

Job creation and destruction within Washington and Baltimore

Microdata from the new BLS Longitudinal Database show that from March 1992 through March 1999, gross job flows varied significantly between central cities and suburbs in the Washington-Baltimore metropolitan area; higher suburban employment growth was related to higher rates of both job creation and job destruction

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It is well known that there exists a large disparity in the growth rates of central cities and suburbs. In a host of metropolitan areas, central city employment has declined, while suburban employment has flourished. Understanding the nature and causes of these growth patterns are critical to those seeking to stimulate the economy of a central city or deal with suburban expansion. One previously unexplored aspect of metropolitan growth patterns is their *gross job flow components*—employment changes due to establishment startups, shutdowns, expansions, and contractions. At its core, employment growth is simply the *net* result of these four components. An examination of those components reveals much more about the employment patterns within a metropolitan area than does an analysis of employment growth alone. Consequently, this article analyzes just how much gross job flows relate to the observed differences in growth between central cities and suburbs.

Gross job flows have recently become the primary focus of several economic studies. Previously, economists relied almost entirely on aggregated data for their research purposes, particularly in studies involving employers and labor demand. This practice, however, allowed researchers to observe only the net

changes in economic variables from period to period. A few economists, notably Timothy Dunne, Mark J. Roberts, and Larry Samuelson,¹ as well as Steven Davis and John C. Haltiwanger,² appealed to establishment-level microdata for their analyses of the U.S. macroeconomy and aggregate labor dynamics. By using those data, they were able to analyze both employment growth and gross job flows for the economy. Together, these variables gave a much clearer picture of how the labor market functioned, and they changed how many economists perceived the way the economy worked.

Job flows deal with changes in employment at the *place of work*. These changes are associated with the startup and closing of an establishment, as well as the expansion or contraction of a continuing establishment's workforce. As the evidence that follows shows, job flows are quite pervasive. They can account for changes totaling more than 15 percent of employment in a given quarter. Such high rates of job turnover are reported in several other empirical studies also.³

Research on job flows requires access to establishment microdata. The Bureau of Labor Statistics is currently in the process of producing a new set of this type of data. The Longitudinal Database (LDB) contains quarterly employment and wage data for nearly all establishments in the U.S. economy. The Unemployment Insurance (UI) records from the

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BLS ES-202 program provide the raw data for the LDB. These records are matched across time in order to create a continuous longitudinal time series for each establishment, thereby allowing a researcher to observe when establishments start up, shut down, expand their employment, or contract their operations. Unlike previous databases, the LDB has quarterly information on all private and public establishments. Extending past the manufacturing industry, the LDB covers approximately 98 percent of all employed individuals. Consequently, it provides a unique source of data for a variety of micro- and macroeconomic studies.⁴ The coverage of industries and establishments in the LDB makes it particularly useful for in-depth regional studies such as the one presented in this article.

Previous research on job flows dealt primarily with national-level data and usually focused on manufacturing. Research across all industries at a finer level of regional detail has the potential to highlight many interesting findings about the labor market. For instance, Randall W. Eberts and Edward Montgomery have one of the few studies that explore State-level job flows using establishment microdata.⁵ These researchers find a positive relation between job flows and employment growth across areas: growing areas tend to have higher rates of both job creation and job destruction. Findings such as this for metropolitan areas or smaller regions could greatly aid in our understanding of how local labor markets function.

The analysis that follows focuses on the Washington and Baltimore metropolitan areas and looks at quarterly job flows from March 1992 to March 1999. These two metropolitan areas are particularly interesting because they have several unique properties. Washington and Baltimore are rather large metropolitan areas, and although they are located in close proximity to each other, they have quite different industrial and sectoral compositions and have experienced different paths of economic growth. Washington is predominantly a service-based city. Nationally and locally, the service industry has grown considerably over the past decade. As the national capital, Washington also has a disproportionate share of public-sector employees. Baltimore, by contrast, is predominantly a manufacturing-based city and is similar to many of the metropolitan areas in the “Rust Belt,” which dominate the Northeastern, Midwestern, and Mid-Atlantic regions of the United States. Like many of its northern counterparts, Baltimore has had to adjust to significant structural change, as its more mature industries have faced employment contractions. Finally, both metropolitan areas have well-defined political boundaries for their central cities (the District of Columbia and Baltimore City, respectively), making them particularly useful for this study.

