZED FACTS

Previous CES and RDC research showed that firms engaged in international trade differ from firms that do not (Bernard and Jensen (1995,1999)). Specifically, exporters were shown to be larger, to be more productive, and to use more capital than the typical firm. Yet, little was known about importers until new research by Bernard, Jensen, and Schott (2005a) looked at both exporters and importers. This research shows that even though importers and exporters account for a small share (about 8 percent) of the number of firms (see Figure 2.1), they employ a large share (41 percent) of the U.S. private-sector workforce.

Given that many exporting firms do not necessarily import, and *vice versa*, it is important to study importers as well as exporters. Further, as Figures 2.1 and 2.2 show, multinational corporations (MNCs) play an important role in international trade since they make up two-fifths (21 percent) of firms that engage in international trade and 18 percent of employment in these firms. These multinational corporations operate plants in several different countries and may produce parts of a single product in several

[1] This chapter was written by C.J. Krizan and T. Lynn Riggs of CES.
[2] See Ghironi and Melitz (2005) and Helpman, Melitz, and Yeagle (2004).
[3] See Melitz (2003).

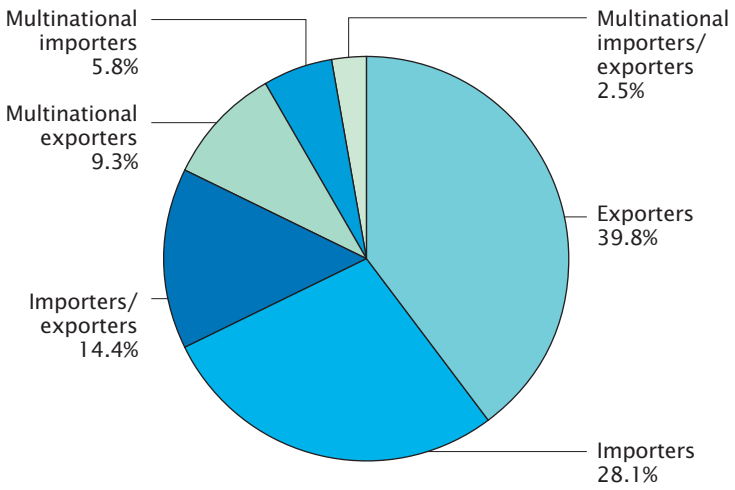
different countries, a practice commonly referred to as "outsourcing."[4]

OUTSOURCERS

It is difficult to know what effects practices like outsourcing could have on the economy since we know so little about the characteristics of firms that outsource. Recent research by Kurz (2006) helps fill this gap.

Economic theory predicts that only the most productive firms will be able to pay the high one-time costs involved in establishing an outsourcing relationship with foreign firms. However, few empirical studies have documented what actually happens to the firms that outsource. Kurz finds that, compared to nonoutsourcing manufacturers, plants that outsource have more workers (about 400 vs. 200), produce more output (about $80,000 of shipments per plant vs. about $60,000), and are slightly more productive (value-added per worker of about $80,000 vs. $75,000) than manufacturing plants that do not outsource, as seen in Figure 2.3. Similar differences hold for firms. However, while exporters' salaries per worker are higher than nonexporters' salaries, salary per worker is almost identical for outsourcers and nonoutsourcers. Regression analysis confirms these findings and also confirms the theoretical prediction that the higher a firm's productivity, the more likely it will be to outsource.

Figure 2.2
Employment of Firms Engaged in International Trade by Firm Type: 2000



Source: Bernard, Jensen, and Schott (2005a).

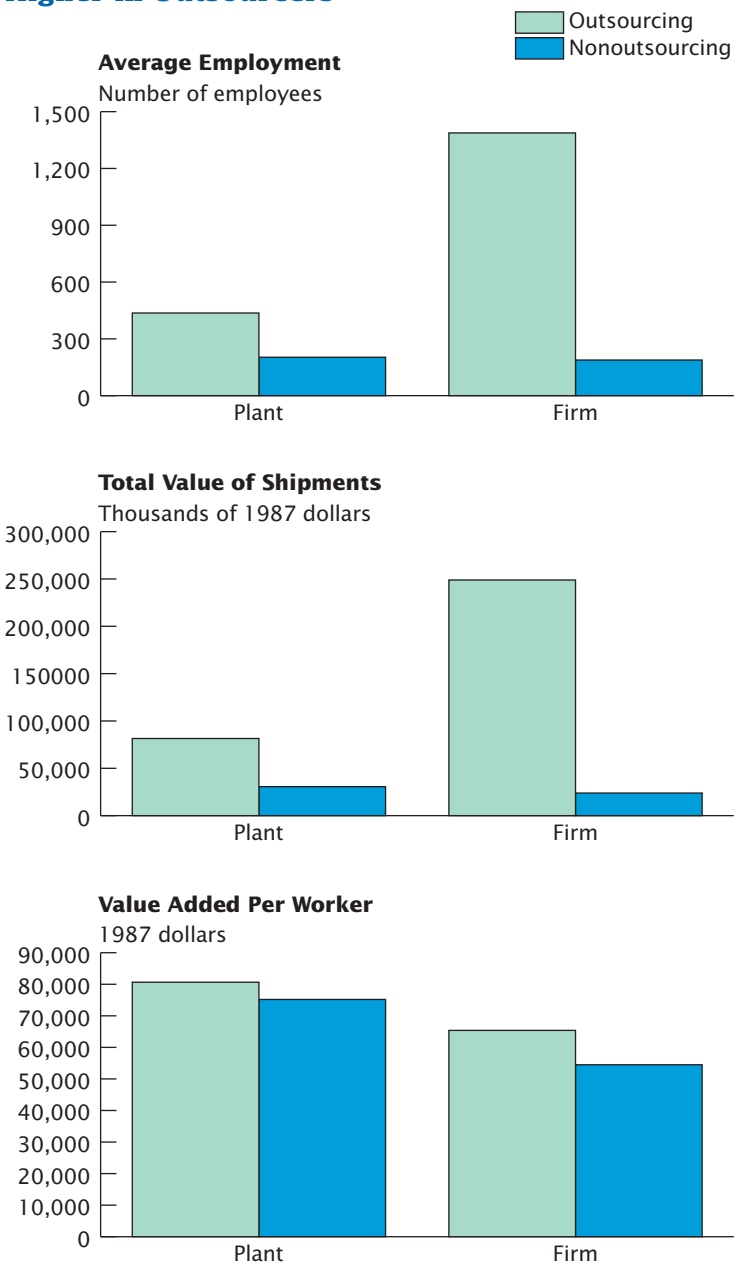
NEW EVIDENCE BEYOND MANUFACTURING AND EXPORTERS

Productivity is a key concept when thinking about the effects of free trade and globalization. For example, firms that produce goods in low-wage countries are thought to have an advantage over U.S. companies producing the same goods since they pay their workers lower salaries. However, that is only true if the workers in the two countries produce the same output per hour. U.S. workers often use a more advanced technology to produce a good. When that happens, a U.S. worker may produce far more per hour than his or her foreign counterpart. In fact, it may be cheaper to produce the same quantity of goods in the United States than in a lower productivity country.

New research by Bernard, Jensen, and Schott (2005a) provides some of the first evidence on exporting and importing behavior among firms from across all sectors of the economy. The importance of looking at all the sectors is shown in Figure 2.4. The retail and wholesale trade sector, not manufacturing, has the greatest share of firms that engage in international trade, and these firms are particularly likely to import. However, as Figure 2.5 shows, the manufacturing industry still accounts for the greatest total value of imports and exports (62 percent and 82 percent).

[4] Outsourcing is defined as the geographic separation of activities involved in producing a good or service across two or more countries.

Figure 2.3
Employment, Output, and Productivity Are Higher in Outsourcers



Source: Kurz (2006).

Bernard, Jensen, and Schott (2005a) found that most firms trade relatively few products with a small number of high-income countries. However, the "most globally engaged firms"—those that import and export, and that do so at least in part from related parties—behave far differently. This small group of firms accounts for nearly 80 percent of exports and imports and employs 18 percent of the entire civilian workforce. They are also more likely than less engaged firms to trade with low-income countries. In fact, they have been increasing their share of intrafirm trade with low-income countries while simultaneously increasing their "arms-length" trade share with higher income countries.

THE SPECIAL ROLE OF MULTINATIONAL CORPORATIONS

MNCs play an extremely important role in trade in the United States. Bernard and Jensen (2005) report that while U.S.-based MNCs account for only 1 percent of U.S. manufacturing firms, they employ 26 percent of the workforce and produce 34 percent of manufacturing output.[5] MNCs account for 18 percent of employment among firms engaged in international

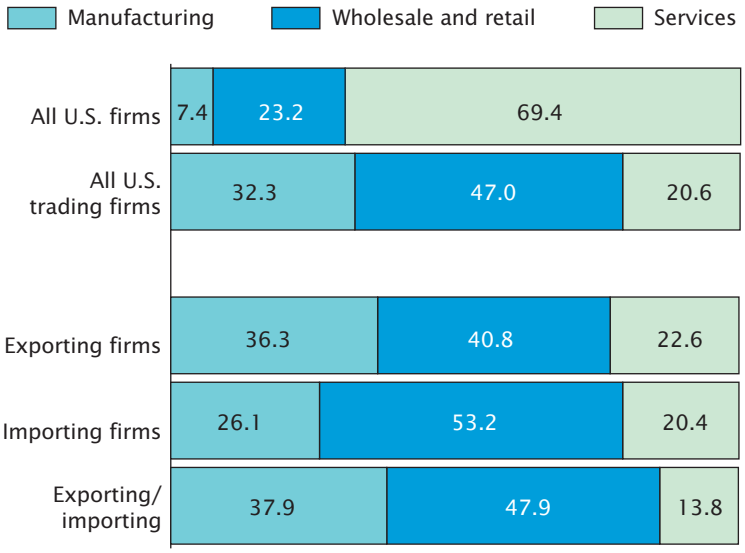
[5] U.S. based multinational firms are defined by Bernard and Jensen as those with 10 percent or more of their assets overseas.

trade (shown in Figure 2.2). MNCs also account for a large share of the employment at closing plants: 21 percent.

Bernard and Jensen found that, overall, plants owned by multiunit or multinational firms are less likely to close than other plants. However, plants owned by these firms are typically larger, older, and more productive than single-unit firms. Once researchers control for these attributes, they show that plants owned by multiunit and multinational firms are more likely to close than single-unit firms. That is, multiunit and especially multinational firms that operate multiple production sites are more likely to adjust output by closing a plant than are other firms. The researchers suggest that the higher wages paid by multinational firms may be a form of compensation to their workers for the increased risk of a plant shutdown due to the special ownership and production structure of the parent firm.

