

TURMOIL AND GROWTH:
Young Businesses,
Economic Churning,
and Productivity Gains

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The Foundation of Entrepreneurship

This report summarizes the recent research conducted by Steven J. Davis, University of Chicago, John Haltiwanger, University of Maryland, and Ron Jarmin, U.S. Bureau of the Census (see bibliography for more details). The Ewing Marion Kauffman Foundation provided core funding for the data infrastructure development in longitudinal business databases, as well as provided support for many of these papers. We thank Alyse Freilich, Robert Litan, E.J. Reedy, and Robert Strom for their comments and contributions to this summary report. We also thank the U.S. Census Bureau for its support of the data infrastructure and research. The papers on which this summary report are based have undergone a more limited review than official Census Bureau publications. The views, findings, and opinions expressed in this work are those of the authors and not the U.S. Census Bureau. All results have been reviewed to ensure confidentiality.

Introduction

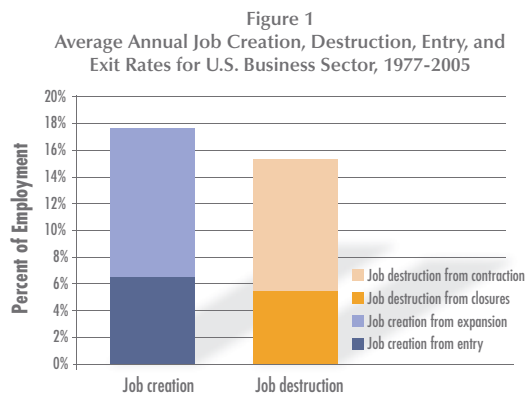
The current economic turmoil arouses much anxiety and concern among the public, the business sector, and the policy-making community. Eventually, however, the economy will recover and resume sustained growth, just as it has after previous slowdowns or recessions.

But some turmoil—specifically the churning of firms and jobs—will continue even in good times. It is inherent in any dynamic capitalist economy that some firms thrive and grow while others decline and sometimes fail. This essay summarizes recent economic research on the key role this churning process plays in enhancing economy-wide productivity growth.¹ Sorting successful business endeavors from unsuccessful ones is, in fact, a central and necessary part of our market economy, and it is essential that the public and policy makers understand this process.

Young Businesses and Economic Churning

The churning of businesses and jobs is a ubiquitous feature of the U.S. private sector. Each year, millions of jobs are created as a result of growth in existing businesses and the creation of new businesses.² At the same time, millions of jobs are destroyed each year as businesses contract or close. Figure 1 illustrates the magnitude of this phenomenon, displaying the average annual job creation and job destruction rates³ at U.S. establishments between 1977 and 2005. The chart also indicates the significant role played by establishment entry in job creation and establishment exit in job destruction. While the expansion and contraction of continuing establishments are responsible for much of the turbulence in the economy, more than one-third of job creation is due to the entry of new establishments, and a similar proportion of job destruction is from exiting establishments.

Closer examination reveals that the contribution of new establishments extends beyond initial entry. In fact, surviving new businesses have very high employment



Source: Tabulations from the Longitudinal Business Database (LBD).

1. The papers on which this summary report is based have undergone a more limited review than official Census Bureau publications.

2. Some of the research summarized here considers firms as observational units and some considers establishments. An establishment is a physical location, such as an individual retail store or manufacturing plant, whereas a firm may own one or many establishments. We use a generic term, such as businesses or employers, when we want to encompass both firms and establishments. See the appendix for a broader discussion of this distinction and its implications.

3. The job creation rate is the gross number of new jobs added to the economy as a percentage of total employment. Similarly, the job destruction rate is defined as the gross number of jobs destroyed as a percentage of total employment. Note: The analogous rates for job creation and destruction using firms as the business concept rather than establishments are slightly lower.

growth rates in their early years. As one might expect, young businesses also have higher exit rates than older businesses, contributing significantly to job destruction from closure.