The results of the study indicate substantial job flow heterogeneity within both metropolitan areas. Higher growth occurred in the suburbs rather than the central cities. The two central cities lost substantial employment during the period studied. The majority of losses in the District were in government, while the losses in Baltimore City were mostly in private

employment. Suburban growth was associated with high rates of both job creation *and job destruction*. An examination of job flows by their component parts (that is, startups, shutdowns, expansions, and contractions) reveals that higher rates persisted in the suburbs in nearly every instance; the only exception was a relatively high rate of shutdowns in the District of Columbia. These findings shed an intriguing new light on the employment dynamics observed within metropolitan areas: not only is job growth higher in the suburbs, but job turnover is as well.

The next section outlines the data, methodology, and terminology used in the analysis. The section after that presents results. The final section draws conclusions, cites possible explanations of the findings, and mentions some potential avenues of future research.

Data and methodology

The study to be presented uses the BLS Longitudinal Database to analyze gross job flows for the Washington, DC-Maryland-Virginia-West Virginia, Primary Metropolitan Statistical Area (PMSA) and the Baltimore, Maryland, PMSA. The District of Columbia and Baltimore City are the central cities of their respective PMSA's. All other counties and independent cities in each PMSA are collectively referred to as suburbs. The study examines 28 quarters, spanning March 1992 to March 1999.⁶ An establishment at a single location is the unit of observation. For the Washington PMSA, the number of quarterly observations ranges from 107,000 at the beginning of the sample period to 129,000 at the end. The number of Baltimore PMSA observations ranges from 50,000 to 57,000. The analysis focuses on employment data for the 3rd month of each quarter. The LDB contains linked establishments from the BLS ES-202 program, creating a historical record for each observation. In a recent *Monthly Labor Review* article, Timothy R. Pivetz, Michael A. Searson, and James R. Spletzer provided a detailed examination of the LDB, including its longitudinal establishment linking procedure.⁷

The study that follows focuses on employment as it changes each quarter. An establishment *birth* has positive employment in the current quarter and zero employment⁸ in the previous quarter and satisfies the following conditions: it cannot be a reactivated establishment coming off a temporary shutdown, and it cannot be a newly created breakout of a multiple-establishment record in the data. Similarly, an establishment *death* has zero employment in the current quarter and positive employment in the previous quarter and satisfies the following conditions: it cannot be shut down temporarily or be an active employer reporting zero employment, and it cannot be the result of a consolidation of a multiple-establishment record. *Birth employment* is the number of jobs gained due to the startup of a new establishment. *Death employment* is the number of jobs lost due to the shutdown of an establishment.

Expansion employment is the number of jobs gained due to continuing establishments experiencing a net gain in employment. *Contraction employment* is the number of jobs lost due to continuing establishments experiencing a net loss in employment. Note that expansions and contractions do not capture job changes within an establishment; instead, these statistics reflect only a net change in establishment employment between quarters.⁹ *Job creation* is the sum of birth employment and expansion employment. *Job destruction* is the sum of death employment and contraction employment. Finally, the *net change* in employment is the difference between job creation and job destruction.

The study uses the average employment over the current and starting periods, rather than the starting-period employment, as the denominator to calculate the growth rate.¹⁰ Job flow rates are calculated using the same denominator. These rates add up in the same manner as the employment numbers. (For example, the job creation rate is the sum of the birth rate and the expansion rate.) Consequently, the growth rate is just the difference between the job creation and job destruction rates.