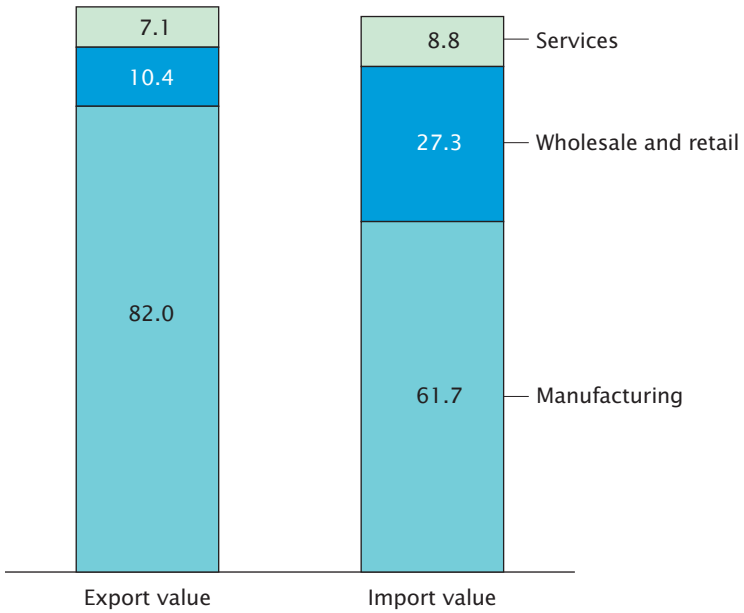
The idea that multinational firms open and close plants in different countries to take advantage of differences in the skill or wage level of workers in the two places fits neatly with the traditional idea of international trade that says that countries specialize in producing goods in which they have an advantage. Bernard, Jensen, and Schott (2005b) investigate this topic. They ask what role international trade has played in the switch by U.S. manufacturing plants from producing labor-intensive to producing capital-intensive goods.

Figure 2.4
Firms Engaged in Trade by Firm Activity and Industry: 2000
(In percent)



Source: Bernard, Jensen, and Schott (2005a).

Figure 2.5
Share of Export and Import Value by Industry: 2000
(In percent)



Source: Bernard, Jensen, and Schott (2005a).

Two key facts motivate their study. First, manufacturing's share of employment and Gross National Product (GNP) has declined sharply in the last 40 years. Second, the value of goods imported from low-wage countries has grown over the same time frame. Earlier research by other authors showed a negative relationship between imports and an industry's employment growth, but they are able for the first time to show that the negative relationship is driven by a combination of plant closures, decline, output reallocation, and product mix changes.

Bernard, Jensen, and Schott (2005b) find that as manufacturers are exposed to trade from lower income countries, many plants either shrink or disappear. Others, however, survive and even grow within the same industry and some switch industries. These surviving plants tend to be relatively capital-intensive. The plants that switch industries tend to move to more capital-intensive industries that are less exposed (for now) to competition from low-wage countries.

These and other findings support the idea that countries tend to specialize in the production of goods and services that best fit their comparative advantage in either labor or capital. That is, countries with more capital are expected to produce goods using more capital than those that have a lower concentration of capital.

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Chapter 3.
YOUNG AND SMALL BUSINESSES

Researchers at the Center for Economic Studies (CES) and Research Data Centers (RDCs) contributed significant insights to the literature on entrepreneurship and small business.[1] Since 1988, 21 CES working papers specifically addressed young and small businesses. Most of these, as well as some papers that did not appear as CES working papers, have been published in scholarly journals and publications. Data from either the 1987 or 1992 Characteristics of Business Owners (CBO) Survey were used in most of this work. This survey contained rich information on the characteristics of businesses and their owners.

In 1997, however, the Survey of Business Owners (SBO) replaced the CBO. The results from the 1997 SBO were published in volumes titled Survey of Minority Owned Businesses (SMOBE) and Survey of Women Owned Businesses (SWOBE). The SBO program is more limited (it requested less detailed financial information than did the CBO). Perhaps for this reason, there have been fewer recent CES and RDC research projects, and fewer CES working papers, focusing on young and small businesses. While there were 16 CES working papers on young and small businesses between 1989 and 1998, there have been only 5 since 1999, and only 1 of them uses data more recent than 1992.[2]

Researchers view the lack of good current data as a major barrier to new studies of young and small businesses. Last year's CES *Research Report* briefly mentioned a major data infrastructure project that we hope will reinvigorate that research agenda at CES and the RDCs. This project, supported by the Kauffman Foundation as well as the Census Bureau, seeks to create a fully Integrated Longitudinal Business Database (ILBD) that includes businesses both with and without paid employees.

The ILBD integrates federal government administrative records for all employer and nonemployer businesses in the U.S. economy for 1992 and from 1994 onward.[3] Nonemployer businesses have been neglected in most studies of business dynamics because they are not well captured in previously available data sources. Thus, the ILBD's longitudinal data on nonemployers fill an important data gap. In addition, the comprehensive business coverage of the ILBD makes it possible, for the first time, to follow businesses as they cross the threshold from nonemployer to employer. This aspect of the ILBD provides a valuable new tool for the study of business start-ups and early life-cycle dynamics.[4] Early findings suggest that young and small businesses are particularly dynamic.

The ILBD shows roughly 21 million employer and nonemployer businesses in the U.S. economy as of 2000. Roughly three-fourths of these businesses are nonemployers, and most nonemployers are sole proprietors. Among the one-fourth of businesses with employees, most have only a single establishment. Thus, most businesses either have zero employees or employ workers at a single location. However, multiestablishment businesses account for well over half of all business revenue.

The first estimates of how many small nonemployer businesses become employer businesses take advantage of the ILBD's ability to track such transitions. The research team creating the ILBD (Davis et al. 2006) defines four transition categories for business that were nonemployers in 1994:

- **Exits**—businesses with positive revenue in the nonemployer universe in 1994, no revenue in the nonemployer universe in 1997, and no payroll in the employer universe in 1997.
- **Transits**—businesses with positive revenue in the nonemployer universe in 1994, no revenue in the nonemployer universe in 1997, but positive revenue in the employer universe in 1997.
- **Continuers**—businesses with positive revenue in the

[1] This chapter was written by Ron Jarmin, Assistant Division Chief for Research, CES.

[2] Two CES working papers using the 1992 CBO data appeared in 2005, Fairlee and Robb (2005a and 2005b).

[3] 1993 data are no longer available.

[4] The ILBD is not yet fully developed or ready for use in the RDCs. In particular, while linkages between the nonemployer and employer universes have been constructed, CES has not yet fully integrated the files from each universe.

nonemployer universe in 1994 and 1997, and no revenue in the employer universe in 1997.

- **Duals**—businesses with positive revenue in the nonemployer universe in 1994, and positive revenue in both universes in 1997.

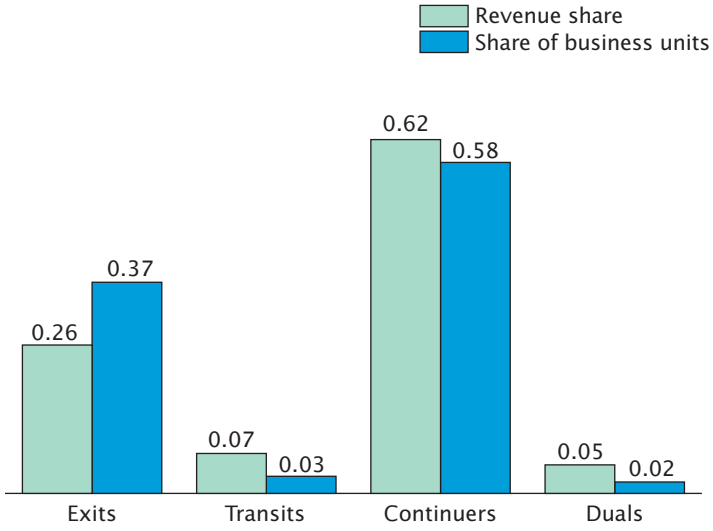
Figure 3.1 shows the 1994–1997 transitions for a set of selected industries (see Davis et. al. 2006 for a description of these industries). Three percent of nonemployer businesses transit—they become employers or are acquired by, or absorbed into, employer businesses. Three percent seems like a small number. However, these transiting businesses represent about 220,000 of the 7.4 million nonemployer businesses in the selected industries analyzed by Davis et al., and account for about 7 percent of nonemployer revenue.

The nonemployer businesses that become employers differ from those that do not. Revenues in the pretransition period grow much more strongly for these businesses than for nonemployer businesses that do not become employers.

Davis et al. also examined the relationship between business age and revenue growth and volatility.[5] Young businesses have much higher net revenue growth than older businesses,

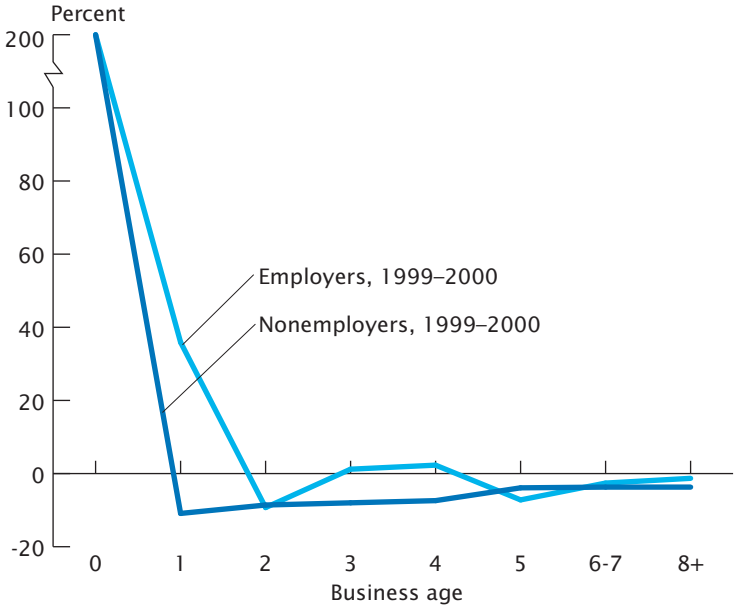
Figure 3.1
Three-Year Transitions for the 1994 Population of Nonemployers in Selected Industries

(Shares of 1994 nonemployer revenues and businesses)



Source: Davis et al. (2006).

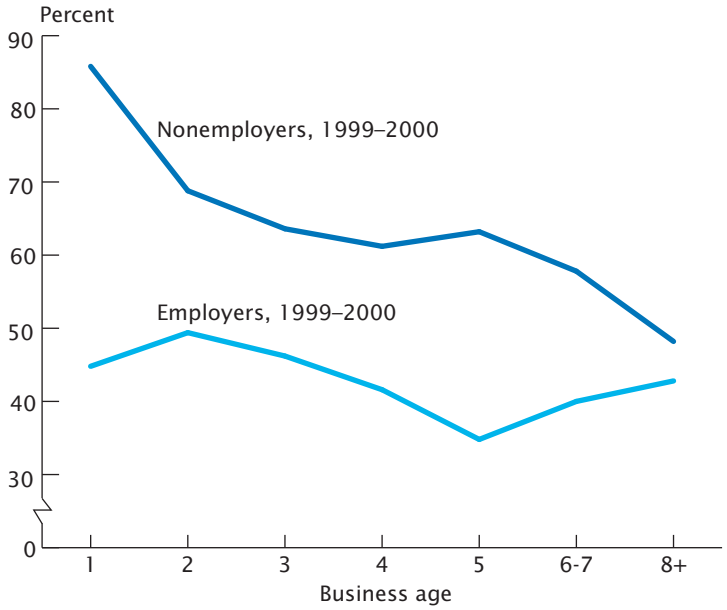
Figure 3.2
Net Revenue Growth Rates for Employers and Nonemployers by Firm Age



Note: Weighted by revenues.
Source: Davis et al. (2006).