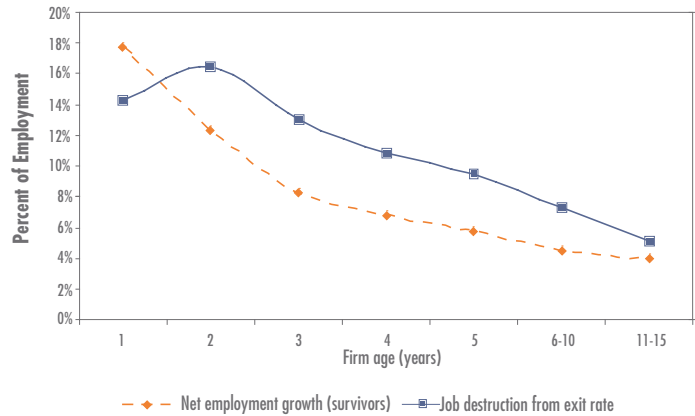
Figure 2 shows how job destruction and net employment growth vary with the parent firm's age.⁴ Among surviving establishments, average employment growth rates decline with firm age. That is, conditional on survival, establishments owned by younger firms grow faster than those owned by older firms. However, the (gross) job destruction rate due to establishment exits also is higher for those owned by younger firms, peaking at two years of age and declining with age thereafter. In other words, establishments operated by younger firms account for a disproportionate share of job destruction. As one would expect, closure and job destruction are more common in the precarious early years of a firm's life, but exit becomes less likely as the firm matures. Young businesses, then, are responsible for both high employment growth when they survive and high job destruction when they close.

A certain amount of job creation or destruction is necessary to account for net employment changes. The rates of job creation and destruction shown in the charts above, however, reveal churning far beyond this amount. We can measure the extent of churn by calculating the excess job reallocation rate, the amount of job creation and destruction over and above the minimal amount required to accommodate the net employment change. (See the Appendix for additional discussion.) Figure 3 confirms that younger firms play a disproportionate role in the economy's churning. The excess reallocation rate declines as firms mature.

Young Businesses and Productivity Growth

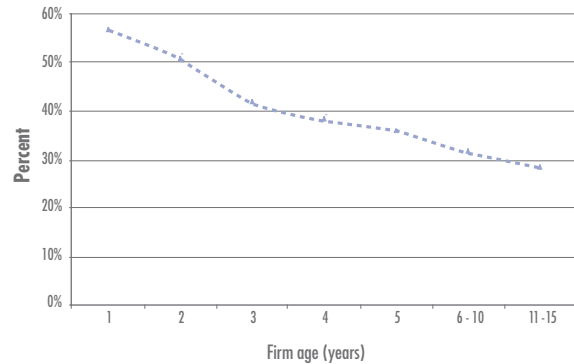
While the churning of businesses and jobs is the subject of much debate among policy makers and the cause of much anxiety among workers, new research indicates that this churning is important to the health of the economy. An analysis of productivity data reveals

Figure 2
Net Employment Growth and Job Destruction from Exit Rates by Firm Age, U.S. Nonfarm Business Sector (1987–2005)



Source: Tabulations from the LBD

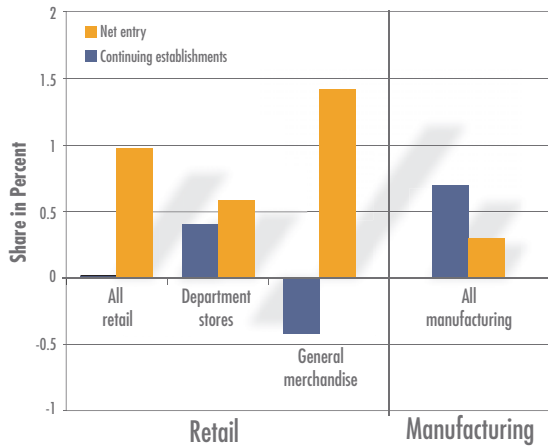
Figure 3
Annual Excess Reallocation Rate by Firm Age, U.S. Nonfarm Business Sector (1987–2005)



Source: Tabulations from the LBD

4. Firm age for an establishment is defined here as the age of the oldest establishment at the firm. This means, for example, that new establishments of large, mature firms in Figures 2 and 3 are classified as having a firm age consistent with its owner. In Figures 2 and 3, most young firms operate a single establishment so that establishment age and firm age are one and the same.