Gross job flows in Washington and Baltimore

Background information. Like many metropolitan areas in the South and West of the United States, Washington has seen significant population growth, in both absolute and per-

centage terms. The Bureau of the Census estimated the metropolitan area's 1999 population to be approximately 4.7 million, a gain of more than 517,000, or 12.2 percent, over the 1990 figure. Baltimore's 1999 metropolitan area population was just under 2.5 million. In contrast to Washington's growth, Baltimore's population increased by just 109,000, or 4.6 percent, between 1990 and 1999. Baltimore has a significant manufacturing base that underwent considerable structural change over the past several decades, similar to that of many "Rust Belt" cities. The Census of Manufactures indicates that the manufacturing industry in Baltimore shed nearly 30 percent of its workforce between 1977 and 1992. The LDB data indicate a contraction of an additional 13 percent during the study period. In contrast, Washington has a relatively high share of employment in high-technology industries. The LDB data suggest that nearly 20 percent of the area's private-sector employees work in industries such as communications, software, and electronics. (This level of detail is not reported herein.) The high skills required of workers in these industries are reflected in the region's wages: on the basis of the 1999 ES-202 employment and wage data, the Washington PMSA ranks sixth out of more than 300 MSA's in average wage per worker. Baltimore, while above average, ranks 39th in this category.

Job flows by central cities and suburbs. Table 1 breaks down the basic employment and growth statistics for each PMSA by

Table 1. Employment growth in Washington and Baltimore, by area and sector, March 1992–March 1999

Area and sector	Employment, March 1999	Employment, March 1992	Net change	Employment share ¹	Quarterly growth rate
Washington PMSA	2,503,416	2,216,611	286,805	...	0.44
District of Columbia:					
Total	592,787	655,084	-62,297	100.0	-.34
Private	371,833	371,053	780	59.7	.01
Public ²	220,954	284,031	-63,077	40.3	-.84
Suburbs:					
Total	1,910,629	1,561,527	349,102	100.0	.72
Private	1,552,917	1,221,923	330,994	79.8	.86
Public ²	357,712	339,604	18,108	20.2	.19
Baltimore PMSA	1,142,326	1,031,994	110,33236
Baltimore City:					
Total	376,748	400,528	-23,780	100.0	-.22
Private	291,682	315,545	-23,863	78.1	-.29
Public ²	85,066	84,983	83	21.9	.00
Suburbs:					
Total	765,578	631,466	134,112	100.0	.69
Private	636,501	517,752	118,749	82.6	.74
Public ²	129,077	113,714	15,363	17.4	.45

¹ The employment share is an average of the employment shares from the first quarter of 1992 and the first quarter of 1999.

² Public-sector employment contains all Federal, State, and local government employees.

NOTE: The growth rate is the quarterly average of the period from the first quarter of 1992 to the first quarter of 1999, multiplied by 100 to yield a percentage.

Table 2. Job flow rates in center cities and suburbs, Washington and Baltimore, by area and sector, March 1992–March 1999

Area and sector	Job creation			Job destruction			Net employment growth
	Total	Births	Expansions	Total	Deaths	Contractions	
Washington PMSA							
District of Columbia:							
Total	4.9	1.1	3.9	5.3	1.2	4.1	-0.3
Private	7.2	1.6	5.5	7.2	1.8	5.4	.0
Public ¹	1.6	.2	1.4	2.5	.2	2.2	-8
Suburbs							
Total	7.1	1.5	5.6	6.4	1.2	5.2	.7
Private	8.3	1.9	6.4	7.4	1.5	5.9	.9
Public ¹	2.6	.2	2.4	2.4	.1	2.3	.2
Baltimore PMSA							
Baltimore City:							
Total	5.1	1.0	4.1	5.3	1.1	4.2	-2
Private	6.0	1.3	4.7	6.3	1.4	4.9	-3
Public ¹	2.1	.2	1.9	2.1	.2	1.9	.0
Suburbs							
Total	7.2	1.7	5.5	6.5	1.3	5.2	.7
Private	8.0	2.0	6.0	7.3	1.5	5.8	.7
Public ¹	3.0	.3	2.7	2.5	.2	2.3	.5

¹ Public-sector employment contains all Federal, State, and local government employees.

NOTE: The job flow rate is the quarterly average of the period from the first quarter of 1992 to the first quarter of 1999, multiplied by 100 to yield a percentage.

area (central city or suburb) and sector (private or public). Washington has more than twice the employment base of Baltimore. Government work makes up a disproportionately large share of Washington employment, particularly in the District of Columbia itself. Nonetheless, the area saw its public-employment share decline over the sample period. Overall, the two PMSA's have similar rates of total employment growth. Washington experienced a higher rate of private-employment growth, but also registered large job losses in the public sector during the study period, again mostly in the District. In both Washington and Baltimore, the central cities experienced striking employment losses. The net losses in the District were almost exclusively in the public sector, while the losses in Baltimore City were concentrated in the private sector. Both cities' suburbs had considerable employment growth over the period, whether it is measured as private or total employment.