[5] The growth rate here is measured as the change from t–1 to t, divided by the simple average of values at t–1 and t. This measure is symmetric about zero, ranges from –2 to 2, and allows for an integrated treatment of births, deaths, and continuing businesses.

Figure 3.3
Excess Revenue Reallocation Rates for Employers and Nonemployers by Firm Age



Note: Weighted by revenues.
Source: Davis et al. (2006).

as Figure 3.2 shows. For nonemployers, the only age group with positive mean revenue growth is new businesses less than 1 year old. Among employers, the youngest businesses also exhibit the highest mean growth rates.

Younger businesses also have relatively volatile growth paths. Davis et al. measure volatility in terms of gross business revenue expansions and contractions during the year. They calculate "excess revenue reallocation" as gross revenue gains at expanding businesses plus gross revenue losses at shrinking businesses less the absolute value of the aggregate revenue change. It is expressed as a rate by dividing by the level of aggregate revenue.[6] Figure 3.3 shows that excess reallocation rates decline by business age for employers and nonemployers in 2000. The volatility of nonemployer revenue growth is much higher at all ages, and it declines more rapidly with age.

The high excess reallocation rates in Figure 3.3 imply that many expanding businesses experience strong growth at the same time as others contract sharply. This pattern is most pronounced for young nonemployers. Even for mature employer businesses, Davis et al. (2006) observe revenue reallocation in excess of 30 percent (again reflecting high average gross expansion and gross contraction rates). Taken together, these findings suggest that the continual rise and fall of individual business fortunes is a ubiquitous feature of the U.S. economy, and that it is more pronounced among younger businesses.

[6] This type of measure is often used to summarize cross-sectional dispersion in job creation and destruction. See, for example, Davis, Haltiwanger, and Schuh (1996).

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Chapter 4.
LOCATION OF BUSINESSES AND PEOPLE

Where businesses and people locate—in rural or urban areas, near or far from others like themselves—was the subject of more than 25 papers published by Center for Economic Studies (CES) and Research Data Center (RDC) researchers between 2000 and 2004, and of 7 CES Discussion Papers in 2005.[1] The recent research on firm location asks whether firms tend to locate their headquarters (HQ) and production facilities in the same or different areas and surveys location decisions in narrowly defined industries, such as advertising, and in areas, such as Manhattan. Another series of papers explores alternative explanations for the observed tendency of individuals to locate near others with similar demographic characteristics. The final section of this chapter discusses recent research on the location decisions of businesses and their relationship to the characteristics of workers in different locations.

LOCATION OF BUSINESSES

Recent studies of firms' location decisions for their establishments have progressed in three directions: the impact of the organizational structure within the firm on location, investigations of establishments in industries other than manufacturing, and on location within finer definitions of geography. This section summarizes three examples of current CES and RDC research on these topics.

A literature has emerged on where firms locate their HQ (e.g., Aarland, Davis, Henderson, and Ono (2004), and Davis and Henderson (2004)). A recent paper by Henderson and Ono (2005) extends this work to investigate where manufacturing firms locate their HQ given the existing location of their plants. Firms often separate HQ functions physically from their production facilities. By locating its HQ in a large, service-oriented metropolitan area away from its production facilities, the firm may be better able to purchase business services in the local metropolitan market and gather information about market conditions for its products. However, locating the HQ away from its production activity increases coordination costs in managing its plant activities. The authors use a sample of firms that first create a stand-alone HQ and find that these firms have a strong tendency to colocate the new HQ near existing production activity. However, firms that choose remote locations for this first HQ establishment appear to be less constrained by proximity to their firm's production facilities, basing their decisions to a greater extent on what potential locations offer the HQ locally. Firms seem to choose alternative locations specifically because there is more diversity in the business services available and because other firms have located their HQ there.

Arzaghi and Henderson (2005) investigate the neighborhood location decisions and networking externalities of advertising establishments. Their paper examines the effect on productivity of having more advertising agencies as near neighbors and hence having better opportunities for meetings and exchange. They show that the benefits of having more near neighbors fall away rapidly with distance even in the close quarters of southern Manhattan. This suggests that having a high density of commercial establishments is important for enhancing local productivity. They also find that Manhattan advertising agencies trade the higher rent costs of being in bigger clusters nearer "centers of action" against the lower rent costs of operating on the "fringes," away from high concentrations of other agencies. High-quality advertising agencies are willing to pay more rent than low-quality advertising agencies to locate in greater size clusters, specifically because they benefit more from networking. Arzaghi (2005) extends this idea, finding nationally that high-quality advertising agencies—measured by payroll, an indicator of the number and quality of client contracts—locate in high-wage and high-rent areas to separate themselves out from low-quality agencies and to guarantee their local network quality. He uses a sample of movers—existing agencies that relocate among

[1] This chapter was written by B.K. Atrostic, James Davis, and Alfred Nucci of CES.

urban areas—to extract a predetermined measure of their quality prior to relocation and shows that agencies sort on quality in their location decisions. High-quality agencies locate together with other high-quality agencies, and high- and low-quality agencies locate in different areas.

LOCATION OF PEOPLE

Residential neighborhood effects—social networks and local interactions—are important determinants of economic outcomes. There are many reasons households may choose neighborhoods, and many of those reasons will be related to individual and neighborhood attributes not observed or captured in available data. Bayer, Ross, and Topa (2005) use 1990 decennial census data for the Boston metropolitan area to detect empirically the effect of social interactions among neighbors on labor market outcomes. These data allow them to characterize residential and employment locations to the city block and hence, they are able to examine whether individuals residing in the same block are more likely to work together than those in nearby blocks.

Significant social interactions operate at the block level—residing on the same versus nearby blocks increases the probability of working together by over 33 percent. This "referral" effect is stronger when individuals have similar sociodemographic characteristics (e.g., both have children of similar ages) and when at least one individual is attached to the labor market. They test whether these findings are due to reverse causality—that coworkers may tend to choose similar places to live, or to live with people with similar characteristics—and find strong statistical support for the referral effect.

Table 4.1.
Sample of Pairs of Individuals Residing in the Same Block Group

Referral relationship	Percentage of sample	Percentage that work in same location	
		Reside in same block group, not same block	Reside in same block
Full sample		0.36	0.94
Both high school drop out	0.53	1.03	ND
Both high school graduate	15.50	0.47	1.33
Both college graduate	36.41	0.34	0.98
HS drop out—HS grad	4.75	0.51	0.82
HS drop out—college grad	4.95	0.29	ND
HS grad—college grad	37.87	0.30	0.82

Note: ND indicates that a value is not discloseable.
Source: Bayer, Ross, and Topa (2005), Table 1.

The likelihood of referrals varies across different pairs of neighbors. For example, a referral is more likely among pairs of high school graduates (see Table 4.1), pairs of young adults, and pairs in which members have children of a similar age, than among pairs with dissimilar traits. More generally, their results are broadly consistent with two common empirical findings in the existing literature on social networks and on informal hiring channels: (1) that there is strong assortative matching within social networks and (2) that referrals only occur when at least one member of the pair is well-attached to the labor market.

Fu (2005) focuses on urban amenities, in the form of human, social, and cultural capital. He discusses the positive externalities generated by living and working in an urban environment as evidenced by differences in earnings. He uses 1990 Massachusetts decennial census data for the Boston metropolitan area labor market to test how individual workers learn from their occupational and industrial peers in the same local labor market. One finding shows that the degree to which individuals share "quality" human capital varies across census blocks. Distance between census blocks matters. For example, externalities generated by shared human capital decay rapidly over geographic distance. Knowledge spillovers are localized within microgeographic scope in cities.

WAGES, SKILLS, LOCATION, IMMIGRATION, AND TECHNOLOGY

The difference in the wages of skilled vs. nonskilled workers, the "skill premium," is the focus of research by Bernard, Redding,

and Schott (2005). In this study, the authors analyze the variation in the skill premium across different labor markets in the United States in 1972 and in 1992. They find that there are significant differences in the skill premium across labor markets in the United States and that these differences are growing. In 1972, for example, Nashville's skill premium was 30 percent higher than that of New York, but it increased to 36 percent in 1992. They note that the bigger the difference in the skill premium between two labor markets, the fewer industries they have in common. Similarly, labor markets where the skill premium has changed the most have the biggest changes in the mix of industries at their location.

Traditional international trade theory suggests that regions, like countries, begin with different mixes of skilled and unskilled workers. Because of this, firms in cities like New York, with an abundance of skilled workers, will pay skilled workers lower relative (to unskilled workers) wages, while firms in cities like Nashville, with fewer skilled workers, will pay skilled workers higher relative wages. If skilled workers prefer living in New York to Nashville, sufficient skilled workers will not move from the lower-premium city to the higher-premium city to equalize the skill premium across the two labor markets. This means that cities with many skilled workers like New York will attract skill-intensive industries, while cities like Nashville attract less skill-intensive ones.

Lewis (2005) uses detailed plant-level data from the 1988 and 1993 Surveys of Manufacturing Technology to examine how the proportion of immigrants and the skill mix of local labor markets may affect wage differentials. The level of automation differs widely across U.S. metropolitan areas. In both 1988 and 1993, in markets with a higher relative availability of less-skilled labor, comparable plants—even plants in the same narrow (4-digit Standard Industrial Classification) industries—used systematically less automation. Moreover, between 1988 and 1993, plants in areas experiencing faster growth of the less-skilled labor supply adopted automation technology more slowly. Even de-adoption was not uncommon. This relationship is stronger when examining an arguably exogenous component of local less-skilled labor supply derived from historical regional settlement patterns of immigrants from different parts of the world.

These findings may address two long-standing puzzles in economics. First, they may explain a consistent empirical finding that immigration has little impact on the wages of competing native-born workers at the local level. It might be that the technologies of local firms—rather than the wages that they offer—respond to changes in local skill mix associated with immigration. Second, these results raise doubts about the extent to which the spread of new technologies has raised demand for skills, one frequently forwarded hypothesis for the cause of rising wage inequality in the United States. Causality appears to run, at least partly, in the opposite direction, where skill supply drives the spread of skill-complementary technology.

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Appendix 1.

CENTER FOR ECONOMIC STUDIES (CES) STAFF PUBLICATIONS, WORKING PAPERS, AND PRESENTATIONS

CES staff in **bold**.

PUBLICATIONS

Atrostic, B.K. "The Demand for Leisure and Nonpecuniary Job Characteristics," Reprint in Clem Tisdell, ed., *The Economics of Leisure*, Edward Elgar Publishing, forthcoming.