Figure 4
Contribution of Net Entry to Productivity Growth
(10-year Horizon)



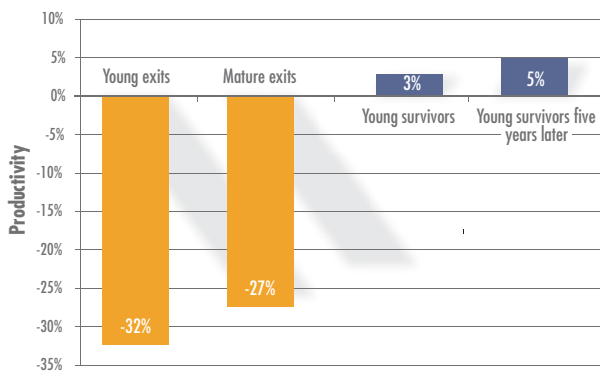
Source: Tabulations from the Census of Retail Trade and the Census of Manufacturers taken from Foster, Haltiwanger, and Krizan 2001 (Manufacturing), 2006 (Retail Trade).
 Note: General merchandise includes warehouse clubs, catalog showrooms, and similar discount houses. See Appendix for more information.

that exiting businesses are less productive than continuing ones. Furthermore, the data show that, conditional on survival, young establishments have higher productivity levels and higher productivity gains than more mature establishments. In effect, the churning process replaces lower productivity businesses with new, more productive ones, thereby increasing productivity overall.

Figure 4 illustrates the important role of new establishments in productivity growth. Using the retail industry as an example, this chart shows that the entry of new establishments makes a greater contribution to industry productivity growth than continuing establishments. While productivity growth at continuing businesses makes an important contribution to productivity growth in some retail segments (e.g., department stores), virtually all of the productivity growth in the sector as a whole appears to be accounted for by net entry. For comparison purposes, the overall figures for the manufacturing sector also are displayed. Here, the contribution of net entry is more modest (approximately 30 percent), but it remains substantial.

Research suggests that the productivity contribution of net entry in retail is more striking than in manufacturing because of recent major shifts in the structure of the retail industry. Large, national firms, such as Wal-Mart, have increasingly displaced smaller retail businesses, and the national firms are significantly more productive on average. As national chains expanded their share of activity, they increased productivity in the industry as a whole. Research also shows, however, that the entry of new, independent retail businesses has contributed to the displacement of less productive retail businesses and overall productivity growth in the industry.

Figure 5
Productivity Relative to Mature Surviving Incumbents



Source: Tabulations from Census of Retail Trade taken from Foster, Haltiwanger, and Krizan (Table 5, 2006).
 Note: Young establishments are those that are under five years old. See Appendix for more information.

Figure 5 makes this “up or out” dynamic even more clear. Comparing the productivity of exits and new establishments to the productivity of mature incumbents, the chart indicates that exits are less productive than (continuing) incumbents, and that young survivors are more productive than incumbents. The figure also shows that young survivors are even more productive five years later. In particular, young survivors initially are 3 percent more productive than mature incumbents, but their productivity advantage over incumbents increases during the subsequent five years to 5 percent. This pattern indicates that young survivors have higher initial productivity levels than mature establishments and higher productivity growth during the next five years.

Taken together, these results suggest that a large portion of U.S. productivity gains reflect the displacement of low-productivity establishments by new establishments with higher productivity. The volatile role that new firms play in the churning of the economy, it seems, is vital to our productivity growth. While the constant entry and exit of new businesses creates turbulence and anxiety, the same process ensures that less productive businesses exit and more productive ones survive, resulting in a more productive economy overall.

Young Businesses in Detail

The research discussed in this report illuminates the significant role young businesses play in job creation and productivity growth. It also underscores the need for additional research on young businesses. In particular, identifying new businesses and tracking them over time are essential for understanding how the economy adapts and what drives productivity growth and improvements in living standards.

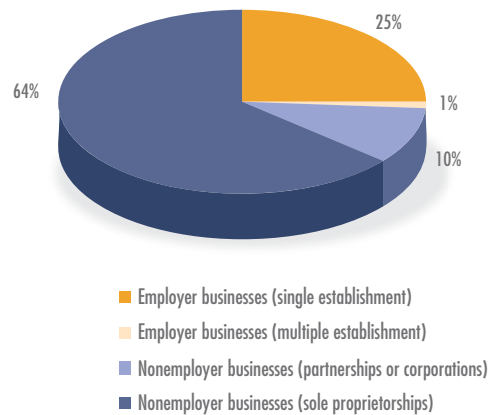
Researchers investigating young firms, however, confront a number of challenges. The first difficulty is defining and tracking new firms. Most studies, in fact, neglect businesses with no employees, usually because of data limitations. In contrast, some of our recent work constructs datasets that include nonemployer businesses and demonstrates their significant economic role.