Table 2 provides the average quarterly job flow rates for the central city and suburbs in each PMSA. For each area, job flows are listed for the private and public sector and for the entire labor force. In both central cities, job losses coincided with low rates of both job creation and job destruction. This was particularly true for total employment. The suburbs of both metropolitan areas had high growth and relatively high job creation and destruction. In Washington, the rates of private-sector job creation and destruction were approximately 15 percent and 3 percent higher, respectively, in the suburbs than in the central city. In Baltimore, the respective differences were a striking 33 percent and 16 percent in favor of the suburbs. The

differences in job flows between the central cities and suburbs remain even when one splits out job creation and destruction by births, deaths, expansions, and contractions. The only exception occurs in the Washington private sector, where the death rate is higher in the District of Columbia than in the suburbs.

Charts 1 and 2 show that these differences generally persist over the study period, despite large seasonal fluctuations in job creation and job destruction each quarter. The top panel of chart 1 shows that the job creation rate in the District of Columbia surpassed that of the Washington area suburbs only three times over the 28-quarter span. In the bottom panel, the District's job destruction rate exceeded the suburban rate just eight times. Chart 2 shows higher rates of suburban job creation and destruction over the entire period for the Baltimore PMSA. The lone exception was during the second quarter of 1994, seen in the bottom panel, where the Baltimore suburban job destruction was just slightly less than that in Baltimore City. Finally, there is a pronounced asymmetry in just how and when job flows are higher in the suburbs. In each case, central city and suburban job flows are not all that different during seasonal declines in a given job flow. However, the seasonal spikes in both job creation and job destruction are much more prominent in the suburbs than in the central cities.

THERE EXIST CONSIDERABLE DIFFERENCES not only in the patterns of growth between the central cities and suburbs of Washington and Baltimore, but also in their rates of job creation and job

Chart 1. Washington PMSA job creation and job destruction, private sector, second quarter 1992 to fourth quarter 1999