Atrostic, B.K. and **Nguyen, Sang V.** "Computer Inputs, Computer Networks, and Productivity," in Charles Hulten and Ernst R. Berndt, eds., NBER-CRIW conference volume, *Hard-to-Measure Goods and Services: Essays in Memory of Zvi Griliches*, University of Chicago Press, forthcoming. <www.nber.org/books/CRIW03-BH/index.html>

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Abraham, Arpad and **White, T. Kirk**. "The Dynamics of Plant-level Productivity in U.S. Manufacturing." Working Paper mimeo, April 2005.

Becker, Randy; Haltiwanger, John; **Jarmin, Ron**; **Klimek, Shawn**; and Wilson, Dan. "Micro and Macro Data Integration: The Case of Capital." Center for Economic Studies Discussion Paper CES-WP-05-02, April 2005.

Davis, Steven J.; **Grim, Cheryl**; Haltiwanger, John; and Streitwieser, Mary. "Electricity Pricing to U.S. Manufacturing Plants, 1963-2000." Working Paper mimeo, December 2005.

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Zawacki, Alice. "Fully Paid Employer Provided Health Insurance: Trends in Benefits Over Time." Presented at Academy Health Annual Research Meeting, June 2005.

Appendix 2.

RESEARCH DATA CENTER (RDC) PUBLICATIONS, WORKING PAPERS, AND PRESENTATIONS

BERKELEY RDC

WORKING PAPERS

Dinlersoz, Emin and MacDonald, Glenn. "The Industry Life-Cycle of the Size Distribution of Firms." Center for Economic Studies Discussion Paper CES-WP-05-10, July 2005.

Hildreth, Andrew K.G.; von Wachter, Till M.; and Handwerker, Elizabeth Weber. "Estimating the 'True' Cost of Job Loss: Evidence using Matched Data from California 1991-2000." Working Paper mimeo, May 2005.

Lewis, Ethan. "Immigration, Skill Mix, and the Choice of Technique." Center for Economic Studies Discussion Paper CES-WP-05-04, May 2005.

PRESENTATIONS

Ferreira, Fernando V. "You Can Take It with You: Transferability of Proposition 13 Tax Benefits, Residential Mobility, and Willingness to Pay for Housing Amenities." Presented at University of California, Berkeley; University of Arizona; University of Pennsylvania; Cornell University; University of British Columbia; NBER; Catholic University of Rio de Janeiro; Brookings Institution; National Tax Association; University of Wisconsin; and Drexel University.

BOSTON RDC

PUBLICATIONS

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Gray, Wayne B. and Shadbegian, Ronald J. "Assessing Multi-Dimensional Performance: Environmental and Economic Outcomes." *Journal of Productivity Analysis*, forthcoming.

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Arzaghi, Mohammad. "Quality Sorting and Networking: Evidence from the Advertising Agency Industry." Center for Economic Studies Discussion Paper CES-WP-05-16, October 2005.

Arzaghi, Mohammad and Henderson, J. Vernon. "Networking Off Madison Avenue." Center for Economic Studies Discussion Paper CES-WP-05-15, October 2005.

Bayer, Patrick; Ross, Stephen L.; and Topa, Giorgio. "Place of Work and Place of Residence: Informal Hiring Networks and Labor Market Outcomes." Center for Economic Studies Discussion Paper CES-WP-05-23, October 2005.

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Appendix 3.
ABSTRACTS OF PROJECTS STARTED IN 2005

WELFARE REFORM AND MIGRATION: MOVING TO BENEFITS/MOVING FROM RESTRICTIONS?

Deborah Graefe—Population Research Institute, The Pennsylvania State University

Has devolution of welfare policy based on the 1996 welfare reform act created "welfare magnet" states where state policies provide more generous benefits and lenient participation requirements? Have welfare disincentive states with more restrictive policies resulted in increased intrastate adjustment moves and outmigration of welfare poor families? Does welfare-driven migration result in increased after-move well-being compared with before the move for welfare poor families versus nonmigrant families?

This study uses merged data from four sources—the 1996 and 2001 panels of the Survey of Income and Program Participation (SIPP), the Urban Institute's Welfare Rules Database, and a local labor market characteristics file created from decennial census and Current Population Survey data—in a longitudinal, two-stage specification of welfare-benefit "push" and "pull" impacts on poor families' migration behavior. Based upon a state welfare policy inequality framework, we use factor analysis to develop measures from textual policy manual materials to operationalize 10 welfare benefit and eligibility rule dimensions for the post-1996 welfare reform implementation period and use these measures to test hypothesized state program effects on migration. We use discrete-time event history analysis to predict migration events (interstate or intrastate migration) in the SIPP data. Our hierarchical modeling strategy considers an integrated, and previously untested, micro-macro analysis of three determinant-of-migration hypotheses for welfare poor families. These tests evaluate effects of 1) time-varying state welfare policy characteristics; 2) individual and family characteristics, including detailed migration, work, and welfare participation histories and network ties, from the information-rich SIPP files; and 3) local labor market-level economic opportunity structure indicators.

Following Frey et al. (1996), we separately analyze push and pull migration effects of our hypothesized covariates through, first, a "destination model" for identifying pull effects and then, a "departure model," which identifies push effects for potential migrants' origin locations. The combination of destination and departure model vectors for state welfare policy, local labor market, and individual and household indicators will provide a strong test, giving new evidence on the "salience of benefit variation to subjects" thesis (Shram and Voss 1999) regarding the welfare policy impact on migration. Finally, we model post-move family income, welfare benefits, and participation requirements as well-being outcomes of welfare poor migrants versus nonmigrants using time-ordered additive and interactive OLS regression models.

The predominant purpose of this project is to prepare estimates of migration among a significant portion of the U.S. population, in accordance with the stated need for estimates of population and characteristics of the population authorized by Title 13, Chapter 5. The proposed work is expected 1) to provide estimates of migration among the welfare poor; 2) to improve understanding the quality of data produced by the U.S. Census Bureau through efforts to understand migration-related reasons for loss to sample; 3) to result in enhancement of the data collected by the Census Bureau by addition of state-level policy data and local labor market indicators for the 1996 through 2002 period, providing for the development of links across both time and entities for these data; and 4) to demonstrate to the demographic community the value of the SIPP for studying migration and other migration-related phenomena, since the Census Bureau has undertaken efforts with the most recent data collections to improve its quality for this purpose.

LONGITUDINAL ANALYSIS OF THE EARNINGS AND FOOD STAMP PARTICIPATION OF THE WORKING POOR

Mary Farrell—The Lewin Group

The Lewin Group has received funding from the U.S. Department of Agriculture's (USDA's) Economic Research Service to conduct research to better understand how the long-term earnings patterns of the working poor who are eligible for the food stamp program (FSP) are related to their participation in the FSP program. We will address the following research questions:

- How do the historical earnings patterns of the 1996 cohort of participants and eligible nonparticipants among the working poor differ, and what are the explanations for any differences?
- To what extent are historical and future earnings patterns predictive of participation in the FSP for the 1996 cohort, given individual characteristics and state welfare policies?
- To what extent do historical earnings of the 1996 cohort predict future earnings, and how is that related to FSP participation?
- How do the earnings patterns of the 1996 cohort compare to an earlier cohort from 1992?

A major concern among policy makers is that a significant number of eligible households, especially the working poor, do not participate in the program. One study found that only 46 percent of working FSP eligible households participated in the program in 1994, compared to an aggregate rate of 69 percent for all FSP eligible households. Some argue that these low participation rates might be an indication that the FSP is not fulfilling its primary purpose of providing food assistance to all who need it. Another explanation is that these households are eligible for a short period of time and anticipate an increase in their earnings.

We would like to use restricted research files of the Survey of Income and Program Participation (SIPP) that are matched to the Social Security Administration's Summary Earnings Records (SER) (matched SIPP/SER data) to identify long-term earnings patterns of the working poor. To date, there is very limited information on the historical earnings patterns of these groups, primarily because of data limitations. The matched SIPP/SER data address this limitation by providing complete earnings histories for nationally representative samples, including large samples of the working poor. Hence, our analysis will provide the first comprehensive analysis of long-term earnings patterns of the working poor. In addition, this study will provide the USDA with important information regarding the reliability of the participation estimates it obtains from the SIPP. The accuracy of the number of eligible persons is based, in part, on the accuracy of the earnings estimates. This is an important concern to USDA, as the share of food stamp recipients who are working has been growing in recent years.

It might be, for instance, that many working poor households that appear eligible for the FSP based on SIPP data, but say they do not participate, are really ineligible because their earnings are higher than what they report. Our study will examine the accuracy of the earnings data in the SIPP core files, as well as the validity and usefulness of the employment information in the SIPP's employment history topical module.

We are interested in the entire history of earnings because for policy reasons it is important to understand how longer-term earnings patterns for adults in working poor families are related to participation in the FSP. The SIPP can support limited analysis of this issue through use of self-reported income over the panel period and some very limited information that is captured in an employment history module. We would like to use the matched data to assess whether better information about past or expected future earnings would improve our understanding of food stamp participation. In summary, this study will provide the Census Bureau with a better understanding of (1) who underreports or overreports earnings and employment on the SIPP; (2) how the underreporting or overreporting affects findings on the working poor population and the take-up rates of the FSP; and (3) whether individuals reporting employment on the employment history topical module are able to recall past jobs.

POLITICAL ENVIRONMENTS AND MANUFACTURING EMPLOYMENT AND INVESTMENT

William Kerr—Harvard Business School

This study will characterize how changes in political environments from 1963–2000 influenced the employment and investment decisions, including technology adoption, of manufacturing establishments. Special attention will be given to the impact of elections themselves, including expectations of the candidates' ideologies. In the face of uncertain elections, are plants more reserved in their hiring or investing behavior? Do the victories of candidates with very strong ideologies lead to discrete adjustments in anticipation of future conditions? Three econometric specifications will be considered: standard cross-sectional regressions; a state border discontinuity analysis; and a longitudinal analysis using a balanced 1973–1988 panel of Annual Survey of Manufacturing plants. Use of detailed plant data housed at the Center for Economic Studies is essential for isolating the impact of local politics on establishment behavior, employing a border effects analysis that requires county identification, and characterizing the different reactions of local, single-plant firms versus establishments part of large, regionally-diverse enterprises.

This project is a response to the July 2001 Research Opportunities at the Census Bureau publication that requests proposals studying how higher-order moments (i.e., skewness, kurtosis) of the cross-section distribution of investment and employment variables should be made publicly available. To identify the influences of regional political environments and elections, I will need to calculate these higher-order moments for individual states and perhaps smaller county/MSA divisions. In a technical memo, I will be able to characterize the best candidate metrics for release from the perspectives of the Census Bureau and potential researchers, the limits to disaggregating geographically these moments (either due to confidentiality concerns or data quality issues), and if and how these higher-order moments should be calculated in non-Census of Manufacturers years. Additional benefits are also identified in the proposal.