Using the Integrated Longitudinal Business Database (ILBD) and other data sources, we document some important facts about these nonemployer businesses.⁵ First, self-employment is the main job for approximately 7 percent of U.S. workers and a secondary source of income for many others. As Figures 6 and 7 illustrate, nonemployer businesses represent nearly 75 percent of all businesses in the U.S., even though they contribute only 4 percent of all revenue. There are more than fifteen million U.S. businesses with positive revenue but no paid employees (e.g., sole proprietors and partnerships with no payroll).

Second, these nonemployer businesses often represent the early stages of future employer businesses. A careful study of forty industries indicates that roughly one-quarter of new employer businesses began as nonemployer businesses. Figure 8 illustrates this finding, showing that businesses with this type of prehistory

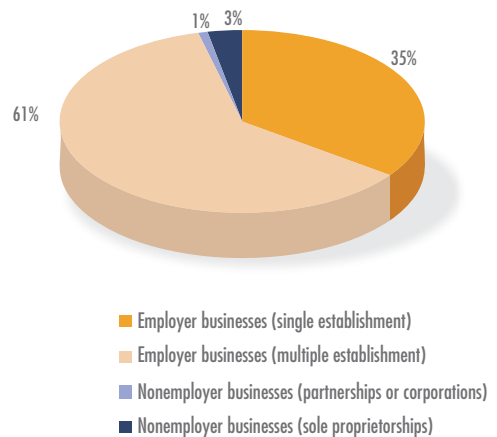
⁵ This section draws heavily from Davis et al. (2007b).

Figure 6
Distribution of Businesses by Business Type, 2000



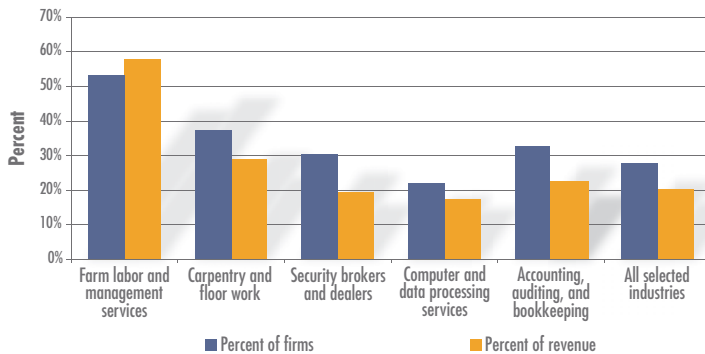
Source: Tabulations from the ILBD taken from Davis et al. (2007b).

Figure 7
Distribution of Revenue by Business Type, 2000



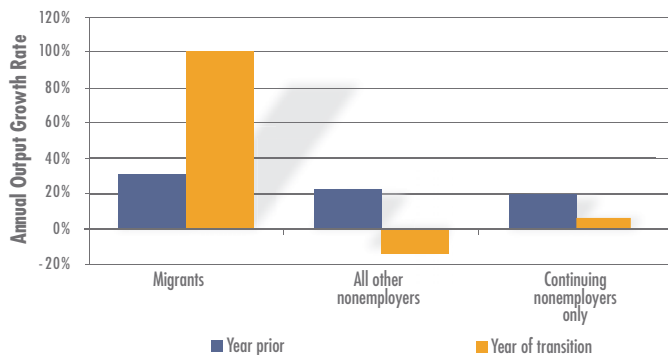
Source: Tabulations from the ILBD taken from Davis et al. (2007b).

Figure 8
Young Employers (0-3 years old)
with Prehistory as Nonemployers



Source: Tabulations from the ILBD taken from Davis et al. (2007b).
Note: Young employers are less than four years old where firm age is the age of the oldest establishment based on its first year of positive payroll.

Figure 9
Annual Output Growth Rates of Firms Migrating from
Nonemployers to Employers (compared to control groups)



Source: Tabulations from the ILBD taken from Table 7 from Davis et al. (2007b)
Notes: Migrants are businesses that transition from nonemployer to employer status. The chart shows revenue growth rates in the year prior to transition and the year of transition for migrants and for controls in the same calendar year. See appendix for more information

account for about one-fifth of all revenue generated by young employers.

Finally, research shows these businesses have especially high output growth rates during their transitions from nonemployer to employer status. Output grows very rapidly in the year before and the year of transition to employer status. As shown in Figure 9, output grows much more rapidly at firms in the process of transitioning or migrating to employer status than at incumbent employers or other nonemployers in the same industry.