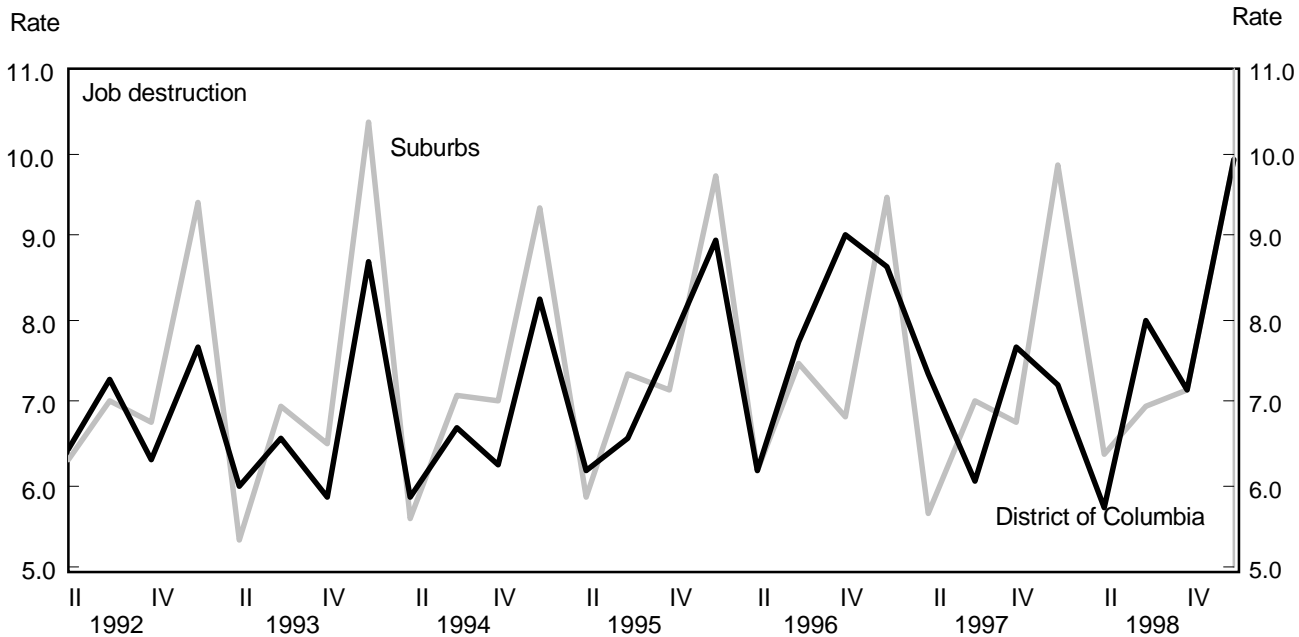
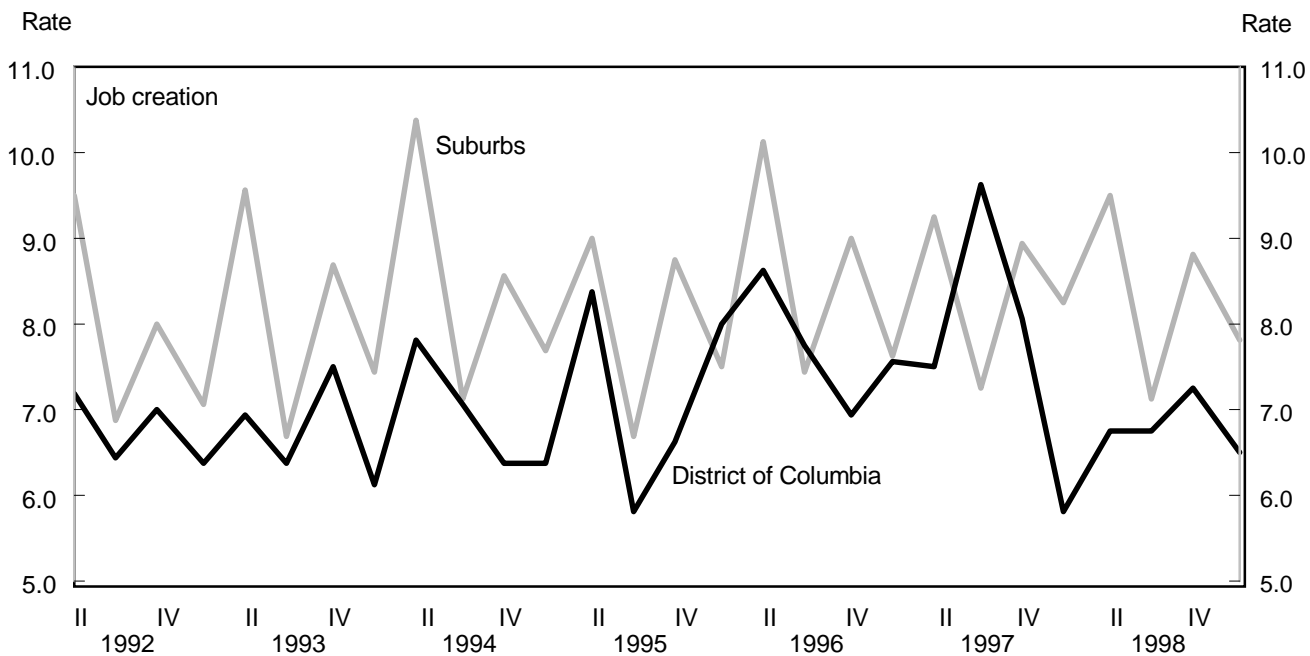