INFORMATION TECHNOLOGY AND ORGANIZATIONAL CAPITAL

Erik Brynjolfsson—MIT; Lorin Hitt—University of Pennsylvania, Wharton School; Adam Saunders—MIT.; Shinkyu Yang—MIT

In order to realize the potential benefits of computerization, investments in additional assets, such as organizational processes and worker knowledge, may be needed. We propose to investigate this hypothesis by combining our own data with that of the U.S. Census Bureau towards finding new ways of measuring organizational capital and how firms can best take advantage of technology. In particular, by assisting the Census Bureau in measuring these changes to the supply chain, we aim to increase the Census Bureau's knowledge base in understanding the broader implications of technology in the workplace. Our research may shed light on the nature of the recent productivity revival and clarify the factors that are most important to its future sustainability.

Our aim is that our research will enable the Census Bureau to assess the benefits of collecting data to better measure these technology-enabled complementary investments, in particular, within the context of the eStats program. At the moment, the majority of the eStats program is dedicated to measuring e-commerce revenue, such as B2C or B2B revenues. While e-commerce is an important feature of the new economy, we believe that our work will show that selling products online is only one of many ways that firms can leverage the power of information technology (IT) to create value. To look at only e-commerce revenues would be missing the broader change in the economy that is taking place: *IT has compelled firms to reorganize themselves in new ways by reinventing and changing their business processes.* We believe it would be worthwhile to more directly measure the underlying data behind this phenomenon.

We also will help the Census Bureau explore ways to provide better statistics on the implications of changing technologies to the supply chain. In the past decade, firms have used IT to change the allocation information, decision rights, incentives, and ownership across firm boundaries. As the CIO of Nokia, Mikko Kosonen, recently noted at the 2004 MIT CIO Summit, new technologies have led to the emergence of an "extended enterprise." These kinds of changes in the supply chain suggest a broader data gathering agenda about nature and scope of the benefits of computers and communications. Furthermore, they raise fundamental questions about the basic unit of measurement. Should it be the plant, the firm, or, perhaps, the whole value chain? We believe that our approach can help address these questions and lay the foundation for improved statistics and methodologies in coming years.

Using a small sample of Fortune 1000 firms, our previous work has shown that the combination of organizational capital and computer investment together drive higher market values and higher productivity. In our project at the Census Bureau, we plan to extend this analysis along the following dimensions: 1) understand the effects of organizational capital after 1997; 2) aggregate Census Bureau measures of plant-level investment data to create a database of computer investment by firm and use estimating techniques to create IT stock by firm; and 3) use Census Bureau measures of Internet use as a proxy for organizational capital. These techniques will enable us to widen our earlier analysis to include thousands of firms of all sizes, across all sectors of the economy.

LEARNING BY DOING IN NEW PLANTS: AN INVESTIGATION

Natarajan Balasubramanian—Anderson School of Management, UCLA

This project aims to enhance the utility of Title 13, Chapter 5 data by (i) linking the LRD with a comprehensive dataset of US patents; (ii) identifying shortcomings of current data collection programs and documenting new data collection needs, specifically with regard to innovation; and (iii) preparing estimates of learning, 'spillovers' in learning, and the impact of technological advance on productivity not contained in existing publications.

This project will further the U.S. Census Bureau's objectives regarding the collecting and analysis of information on productivity and technological innovation and address some of the associated issues. This project will link two extensively used datasets—the LRD and the NBER Patent Dataset, a comprehensive dataset of all U.S. patents granted between 1963 and 1999—and provide a much richer picture of technological innovation than what can be obtained using R&D expenditures alone, which is the only measure of technological innovation currently available at the Census Bureau. Specifically, the study will use the linked dataset to develop a number of descriptive statistics regarding patenting behavior along the lines of the NSF R&D survey and compare them with the aggregate statistics in the NSF R&D survey.

The productivity estimates obtained using output-based (i.e., patent-based) innovation variables are likely to be significantly different from that estimated using input-based measures such as R&D expenditure. By providing comparisons of these detailed productivity estimates with "plain-vanilla" estimates, the results of the study will highlight the need for improvements in the current R&D survey or the need for a new innovation survey.

This project will produce a number of estimates of characteristics of the population that are not contained in existing publications. These estimates will be developed with two objectives in view—(i) to assess the extent of potential bias in productivity estimates due to ignoring the impact of learning, spillovers in learning, and technological innovation; and (ii) to provide a better understanding of the sources of productivity growth by decomposing productivity growth into that caused by learning, spillovers in learning, and technological innovation.

Specifically, the project will develop regression estimates of "labor learning" and "capital learning" by industry. Second, the analytical results will provide, by industry where possible, estimates of "spillovers" in learning within firms and across different firms, including the variation in the magnitude of learning "spillovers" with geographical proximity and locational characteristics. Third, the study will provide estimates of productivity growth decomposed into components caused by technological innovation, by learning, and by the interaction of innovation and learning. Finally, the study will create estimates of productivity differences from learning between (a) "survivors" and "non-survivors" and (b) between new entrants and existing incumbents diversifying into new industries.

USING THE SURVEY OF PLANT CAPACITY TO MEASURE CAPITAL UTILIZATION

Matthew D. Shapiro—University of Michigan, Survey Research Center

Most capital in the United States is idle much of the time. By some measures, the average work week of capital in U.S. manufacturing is as low as 55 hours per 168-hour week. The level and variability of capital utilization has important implications for understanding both the level of production and its cyclical fluctuations. This proposal will investigate a number of issues relating to the Survey of Plant Capacity measures. It will aim to better understand the behavior of these measures in the panel of plants and in the aggregate. It will use this analysis to make recommendations on expanding and improving the published statistics deriving from the Survey of Plant Capacity. These statistics could increase the value of this survey at low incremental cost. This improved information about the utilization margin would be a substantial benefit for economists and decision makers. Capital utilization is an important margin for understanding fluctuations in output and productivity at the plant and aggregate level and in firms' decisions about adding or subtracting from their stocks of factors of production. This research will examine how Survey of Plant Capacity measurements can contribute to studying these issues.

ALCOHOL MARKETS AND CONSUMPTION

Frank Sloan—Center for Health Policy Law and Management, Duke University
David Ridley—The Fuqua School of Business

This proposal addresses three research questions about retail markets for alcoholic beverages. First, how do market size and regulation affect the competitiveness and number of onsite (bars and restaurants) and offsite (liquor stores) sellers? Second, how is the spatial distribution of sellers determined in these markets? Third, to what extent does the degree of competitiveness and spatial distribution of alcohol sellers affect individuals' consumption of alcoholic beverages?

To address these questions, we will use the 1990 and 2000 decennial censuses, the 1987–2002 Economic Censuses, the American Housing Survey for 1985–2001, and the Longitudinal Business Database for 1985–2002. We expect that our study will yield multiple benefits to the U.S. Census Bureau. First, our analysis will enhance understanding of the data and improve the quality of data. Second, we will improve the accuracy of links across time or entities for establishments in specific industries that the Census Bureau surveys. Third, we will identify shortcomings of current data collection programs and document new data collection needs. Fourth, we will prepare estimates of the population and characteristics of the population.

IMPROVING DATA ON EMISSIONS AND VOLUNTARY PROGRAM PARTICIPATION AND ESTIMATING RELATIONSHIPS AMONG PARTICIPATION, EMISSIONS, AND OTHER PLANT CHARACTERISTICS

Richard Morgenstern—Resources for the Future; Billy Pizer—Resources for the Future; Jhih-Shyang Shih—Resources for the Future

Collected under Title 13, Chapter 5, of the U.S. Code, the Census of Manufactures, Annual Survey of Manufactures, and Manufacturing Energy Consumption survey all contain important information about plant-level activity in the United States and associated material and energy use. Over the past decade, voluntary environmental programs have played an increasingly important role in environmental and energy management. Yet existing programs have been subject to only limited empirical study. An important question is whether participation in these programs is important enough to warrant inclusion in future surveys, analogous to current questions about energy management.

This project will increase the knowledge base of the U.S. Census Bureau and other researchers and analysts by merging existing data with additional information on emissions and voluntary program participation. First, this project will allow us to examine the impact of voluntary program participation and whether it warrants inclusion in future surveys. Second, the project improves our understanding of plant characteristics and activities while checking the quality of existing data. Third, the merged datasets will allow us to calculate population estimates of emissions and other measures of plant activity with and without the voluntary programs.

All three results promise important benefits for the Census Bureau in its effort to improve the quality and usefulness of both existing Title 13, Chapter 5 data, as well as future survey instruments. Understanding how program participation interacts with other inputs and outputs can indicate whether participation indicators would be useful in future data collection. Comparisons with newly merged datasets allow for verification of some data elements. Even where direct comparisons are not possible, we can observe anomalies in indirect comparisons (for example, energy use and emissions) that signal a quality issue. As we compute population estimates of plant emissions and activity with and without voluntary programs, we will make use of state-of-the-art sample selection techniques. Such techniques, which are analogous to missing data techniques, could prove useful in other areas of work with Census Bureau data where population estimates are necessary despite significant problems with missing data. Finally, we expect this work to generate suggestions for improved survey design in the future.

The last result will provide some of the first quantified estimates of voluntary program consequences involving careful attention to sample selection issues. Drawing on experience with EPA's 33/50 and Climate Wise programs, and DOE's 1605(b) program, the proposed research will identify program consequences based on competing sample selection approaches that jointly model voluntary program participation and emission outcome. The assumptions inherent in these competing models can alter or reverse estimated population effects. Comparing estimates across models and programs, we expect to draw conclusions that will be more robust and therefore more valuable for future decision-making.

LOCAL LABOR MARKET EFFECTS OF INDUSTRIAL DEMAND SHOCKS—AIRCRAFT MANUFACTURING IN THE 1990S

Keenan Dworak-Fisher—U.S. Bureau of Labor Statistics

In this study, we prepare estimates of population measuring the effects of local labor demand shocks on the labor market outcomes and geographic migration of U.S. workers. To do so, we generate a valuable new set of geographic delineations that are consistently defined across the 1990–2000 decade in five states. Within these delineations, we create estimates of how labor market and demographic characteristics of the resident populations changed over the decade. To generate our estimates of labor market behavior, we exploit a natural experiment in the aircraft manufacturing industry during the 1990s: a variety of plausibly exogenous factors that combined to severely diminish aircraft manufacturing in several localities, creating local labor demand shocks. Due to the end of the Cold War, a recession, and a glut in the commercial aircraft market, employment in this industry fell by 25 percent between 1989 and 1999, with the decline concentrated early in the decade. In a related development, the industry also restructured during this decade; consolidations borne out of a need to maintain minimum economies of scale caused some localities to be especially hard-hit by the decline. At the same time, increased competition in the industry led to the increased adoption of lean production technologies that diminished employment in traditional aircraft manufacturing further. Because the aircraft manufacturing industry is so large, it comprises a significant proportion of employment in several areas where it experienced these severe declines. We generate our estimates of the labor market behavior populations by examining the changes of various population characteristics in these localities. We use our estimates of population characteristics within our newly defined geographic units to perform this analysis.