The data and analyses summarized above shed light on the role of nonemployer businesses in the economy. They also highlight some of the issues involved in defining and tracking new businesses. Prospects for additional research progress in this area depend on the availability of the right data. Accurate measures of business age require prompt identification of new businesses (perhaps even before they acquire employees), high-integrity longitudinal links, and a long panel dimension. And, of course, it is impossible to analyze and evaluate the role of new businesses unless they are captured by the data early in the business life cycle.

Conclusion

It is important for policy makers, citizens, and researchers to understand the complex role of new businesses in the economy. The costs of the churning process described in this report are highly visible—and often considerable—for the owners and employees of businesses that downsize or close. Business failure and job loss can be traumatic on a personal level and create a sense of insecurity. The benefits that flow from this churning process are less visible but no less real. The reallocation of jobs, workers, and capital to their best use is a major force behind productivity gains over time, and these gains are the main source of improved living standards. Dynamism and turbulence in the economy have a favorable overall impact on productivity and economic well being.⁶ The turmoil in our economy, it appears, also is one of its greatest strengths.

⁶ Davis and Haltiwanger (1999) provide some discussion of these issues. Davis et al. (2007c) investigate the effects of a general decline in business-level volatility on the incidence and rate of unemployment in the United States. Bartelsman, Haltiwanger, and Scarpetta (2006) and Caballero (2007) explore many factors that can distort the churning dynamics and, in the process, reduce efficiency, productivity, and economic well being.

Appendix: Definitions and Methodology

Longitudinal Business Database (LBD): The LBD is a longitudinal dataset that contains annual observations from 1975 to 2005 on all nongovernment establishments and firms in the U.S. economy. The dataset was developed at the U.S. Census Bureau's Center for Economic Studies (CES) and includes information on employment, payroll, industry, and geography. Jarmin and Miranda (2002) describe the LBD and its construction.

Integrated Longitudinal Business Database (ILBD): The ILBD builds on the Longitudinal Business Database (described above), integrating federal government administrative records and survey-based data to create a database that includes both U.S. employer and nonemployer businesses. As of 2000, the ILBD had a universe of approximately twenty-one million employer and nonemployer businesses in the United States. See Davis et al. (2007b) for a detailed description of the ILBD.

Excess reallocation rate: The excess reallocation rate is the sum of the job creation and job destruction rates, minus the absolute value of the net employment growth rate. For example, if the job creation rate is 18 percent and the job destruction rate is 15 percent in a given year, the number of jobs reallocated is 33 percent of total employment. Since the net employment change is 3 percent, the excess reallocation rate equals 30 percent, the amount of job churning over and above the minimal amount required to accommodate the net employment change.

Firms versus establishments: Establishments are distinct economic units that produce goods or services at a single physical location. By contrast, a firm is a legal entity that consists of one or more establishments under common ownership and control. In this essay, we use "business" as a generic term that encompasses establishments and firms. In analyzing "the churn," it is useful to examine the churning of both establishments and firms. For example, from the perspective of job churning, the establishment concept is the most relevant. However, as is clear in this report, the opening of new establishments by existing firms is a potentially important source of innovation, productivity, and job growth.

Figure 4: Productivity at the establishment level is measured as real gross output per worker. The shares reported are from a decomposition of productivity growth at the four-digit standard industrial classification (SIC) level of aggregation on the share of industry level productivity growth attributable to continuing establishments and net entry. For details of the methodology, see Foster, Haltiwanger, and Krizan (2001, 2006). For the Retail-All and Manufacturing-All results, the reported shares are the output-weighted average shares across four-digit industries. A negative share implies that the group exhibited negative productivity growth during the period. The results for manufacturing are similar for total factor productivity.

Figure 5: The relative productivity measures are based on an establishment-level regression of output per worker on dummy variables for young exits, other exits, young survivors, and young survivors five years later with controls for industry interacted with year effects and for entry. The omitted group is mature surviving incumbents; thus, the reported coefficients reflect differences between the group in question and mature surviving incumbents.

Figure 9: The output and productivity of nonemployer businesses is captured in the National Income and Product Accounts (NIPA), but the treatment of productivity and productivity gains for such businesses suffers from serious data limitations. Measured output for nonemployers is derived from administrative records on revenues or sales. Measured labor input for nonemployer businesses relies on a combination of business-level administrative records and data derived from household surveys, such as the Current Population Survey. There are complex and unresolved issues involved in counting the self-employed and measuring their labor input. These issues have important implications for NIPA productivity measures, as discussed in Bjelland, Haltiwanger, Sandusky, and Spletzer (2006).