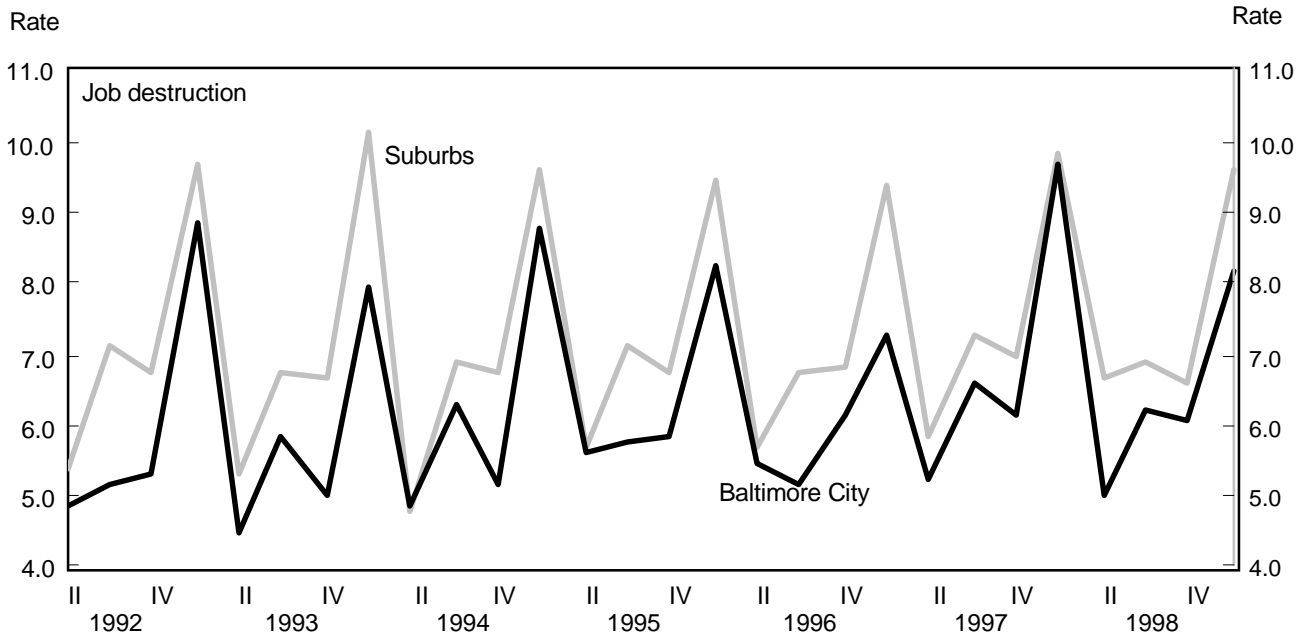
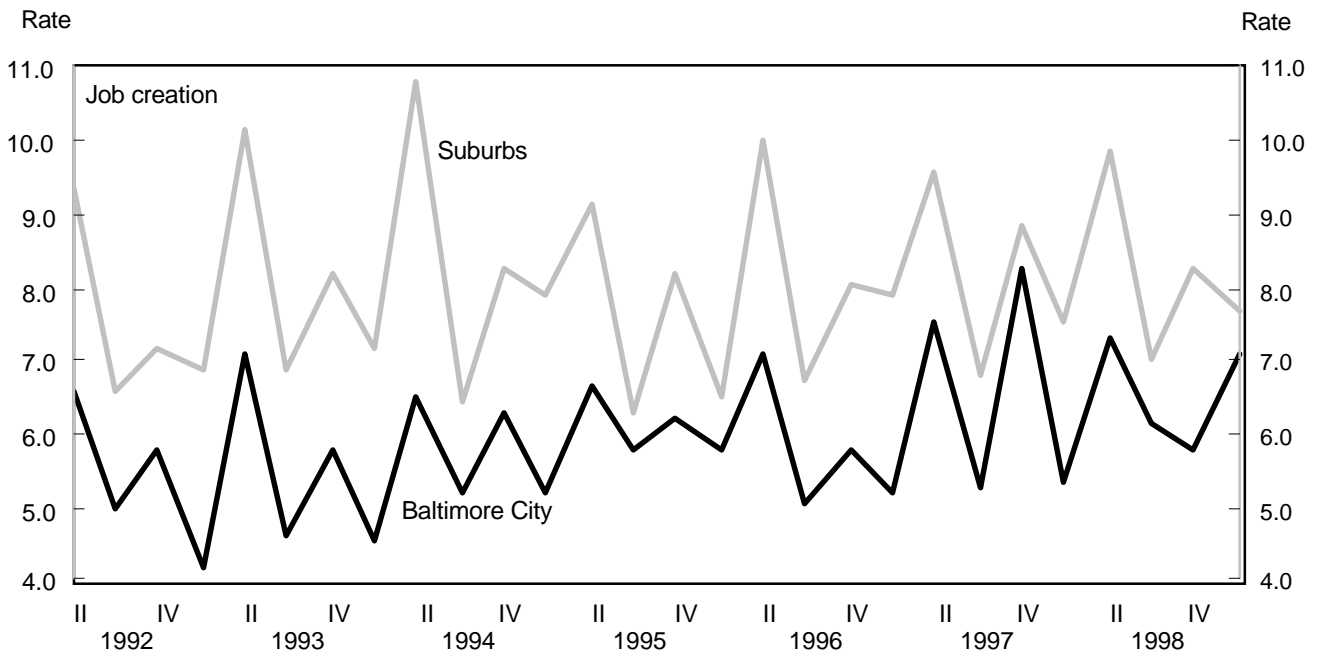