We will use data from the 1990 and 2000 Censuses of Population, including geographic detail, to construct indexes measuring how wages, employment rates, and population changed over the 1990s within narrowly defined geographic areas, while controlling for demographic compositions of the areas. We match these indexes up with measures of changes in overall job availability in the areas based on publicly available data from the Regional Economic Information System (REIS). We use this linked database to estimate reduced form equations measuring the elasticities of wage, employment rate, and population of various demographic groups and sectors to the labor demand shock caused by aircraft manufacturing's decline. In addition to benefiting the U.S. Census Bureau by preparing valuable estimates of population, this research will create a valuable intermediate product: a database of Census Bureau data that is linked across time through consistently defined geographic designations and linked with establishment-based measures of employment. This database will provide a useful tool for the improvement of data quality via improved sensitivity checks for data review, additional inputs to imputation for nonresponse, and establishment-based checks on employment information by place-of-work that could be used in a benchmarking procedure. In addition, our research into creating geographic links and examining their use in the study of local labor markets will provide a valuable tool for evaluating the labor market designations created by the Census Bureau. The database will also provide an alternative starting point for future research involving geographic detail.

TEMPORARY HELP AGENCIES AND LOCAL MARKET CONDITIONS

Yukako Ono—Federal Reserve Bank of Chicago; Daniel Sullivan—Federal Reserve Bank of Chicago

The Help Supply Industry (SIC 7363) has been one of the fastest growing industries in the U.S. economy. It includes both Temporary Help Services (THS) establishments, which supply workers to client firms on a temporary basis, and Employee Leasing Services (ELS) establishments, which supply workers to client firms on a longer-term basis. Research on the industry has been growing because of the important role it is thought to have had in increasing labor market flexibility by efficiently matching workers and employers (e.g., Segal and Sullivan, 1995, 1997; Golden, 1996; Ono and Zelenev, 2003). However, the rapid growth of the Help Supply Industry also presents challenges for statistical agencies and the researchers who use their data. One concern is that while the workers supplied by THS and ELS establishments are under the direct supervision of the client firm, they are on the payroll of the Help Supply establishments. Thus, they are not counted in the employment totals of the industries in which they perform their work. This can make standard estimates of labor productivity misleading for industries that utilize help supply workers. In addition, most research interest is in the role of THS firms in improving the functioning of labor markets, but most available data do not distinguish between THS and ELS employment. This is a concern because ELS firms, which typically take on the payroll of an existing workforce and have little role in the recruitment of workers, are unlikely to play the same important labor market intermediation role as THS firms.

This project will increase the U.S. Census Bureau's knowledge base about the relevant issues surrounding the Help Supply Industry. Given recent growth in this industry and its likely impact on the productivity and investment decisions of firms outside the industry (the client firms), this information is extremely important for evaluating Census Bureau's collection and tabulation of employment data. To examine these issues, this project will extend our previous work (Ono and Zelenev, 2003; Segal and Sullivan, 1995, 1997) with micro-level analyses of firms' use of temporary labor and the industrial organization of the THS industry.

First, by using the 1997 and 2002 Business Expenditure Survey (BES) and Survey of Plant Capacity Utilization (PCU), we will analyze the extent to which THS usage buffers fluctuations in client firms' regular employment. We will also examine whether the use of THS is increased by greater competition among THS agencies. Next, by using the Census of Services and Longitudinal Business Database, we will study whether THS agencies are attracted to local markets with more volatile industrial structures, using the method employed in Ono and Zelenev (2003). We then will examine whether the entry of THS agencies reduces the markup they charge client firms for supplying workers. Finally, we will study the role of temporary help services in the particularly important market for temporary nurses.

This proposal will further benefit Census programs by using Census micro data to address data quality issues and to create documentation that will benefit the Census Bureau by increasing understanding of current problems in the data as well as by improving future data collection efforts. In particular, we will contribute to the development of methods to improve the separate estimation of the number of ELS and THS workers employed by each industry in each geographic area. This will require use of the economic census and the BES. We will also develop methods to incorporate the inputs of THS and ELS workers in estimates of industry level labor productivity in manufacturing. This will require use of the PCU, as well as other census datasets.

RURAL ENTREPRENEURS AND THE SURVIVAL AND GROWTH OF RURAL ENTREPRENEURIAL FIRMS

Jason Henderson—Federal Reserve Bank of Kansas City

Although entrepreneurship is a vital source of economic growth, information on rural entrepreneurship is sparse. The lack of rural entrepreneurship information leaves rural stakeholders dependent on statistics that may not reflect rural entrepreneurial activity. For example, do published Characteristics of Business Owners (CBO) Survey statistics accurately reflect rural entrepreneurship activity? Does rural entrepreneurship differ from nonrural entrepreneurship? If so, does U.S. Census Bureau data accurately reflect the rural component of entrepreneurship, or does rural response idiosyncrasies lead to systematic bias in published data?

This proposal will first analyze such potential bias in Census Bureau statistics, then explore the development of new methodologies that the Census Bureau could use to publish new statistics on rural entrepreneurship. Rural will be defined in two ways: places with less than 2,500 people and as nonmetropolitan areas.

The project's first stage will analyze the factors contributing to the success and growth of new firms in rural and nonrural locations. The result will be a better understanding of how firm success is affected by the characteristics of individual entrepreneurs, by the characteristics of the firms they form, and by the communities in which businesses are located. If the factors contributing to firm success differ by rural/nonrural location, rural entrepreneurship is indeed different than metro entrepreneurship, and Census Bureau statistics could be biased if rural firms are under- or overrepresented in summary statistics. By using both urban/rural and metro/nonmetro definitions, the use of the metro/nonmetro definition as a proxy for the urban/rural definition can be explored.

The second stage of the analysis will develop a methodology that could be used to publish new statistics on entrepreneurship from the Census Bureau. At the national level, entrepreneurship has been clearly demonstrated to be a vital source of economic growth. The lack of entrepreneurship data at subnational level limits the ability to study the relationship between entrepreneurship and regional economic growth. An entrepreneurship index that satisfies Census Bureau disclosure requirements will be developed for various geographic regions. Entrepreneurship is a multifaceted concept that cannot be characterized by business starts alone, further justifying the development of a broader index measure. All project results will be made publicly available, subject to Census Bureau disclosure rules.

This proposal will use the Longitudinal Business Database (LBD) from 1976 to current, the 1992 CBO Survey, and the 1992 Survey of Minority and Women Owned Business Enterprises (SMWOBE) as the basis for the analysis. The proposal requests the use of the Standard Statistical Establishment Listing (SEEL) to explore rural/nonrural responses/nonresponse bias. 2002 Survey of Business Owners (SBO) data are also requested if they become available prior to proposal termination. The CBO, SMWOBE, and LBD will be used to identify new firm start-ups, measure their growth, identify the individual and firm characteristics of rural entrepreneurs, and analyze the difference between rural and nonrural entrepreneurs. Moreover, the project will characterize nonresponse (item and respondent from the CBO and SMWOBE) specifically using information on rural/nonrural status. The methodologies and recommendations produced are expected to apply to the upcoming publications of the 2002 SBO.

THE BEHAVIOR OF SMALL AND LARGE FIRMS OVER THE BUSINESS CYCLE

Patrick Kehoe—Federal Reserve Bank of Minneapolis; Varadarajan Chari—University of Minnesota; Lawrence Christiano—Northwestern University

This proposal will examine the relative behavior of small and large firms over the business cycle. A widely held view is that monetary policy fluctuations play a central role in the business cycle and that these fluctuations affect small firms disproportionately. We plan to ask whether the data support this view. Furthermore, some researchers have argued that markups of prices over costs fluctuate systematically with the business cycle and that these fluctuations are tied to the size of firms. We plan to document the relationship between the cyclical properties of markups and the size of firms.

This project will use the Longitudinal Research Database, the Longitudinal Business Database, the Quarterly Financial Reports, and the Enterprise Summary Report (ES9100) to obtain establishment- and firm-level information about sales, employment, value added, inventories, capital expenditures, the cost of materials, and ownership. These data will be compiled into a panel dataset of establishments and of the firms to which these establishments belong. For larger firms, we plan to link these data to data from Compustat® on the financial conditions of the firms, as well as to monetary policy indicators and other business cycle indicators. These will be examined for fluctuations over time and with respect to the business cycle.

The predominant purpose of this proposal is to inform the U.S. Census Bureau about differences in behavior of small and large firms in varying economic climates. Hence, the project will prepare estimates of the population characteristics regarding the differential sensitivity of small and large firms to business cycles. These analyses will not only further the understanding of the quality of Census Bureau data for small vs. large firms, but could also lead to improvements in the methodology for collecting, measuring, or tabulating data in Title 13, Chapter 5 surveys and censuses.

NEIGHBORHOOD PHYSICAL FORM AND RESIDENTIAL SATISFACTION

Yizhao Yang—Cornell University

The proposed research aims at testing whether and how the major components of neighborhood physical form—density, mixture in land use and housing, interconnectedness of street network—impose any systematic influence on residents' perception and rating of their residential environment as a place to live, and how such influence would vary across household subgroups. It will employ multivariate statistic method to perform cross-sectional analyses. It will make use of the individual-level information from the publicly available 2002 metro-version American Housing Survey (AHS) data and neighborhood and community level social and physical measures derived from multiple data sources including the 2000 decennial census, the 2000 Census Transportation Planning Package (CTPP), and local parcel-based land use Geographic Information System (GIS) data. However, linking the AHS data to other datasets proposed to use in this research requires the census tract identifier, which is only available in the internal version of the AHS data. Given the current availability of the internal AHS datasets at the Center for Economic Studies (CES), the project proposes using the tract identifiers from the 1994/1995 internal AHS datasets for the 13 MSAs surveyed in the 2002 metro-AHS for the purpose of merging files.

Funded in part by a dissertation research grant award by the U.S. Department of Housing and Urban Development (HUD), the proposed research is anticipated to generate output that will not only inform policy makers but also benefit the U.S. Census Bureau in several areas. First, the proposed research will improve the understanding of the AHS data quality by conducting not only a careful examination of the AHS data itself but also an evaluation of the relationship between the AHS neighborhood measures and the neighborhood measures generated with other datasets. Second, analyses performed in this research will lead to potential improvement in data collection by identifying shortcomings in current AHS data collection and document new data collection needs, such as neighborhood attributes important to residential satisfaction but not currently surveyed in the AHS. Third, the resulting new dataset from merging the AHS with the neighborhood and community measures generated in this research will remain at the CES and be made available to other researchers. This new dataset will greatly enhance the utility of the AHS data in social science. And, fourth, the proposed research will yield summary statistics and coefficient estimates that go beyond those commonly released by the Census Bureau and enable a better understanding about Americans' residential settings and residential experience.