References

- Bartelsman, Eric, John Haltiwanger, and Stefano Scarpetta. December 2006. Cross Country Differences in Productivity: The Role of Allocative Efficiency. Working paper.
- Bjelland, Melissa, John Haltiwanger, Kristin Sandusky, and James Spletzer. 2006. Reconciling Household and Administrative Measures of Self-Employment. Working paper.
- Caballero, Ricardo. 2007. *Specificity and the macroeconomics of restructuring*. Cambridge, Mass.: MIT Press.
- Davis, Steven, John Haltiwanger, and Scott Schuh. 1996. *Job creation and destruction*. Cambridge, Mass.: MIT Press.
- Davis, Steven, Jason Faberman, and John Haltiwanger. 2006. The flow approach to labor market analysis: New data sources and micro-macro links. *Journal of Economic Perspectives* 20(3) 3-26.
- Davis, Steven, John Haltiwanger, Ron Jarmin, Javier Miranda. 2007a. Volatility in business growth rates: Publicly traded versus privately held firms. *NBER Macroeconomics Annual 2006*, 2:107-156.
- Davis, Steven, John Haltiwanger, Ron Jarmin, C.J. Krizan, Javier Miranda, Al Nucci, and Kristin Sandusky. 2007b. Measuring the Dynamics of Young and Small Businesses: Integrating the Employer and Nonemployer Universes. NBER Working paper. No. 13226. Forthcoming in Timothy Dunne, J. Bradford Jensen, and Mark J. Roberts (eds.), *Producer dynamics: new evidence from micro data*.
- Davis, Steven, Jason Faberman, John Haltiwanger, Ron Jarmin, and Javier Miranda. 2007c. Business Volatility, Job Destruction and Unemployment. Working paper.
- Davis, Steven, John Haltiwanger, Ron Jarmin, and C.J. Krizan. 2007d. Productivity Dynamics of Young Employer Businesses: Does a Nonemployer Prehistory Matter? Working paper.
- Dunne, Timothy, Mark Roberts, and Lawrence Samuelson. 1989. Patterns of firm entry and exit in U.S. manufacturing industries. *Rand Journal of Economics*. 495-15.
- Fairlie, Robert. 2006. Kauffman Index of Entrepreneurial Activity: National Report 1996-2005. Kansas City, Mo.: Ewing Marion Kauffman Foundation.
- Foster, Lucia, John Haltiwanger, and C.J. Krizan. 2001. Aggregate productivity growth: Lessons from microeconomic evidence. Dean, Harper, and Hulten (eds.), *New directions in productivity analysis*. Chicago, Ill.: University of Chicago Press.
- Foster, Lucia, John Haltiwanger, and C.J. Krizan. 2006. Market selection, reallocation and restructuring in the U.S. retail trade sector in the 1990s. *The Review of Economics and Statistics*, 748-758.
- Foster, Lucia, John Haltiwanger, and C.J. Krizan. 2008. Reallocation, Firm Turnover and Efficiency: Selection on Productivity or Profitability. *American Economic Review*, 394-425.
- Haltiwanger, John, Lisa Lynch, and Christopher Mackie (eds.). 2007. *Understanding business dynamics: an integrated system for America's future*. National Research Council.
- Haskel, Jonathan, Ron Jarmin, Kazuyuki Motohasi, and Raffaella Sadum. 2007. Retail Market Structure and Dynamics: A Three Country Comparison of Japan, the U.K. and the U.S. Working paper.
- Jarmin, Ron S. and Javier Miranda. 2002. The Longitudinal Business Database. Center for Economic Studies. Working paper. No. 02-17.
- Jarmin, Ron S. and Javier Miranda. 2005. Reassigning Incorrectly Timed MU Births and Deaths. Center for Economic Studies. Technical working paper.
- Jarmin, Ron S., Shawn Klimek, and Javier Miranda. 2005. The Role of Retail Chains: National, Regional, and Industry Results. Center for Economic Studies. Working paper. No. 05-30.
- Kaplan, Steven, B.A. Sensoy, and P. Stromberg. 2002. How well do venture capital databases reflect actual investments? Working paper.
- Kaplan, Steven, B.A. Sensoy, and P. Stromberg. 2005. What are Firms? Evolution from Birth to Public Companies. NBER working paper. No. 11581.

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