Chart 2. Baltimore PMSA job creation and job destruction, private sector, second quarter 1992 to fourth quarter 1999



destruction. Further, higher growth in the suburbs is associated, as one might expect, with high rates of job creation, but also, as one might *not* expect, with high rates of job destruction. To a large degree, the higher job flow rates persist over time, with seasonal fluctuations causing an asymmetry in the central-city–suburb difference: suburban job flows are much higher during seasonal increases than during seasonal decreases.

The fact that rates of both job creation and destruction are higher in the suburbs is a striking finding. It is not surprising that higher rates of job creation exist in the suburbs, because net growth is higher there as well. What is surprising is that rates of *job destruction* are higher in the suburbs, too. One explanation is that the central cities and suburbs differ in their establishment characteristics (for example, industry classification, establishment size, and age). Evidence presented in previous work indicates that these characteristics should play a role.¹¹ If so, then job flow rates in the suburbs would be higher in the aggregate, but would not be much different than central-city rates, for a given characteristic (for instance, comparing rates within the manufacturing industry or among medium-sized establishments).

One could think of other, more economic, factors that might influence the differences in job creation and destruction found in this study. There are several possibilities. Some deal with stories of “creative destruction.” For instance, suburban locations may be appealing to newer firms. When locating in the suburbs, new firms outcompete the older firms with new technologies and innovations. The inflow of new firms causes a higher rate of job creation, and the added competition it introduces to the older firms generates a higher rate of job destruction. In the end, the suburbs end up with more productive firms, a situation that comes about through higher rates of job turnover. This *replacement pattern* of creative destruction is consistent with several macroeconomic models in which older capital is slowly replaced by newer “vintages” over time.¹² In the central cities, the process of creative destruction is absent: there is no added competition for older firms to contend with, implying that competition has no effect on job destruction rates, and no new firms are entering the area, keeping job creation rates low.

Another way creative destruction could account for high suburban job flows is through a *shakeout* mechanism, as in the model of Ricardo Caballero and Mohamad Hammour.¹³ In this setting, new firms compete against each other, with some flourishing and others dying out quickly. Here, it is the entrance of new firms that accounts for the high rates of both job creation and job destruction.

Finally, labor migration may also explain how these differences in job creation and job destruction come about. An influx of workers may increase the rates of job searching and matching, as migrants try to match up with a job they find acceptable. This added shuffling around also would lead to simultaneously higher rates of job creation and job destruction, a scenario that is most consistent with the model of regional labor dynamics presented by Oliver J. Blanchard and Lawrence Katz.¹⁴ However, this scenario may better explain job flow differences *across* metropolitan areas rather than within them, as migration is usually thought of as occurring across different labor markets.