MIGRATION IN THE ARCTIC: SUBSISTENCE, JOBS, AND WELL-BEING IN URBAN AND RURAL COMMUNITIES

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W. Edwards—College of Business and Public Policy, University of Alaska Anchorage
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The purpose of the proposed research is to increase the utility of U.S. Census Bureau data especially as it relates to understanding mobility of Arctic indigenous peoples, with a particular focus on Inupiat and other Inuit people. Our research proposes using decennial census long form data (1990, 2000) at the UCLA Census Bureau Research Data Center. In addition, as a part of our analysis, we will use data from the Survey of Living Conditions in the Arctic (2003), the North Slope Borough Census (1988–2003), the Government of Nunavut (1999, 2001, 2004), and Statistics Canada Aboriginal Peoples Survey (1991, 2001) along with the public U.S. Decennial Census PUMS and Census Summary Files 1–4 (1980–2000).

In the Proposed Benefits section we outline how our research will provide the following direct benefits to the Census Bureau: (1) understanding and improving the quality of data produced through a Title 13 census; (2) enhancing the data collected in a Title 13 census; (3) identifying shortcomings of current data, collection programs, and/or documenting new data collection needs; (4) preparing estimates of population and characteristics of population as authorized under Title 13. Briefly, our research proposes the following:

First, we compare household migration and social characteristic variables from other surveys with Census Bureau data. Active temporary migration, in combination with high rates of nonresponse, have contributed to suspect Census Bureau place-level data for certain variables in rural Alaska. Because of the uniqueness of questions in other survey instruments (such as temporary migration), we can test for differences in data quality, identify possible undercounts or overcounts, and suggest methods for improved remote rural enumeration. Second, we will improve the quality of data by estimating the effect of age, sex, and race imputation among large rural Alaska households (age and sex information for large Alaska households was lost due to a data capture error). Third, we use fitted values from private instruments to estimate the effect of nonresponse imputation in Census Bureau data. Fourth, we link private data sources with Census Bureau data to create a dataset, stored with the CRDC, which includes all Inupiat households living in the United States and additional Arctic place-level characteristics. Finally, we provide estimates of migration patterns within and between the Arctic regions of Alaska and the Canadian North.

The proposed research on migration specifically addresses migration of Arctic indigenous people between rural communities, larger regional centers, and urban areas. We have three primary research objectives: (1) improve the utility of census data in order to more precisely document the economic and social characteristics of Arctic indigenous peoples; (2) to refine and improve methods for analyzing migration decisions of individuals participating in mixed subsistence and cash economies in Arctic regions; (3) apply these improved methods to understand the particular migration behavior of the indigenous population in Arctic Alaska and Canada.

We propose to address a number of questions about the causes and consequences of migration raised in previous studies. First, what are the roles of subsistence opportunities and community quality of life amenities in migration decisions? Second, how persistent and widespread are differences in migration patterns (such as

gender differences)? Third, what can be said about the role of national policies regarding transfer income, education, and investment in community infrastructure on migration? Finally, what are the long-term consequences of migration decisions: is mobility on balance improving living conditions in Arctic communities, especially the poorest places, or is it draining leadership to larger settlements and exacerbating inequalities? Our approach views migration into and out of Arctic communities as a potential indicator of relative well-being for residents and takes into account subsistence opportunities and quality of life factors, as well as income earning opportunities.

Our three levels of analysis include: i.) documenting patterns and stylized facts, ii.) testing community and regional differences, and iii.) applying a household production model to estimate well being by place. The model directly integrates subsistence opportunities into the migration decision and the estimated equations predict how changes in communities affect well-being directly and indirectly through their effects on migration. Comparing the Inupiat regions in Alaska to the Nunavut Territory of Canada in all three levels of analysis, we develop a demographic profile of migrants and migration rates over time and test hypotheses on the effect of changes in well-being on household migration decisions.

INDUSTRIAL STRUCTURE, AGGLOMERATION, AND PRODUCTIVITY

Edward Feser—University of Illinois at Urbana-Champaign
Joshua Drucker—University of North Carolina at Chapel Hill

This study will produce estimates of manufacturing productivity of businesses in U.S. regions that differ according to their industrial structure and agglomeration characteristics. Specifically, it will compare the production efficiency and realized agglomeration economies of business establishments in regions dominated by a few large firms with establishments in regions with a broad mix of firms and sectors. The substantive results are expected to yield insights into the forces driving regional economic growth and adjustment. The project will aid the U.S. Census Bureau's mission by producing new estimates of productivity that account for the role of regional corporate structure, by developing and documenting procedures for linking Census Bureau data to Dun and Bradstreet *MarketPlace* data, and by evaluating the consistency of Census Bureau data with Dun and Bradstreet data. The project will link the *MarketPlace* data to the *Standard Statistical Establishment List* (SSEL) and to the *Longitudinal Research Database* (LRD). In the process of linking Census Bureau data to *MarketPlace* data, the project will create a documented crosswalk file that can be used in the future to link establishments in the *MarketPlace* data to those in Census data. The project will use the linked data to compare data items (i.e., establishment name, establishment address) in the *MarketPlace* data to those in the SSEL. The project will also compare employment, sales, and ownership structure in the LRD to those items in the *MarketPlace* data to check the quality of data collected in the Annual Surveys and Censuses of Manufactures.

VENTURE CAPITAL FINANCING IN YOUNG FIRMS

Manju Puri—Fuqua School of Business, Duke University
Rebecca Zarutskie—Fuqua School of Business, Duke University

The primary purpose of this study is to enable the U.S. Census Bureau to better understand the role of venture capital (VC) financing in young firms and to improve the data collected in the Quarterly Financial Report (QFR) and the Survey of Business Owners (SBO) by linking these datasets to an external dataset on VC financing. The researchers will suggest ways to improve the collection of information on VC financing and note any inconsistencies in variables across the Census Bureau datasets and the external data. The researchers will be the first to link the external dataset on VC financing (called VentureXpert) with the QFR and the SBO. The researchers will therefore create a bridge file that can be accessed by future users of these data. Finally, the researchers intend to empirically investigate important economic questions relating to VC.

Using the SSEL Name and Address files from 1975 to 1999, the researchers will link VentureXpert to the Longitudinal Business Database (LBD) using a STATA coded name matching algorithm. The researchers will link the QFR (1982, 1987, 1992, 1997), and the 1992 Characteristics of Business Owners Survey (Firms and Owners) to the merged LBD-VentureXpert dataset using EINs and CFNs. The researchers will also link to the merged LBD-VentureXpert dataset the 1977, 1982, 1987, 1992, and 1997 waves of the Census of Manufactures, Census of Services, Census of Retail Trade, Census of Wholesale Trade, and Census of Construction Industries, and the 1987, 1992, and 1997 waves of the Census of Transportation using EINs and CFNs.

Using these data and additional data from SDC Platinum, Compustat®, CRSP, the FDIC Summary of Deposits and Call Reports, and BEA economic data, the researchers will estimate what are the determinants of receiving VC financing and what is the relationship between VC financing and a variety of firm outcomes, such as growth rates, survival rates, time to merger, and time to initial public offering. Additional analysis will be performed on the subsample of the LBD and VentureXpert, which can be matched to and the Annual Surveys of Manufactures (1975 to 2001). This project will meet benefits objectives consistent with Title 13, Chapter 5 by improving the data collected in the QFR and the SBO, creating a VentureXpert-SSEL bridge file, and creating estimates of the fraction of firms receiving VC financing from 1975 to 1999 and the determinants and impact of this VC financing.

THE MIXED-RACE HOUSEHOLD IN RESIDENTIAL SPACE: PROPOSAL TO ACCESS 1990 AND 2000 DECENNIAL LONG FORM DATA

Mark Ellis—University of Washington; Steven Holloway—Department of Geography, University of Georgia; Richard Wright—Department of Geography, Dartmouth College

The research has four goals that require use of the 1990 and 2000 long form data. First, we will test various definitions of mixed-race households using 2000 multiracial data with a view to maximizing compatibility for comparisons with 1990 single-race data. This testing will identify locations and scales where temporal comparisons are most sensitive to definitional issues in 2000. Second, we intend to map and analyze the neighborhood geographies of mixed-race households in 1990 and 2000. In light of concerns about disclosure risk for small populations in small areas, we are interested in developing procedures available for effective cartographic representations of mixed-race household geography that do not violate confidentiality protections. The third aim of the proposed research investigates the effect of increased rates of mixing within households on neighborhood segregation measures. The fourth aim of the proposed research centers on how racial identity is reported for the children of mixed-race couples. Specifically, to what extent does this choice reflect the particulars of household and/or neighborhood characteristics.

USING PLANT-LEVEL DATA TO ASSESS THE MOTIVES FOR AGGREGATING LINE-OF-BUSINESS INFORMATION

Daniel Bens—University of Chicago; Philip G. Berger—Graduate School of Business, University of Chicago; Steven Monahan—INSEAD

Our proposed study evaluates the degree of information aggregation selected by management in a firm's published financial statements. This project will study the way financial data within a firm are grouped in the Compustat® Database to the way they are grouped in the Longitudinal Research Database (LRD), the Longitudinal Business Database (LBD), and the Enterprise Summary Report (ES9100). Compustat® is a database of information from firms' published financial statements, whereas the LRD and the LBD contain establishment-level data reported to the U.S. Census Bureau by firms and collected from administrative records. The ES9100 provides aggregated firm information as reported by the firm to the Census Bureau. Firms have considerable discretion in how they aggregate business information when preparing their published financial statements. Thus, comparing these data to the more detailed establishment-level data will shed light on how discretion affects the aggregation of information by firms in general. Further, the project will assess the impact of this aggregation on industry classification. While many factors likely affect management's aggregation decision, economic theory suggests two phenomena are particularly pertinent: proprietary costs and agency costs. Proprietary costs result from revealing proprietary information to competitors, suppliers, employees, customers, or other groups; our focus in this study will be on competitive proprietary costs. Shareholders incur agency costs when they delegate decision-making authority to agents (managers) whose interests are not fully aligned with those of the shareholders. Thus, investigating the impact of proprietary costs and agency costs on the aggregation of information in published financial statements is a central issue in our research proposal.

UNDERSTANDING THE IMPACT OF TRADE ON THE U.S. ECONOMY

Andrew B. Bernard—Tuck School of Business; J. Bradford Jensen—Institute for International Economics; Peter K. Schott—Yale School of Management

Measuring foreign trade in the United States, who trades, how it is conducted, where it originates, where it goes, and its impact on the U.S. economy is an important mission of the U.S. Census Bureau. The purpose of this project is to extend the benefits of a previous project (FY01-1112) to Title 13, Chapter 5 programs. The previous project enhanced data collected under a Title 13, Chapter 5 program, increased the Census Bureau's understanding of the quality of data produced in a Title 13, Chapter 5 program, and produced new estimates of population characteristics for Title 13, Chapter 5 programs.

A principal objective of the project is to link additional years of import and export transaction data to the Longitudinal Business Database (LBD) and enhance the existing match of 1993 and 2000 data. The additional years to link are 1992, and 1994–1999 (with the hope of obtaining (and linking) additional years of data from the Foreign Trade Division). The links are made via the EIN information on the import and export transaction files to the Standard Statistical Establishment List files (SSEL) and for exports to Canada, the link is made via business name. We propose to investigate improved matching methodologies using the enhanced statistical matching algorithms in SAS9.

With the additional linked data, the project proposes to examine a number of issues to increase the Census Bureau's understanding of the quality of data collected in Title 13, Chapter 5 programs. The topical areas to be investigated include multinational corporation import and export pricing and valuation behavior, geographic and product market entry, the impact of trade on the domestic economy, and treatment of inventory in transit. All of these topical areas will increase the Census Bureau's knowledge base regarding Title 13, Chapter 5 programs.

The project requests the use of all economic census and survey data for the years 1963 through the most recent available (and future years as they become available), the SSEL files (including name and address information) for 1975-most recent available (and future years as they become available), the LBD for 1975-most recent available (and future years as they become available), the Foreign Trade Division import and export transaction data for 1992–2000 (and future years should they become available). The project will also make use of a number of publicly available datasets that the research team will provide. (These are listed in the Data Section.)

Appendix 4.
CENTER FOR ECONOMIC STUDIES (CES) DISCUSSION PAPERS 2005

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

05-30 "The Role of Retail Chains: National, Regional, and Industry Results," by Ronald S. Jarmin, Shawn D. Klimek, and Javier Miranda, 12/05.

05-29 "The Industry Life Cycle and Acquisitions and Investment: Does Firm Organization Matter?," by Vojislav Maksimovic and Gordon Phillips, 12/05.

05-28 "The Impact of Minimum Quality Standards on Firm Entry, Exit and Product Quality: The Case of the Child Care Market," by V. Joseph Hotz and Mo Xiao, 12/05.

05-27 "Contributions to Health Insurance Premiums: When Does the Employer Pay 100 Percent?," by Alice M. Zawacki and Amy K. Taylor, 12/05.

05-26 "Using Census Business Data to Augment the MEPS-IC," by Kristin McCue and Alice Zawacki, 12/05

05-25 "What Has Been Capitalized into Property Values: Human Capital, Social Capital, or Cultural Capital?," by Shihe Fu, 10/05.

05-24 "Smart Cafe Cities: Testing Human Capital Externalities in the Boston Metropolitan Area," by Shihe Fu, 10/05.

05-23 "Place of Work and Place of Residence: Informal Hiring Networks and Labor Market Outcomes," by Patrick Bayer, Stephen L. Ross, and Giorgio Topa, 10/05.

05-22 "Product Choice and Product Switching," by Andrew B. Bernard, Stephen Redding, and Peter K. Schott, 10/05.

05-21 "Factor Price Equality and the Economics of the United States," by Andrew B. Bernard, Stephen Redding, and Peter K. Schott, 10/05.

05-20 "Importers, Exporters, and Multinationals: A Portrait of Firms in the U.S. that Trade Goods," by Andrew B. Bernard, J. Bradford Jensen, and Peter K. Schott, 10/05.

05-19 "Survival of the Best Fit: Exposure to Low-Wage Countries and the (Uneven) Growth of U.S. Manufacturing Plants," by Andrew B. Bernard, J. Bradford Jensen, and Peter K. Schott, 10/05.

05-18 "Firm Structure, Multinationals, and Manufacturing Plant Deaths," by Andrew B. Bernard and J. Bradford Jensen, 10/05.

05-17 "Where Do Manufacturing Firms Locate Their Headquarters?," by J. Vernon Henderson and Yukako Ono, 10/05.

05-16 "Quality Sorting and Networking: Evidence from the Advertising Agency Industry," by Mohammad Arzaghi, 10/05.

05-15 "Networking Off Madison Avenue," by Mohammad Arzaghi and J. Vernon Henderson, 10/05.

05-14 "Effect of Volatility Change on Product Diversification," by Namsuk Kim, 10/05.

05-13 "Public Disclosure of Private Information as a Tool for Regulating Environmental Emissions: Firm-Level Responses by Petroleum Refineries to the Toxics Release Inventory," by Linda T. M. Bui, 10/05.

05-12 "Poverty Estimates for Places in the United States," by Daniel H. Weinberg, 9/05.

05-11 "Reallocation, Firm Turnover, and Efficiency: Selection on Productivity or Profitability?," by Lucia Foster, John Haltiwanger, and Chad Syverson, 9/05.

05-10 "The Industry Life-Cycle of The Size Distribution of Firms," by Emin M. Dinlersoz and Glenn MacDonald, 7/05.

05-09 "How is Value Created in Spin-offs? A Look Inside the Black Box," by Thomas Chemmanur and Debarshi Nandy, 7/05.

05-08 "Alternative Measures of Income Poverty and the Anti-Poverty Effects of Taxes and Transfers," by Daniel H. Weinberg, 6/05.

05-07 "Families, Human Capital, and Small Business: Evidence from the Characteristics of Business Owners Survey," by Robert W. Fairlie and Alicia M. Robb, 6/05.

05-06 "Why Are Black-Owned Businesses Less Successful than White-Owned Businesses? The Role of Families, Inheritances, and Business Human Capital," by Robert W. Fairlie and Alicia M. Robb, 6/05.

05-05 "The Long-Term Effects of Job Mobility on the Adult Earnings of Young Men: Evidence from Integrated Employer-Employee Data," by Javier Miranda, 6/05.

05-04 "Immigration, Skill Mix, and the Choice of Technique," by Ethan Lewis, 5/05.

05-03 "Assessing Multi-Dimensional Performance: Environmental and Economic Outcomes," by Ronald J. Shadbegian and Wayne B. Gray, 5/05.

05-02 "Micro and Macro Data Integration: The Case of Capital," by Randy Becker, John Haltiwanger, Ron Jarmin, Shawn Klimek and Dan Wilson, 4/05.

05-01 "Computer Investment, Computer Networks, and Productivity," by B.K. Atrostic and Sang Nguyen, 1/05.

Appendix 5.
DATA RELEASED TO RESEARCH DATA CENTERS (RDCs) IN 2005

Dataset	Description	Year
Annual Survey of Manufactures (ASM)	ASM provides estimates of statistics for all manufacturing establishments with one or more paid employees.	2001
Business Expenditure Survey (BES)	BES supplements basic economic statistics produced by the economic census for wholesale trade and retail trade with estimates of operating expenses.	1997 and new version of 1992 BES files (originally known as AES) that match the format of 1997 file
Medical Expenditure Panel Survey-Insurance Component (MEPS-IC)	MEPS-IC Researcher Version provides data on health insurance plans obtained through employers.	2003
American Housing Survey–National (AHS-NAT)	AHS collects data such as 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.	1997, 1999, 2001, and 2003
American Housing Survey–Metropolitan (AHS-MET)	See description for AHS-NAT. Selected metropolitan areas.	1998, 2002, and 2004
Longitudinal Employer-Household Dynamics Business Register Bridge (LEHD-BRB)	The LEHD employer-level data are at the establishment level; this can be linked to U.S. Census Bureau establishment and firm-level microdata by the LEHD-BRB. The bridge provides a crosswalk at various levels of business-unit aggregation.	1990–2004
Longitudinal Employer-Household Dynamics Employer Characteristics File (LEHD-ECF)	The ECF contains information on establishment industry coding and geographical location, as well as quarterly payroll and monthly employment for selected states.	1990–2004

Appendix 6.
RESEARCH DATA CENTER (RDC) PARTNER INSTITUTIONS

Berkeley RDC
University of California, Berkeley

Boston RDC
National Bureau of Economic Research

CES RDC
Administration for Healthcare Research and Quality
Bureau of Economic Analysis
Federal Reserve Board of Governors

Chicago RDC
Argonne National Laboratory
Federal Reserve Bank of Chicago
Northwestern University
University of Chicago
University of Illinois

Michigan RDC
University of Michigan

New York RDC
Baruch College, CUNY
City University of New York
Columbia University
Cornell University
Federal Reserve Bank of New York
Fordham University
National Bureau of Economic Research
New York University
Pace University
Princeton University
Russell Sage Foundation
Rutgers University
Stony Brook University, SUNY
University at Albany, SUNY
Yale University

Triangle RDC
Duke University
North Carolina State University
The University of North Carolina at Chapel Hill

UCLA RDC
University of California, Los Angeles

Appendix 7.
CENTER FOR ECONOMIC STUDIES (CES) STAFF LISTING 2005

Current CES Staff in **bold.**

Name	Position
CES Senior Staff	
Atrostic, B.K.	Senior Economist
Holly, Brian	Project Review Coordinator
Jarmin, Ron	Assistant Chief for Research
Mildorf, Mark	Assistant Chief for Research Support
Weinberg, Daniel	Chief Economist and Chief, Center for Economic Studies
Weng, Shigui	Chief, Data Staff
CES Staff Researchers	
Becker, Randy	Senior Economist
Foster, Lucia	Senior Economist
Gray, Bradley	Economist
Grim, Cheryl	Economist
Klimek, Shawn	Senior Economist
Krizan, C.J.	Economist
Luque, Adela	Economist
McCue, Kristin	Economist
McInerney, Melissa	Statistician
Michaelides, Marios	Economist
Miranda, Javier	Economist
Nguyen, Sang	Senior Economist
Nucci, Alfred	Statistician
Zawacki, Alice	Economist
CES Data Staff	
Goodloe, Mike	Information Technology Specialist
Iceland, John	Sociologist
Ryan, David	Information Technology Specialist (Microcomputer Systems)
Singal, Anurag	Information Technology Specialist (Data Base Systems)
Yates, Michele	Survey Statistician
CES Computer Staff	
Caputo, Dean	Information Technology Specialist (Systems Analyst)
Lawrence, Debbie	Information Technology Specialist
Lessard, James	Information Technology Specialist (Data Base Systems)
Linoinis, Cyr	Information Technology Specialist (Systems Analyst)
Monahan, James	Senior Information Technology Specialist
Murray, Michael	Information Technology Specialist (Systems Analyst)
Stolba, Darrin	Information Technology Specialist (Systems Analyst)
Yates, William	Information Technology Specialist (Programming & Analysis)

RDC Administrators

Acosta, Rebecca	Los Angeles (UCLA)
Chandra, Pinky	New York (Ithaca)
Davis, James	Boston
Hyson, Rosemary	New York (Baruch)
Kurz, Christopher	Ann Arbor (Michigan)
Milby, Ritch	Berkeley
Reznek, Arnold	Washington, DC (CES Headquarters)
Riggs, T. Lynn	Chicago
Sedo, Stanley	Ann Arbor (Michigan)
White, T. Kirk	Research Triangle (North Carolina)

Administrative Staff

Foster, Tenille	Secretary
Hajmosi, Mary Ellen	Division Chief Secretary
Norris, Teresa	Secretary
Schatzer, Ann	Secretary
Turner, Rebecca	Secretary

Administrative Staff—Governments Division/CES Administrative Office

Bryant, Ann	Administrative Assistant
Dennison, Marilyn	Lead Financial Assistant
Kiatta, Cheryl	Administrative Officer
Magee, Staci	Administrative Assistant
Schafer, Jackie	Administrative Assistant