This article documents significant regional variation in the rates of job creation and job destruction. These gross job flows provide a more detailed picture of how local labor markets function than do simple net employment growth rates, and databases such as the LDB are ideal for the purpose. The study, however, tackles only a small part of the regional aspect of gross job flows, leaving the door open for a host of future work on the subject. For example, further research could go far in discerning whether any of the preceding scenarios represents a plausible explanation for the higher rates of job flows in the suburbs. Research involving a broader range of metropolitan areas would prove fruitful in this regard, as well as in either corroborating or refuting the existence of the job flow difference between the center cities and suburbs—it may be, after all, that the findings reported here are unique to the Baltimore-Washington area. Because employment growth rates are known to vary widely across the Nation, research on other regions could also aid in documenting and explaining variations in job flows across metropolitan areas as well as within them. The results of future work in this area could have considerable policy implications at both the local and national levels. □

Notes

¹ Timothy Dunne, Mark J. Roberts, and Larry Samuelson, “Patterns of Firm Entry and Exit in U.S. Manufacturing Industries,” *RAND Journal of Economics*, winter 1988, pp. 495–515; “Plant Turnover and Gross Employment Flows in the U.S. Manufacturing Sector,” *Journal of Labor Economics*, January 1989, pp. 48–71; and “The Growth and Failure of U.S. Manufacturing Plants,” *Quarterly Journal of Economics*, November 1989, pp. 671–98.

² Steven Davis and John C. Haltiwanger, “Gross Job Creation and

Destruction: Microeconomic Evidence and Macroeconomic Implications,” in *NBER Macroeconomics Annual 5* (Cambridge, MA, National Bureau of Economic Research, 1990), pp. 123–68; and “Gross Job Creation, Gross Job Destruction and Employment Reallocation,” *Quarterly Journal of Economics*, August 1992, pp. 819–63.

³ For a review, see Steven Davis and John C. Haltiwanger, “Gross Job Flows,” in Orley Ashenfelter and David Card (eds.), *Handbook of Labor Economics, Volume 3* (Amsterdam, Elsevier Science, 1999),

pp. 2711–2805.

⁴ See Daniel S. Hamermesh, “LEEp ing into the Future of Labor Economics: The Research Potential of Linking Employer and Employee data,” *Labour Economics*, March 1999, pp. 25–41. Hamermesh presents an in-depth list of the avenues of potential research for matched employee-employer data. The list includes many research possibilities for establishment microdata, such as the LDB, as well.

⁵ Randall W. Eberts and Edward Montgomery, “Cyclical versus Secular Movements in Employment Creation and Destruction,” NBER Working Paper No. 5162, 1995.

⁶ Effective June 30, 1993, the Baltimore and Washington Metropolitan Statistical Areas were combined. This article looks at the two areas separately; for more information on definitions of metropolitan areas, see OMB Bulletin 99–04.

⁷ Timothy R. Pivetz, Michael A. Searson, and James R. Spletzer, “Measuring job and establishment flows with BLS longitudinal microdata,” *Monthly Labor Review*, April 2001, pp. 13–20.

⁸ An establishment that is missing from the data is construed to have zero employment.

⁹ Davis, Haltiwanger, and Scott Schuh, *Job Creation and Destruction* (Cambridge, MA, MIT Press, 1996), note this occurrence as well in

their calculations of job creation and destruction. They conclude that the resulting job creation and destruction measures yield a lower bound estimate due to the movement of jobs within establishments in a given quarter.

¹⁰ The methodology for growth rate and job flow rate calculations is identical to that outlined in Davis, Haltiwanger, and Schuh, *Job Creation and Destruction*.

¹¹ See Davis and Haltiwanger, “Gross Job Flows.”

¹² Some examples are V. V. Chari and Hugo Hopenhayn, “Vintage Human Capital, Growth, and the Diffusion of New Technology,” *Journal of Political Economy*, December 1991, pp. 1142–65; Philippe Aghion and Peter Howitt, “A Model of Growth through Creative Destruction,” *Econometrica*, March 1992, pp. 323–52; and Simon Gilchrist and John C. Williams, “Putty-Clay Investment: A Business-Cycle Analysis,” NBER Working Paper No. 6812, 1995.

¹³ Ricardo Caballero and Mohamad Hammour, “The Cleansing Effect of Recessions,” *Quarterly Journal of Economics*, December 1994, pp. 1350–68.

¹⁴ Oliver J. Blanchard and Lawrence Katz, “Regional Evolutions,” *Brookings Papers on Economic Activity*, Vol. 1 (Washington, DC, Brookings Institution, 1992), pp. 1–75.