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Structural and Cyclical Trends in Net Employment over US Business Cycles, 1949–2009: Implications for the Next Recovery and Beyond

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Abstract

This paper expands on the methodology of Groshen and Potter (2003) for studying cyclical and structural changes in the US economy and analyzes the net structural and cyclical employment trends in the US economy during the last 10 trough-to-trough business cycles from 1949 to the present. It illustrates that the US manufacturing sector and an increasing number of services sectors, including parts of the financial services sector, are experiencing structural employment declines. Structural employment gains in the US labor market are increasingly concentrated in the healthcare, education, food, and professional and technical services sectors and in the occupations related to these industries. The paper concludes that the improved operation of the US labor market during the 1990s has reversed itself in the 2000s, with negative long-term economic effects for the United States.

Keywords: Business cycles, structural change, unemployment duration, occupational/sectoral employment shifts, labor turnover, Okun's Law relationship, Beveridge curves.

JEL codes: J21, J24, J62, J63, J64, O14, O51.

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"It is a crisis of confidence.… As you know, there is a growing disrespect for government and for churches and for schools, the news media, and other institutions. This is not a message of happiness or reassurance, but it is the truth and it is a warning."

—President Jimmy Carter, televised speech, July 15, 1979

One of the strongest and most durable historical-economic correlations is the link between the services sector's shares of total output and employment and average income levels. Simply put, the greater the role services play in an economy, the richer it is, and vice versa. However, the current global economic crisis has hit at the very core of the global services economy. It has humbled previously gravity-defying global financial centers, has stopped the engine of globalization in its tracks by causing the first contraction of global trade since World War II, and has led to the largest decline in global output in decades. The forward-looking alphabetic debate about the shape of the inevitable global economic recovery—will it be an L, V, W, or an inverse √?—has already been raging for some time and seems principally to be a debate about whether or the degree to which historic growth patterns will hold or if this time is really different.[1]

One thing, however, that definitely is different in this crisis is that it has spawned a reassessment of the benefits of the continuing economic shift toward some of the very sophisticated and high-wage services sectors, notably financial services. It is a recurring theme in much of the commentary on the crisis that the UK and US financial sectors grew to be far too large, were ultimately unsustainable, and have delivered little in terms of lasting welfare gains to anyone beyond a very select group of banking executives and traders. Somewhere along the way, the financial-services sector evolved from being just that—a sector that provided financial services to the rest of the economy into just a "financial sector," detached from the rest of economy and producing little beyond leveraged products for its own consumption.[2] For the first time there seems to be a broadening consensus that it would be a good thing for the US and UK financial sectors to shrink in economic importance and that it would be valuable for national welfare if a large part of this sector's highly quantitatively skilled workforce did something more productive in the long term for the country as a whole. Yet until August 2007, financial services and other related high-valued-added knowledge services were viewed as the end of the economic growth rainbow. Countries that had successfully exited the "twentieth-century manufacturing economy" and had entered these sectors and established global or regional financial and services centers seemed assured of reaping the vast economic rewards of the "postindustrial, twenty-first century services economy."

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1. For a discussion of this issue, see the debate between Peterson Institute Senior Fellows Simon Johnson and Michael Mussa at the Peterson Institute for International Economics on April 7, 2009, available at www.piie.com.

2. Adam Posen and Marc Hinterschweiger, "How Useful Were Recent Financial Innovations? There Is Reason To Be Skeptical," Peterson Institute for International Economics Realtime Economic Issues Watch, May 7, 2009, available at www.piie.com (accessed on July 18, 2009), have convincingly shown that in recent years just a small fraction of the trillions of dollars of the gross nominal value of derivatives actually involved nonfinancial parties and companies.

This clearly raises a series of longer-term development questions concerning just what kind of postindustrial services economy emerging-market and newly industrialized countries should ultimately aspire to. In the short term, for countries at the heart of the existing global services economy and particularly the United States, this issue leads to a repeat of the question of what kind of recovery the United States is likely to see and, more importantly, in what economic sectors future employment growth is likely to materialize. If the US financial sector and affiliated services are set to shrink significantly as a result of this crisis and new regulations are implemented to prevent future crises, perhaps this US business cycle will see a qualitatively different US postindustrial services economy begin to emerge. Or perhaps, after everything is said and done, there will not be much change at all.

What will the shape of the future US labor market be and where will employment growth be concentrated? This paper attempts to provide an answer to these questions by looking at historical, long-term structural and cyclical net employment trends in the United States. Which sectors have seen structural employment gains until now, which sectors have been in decline, and how have these trends shifted over time?

SCALE OF THE CURRENT US LABOR-MARKET SLOWDOWN IN HISTORICAL COMPARISON

It is important to recognize just how severe the labor-market impact of the current US downturn has been. This downturn is now the most severe labor-market contraction since World War II (Mussa 2009). It is therefore now especially relevant to ask questions about the relative strengths of structural and cyclical developments. The severity of the current downturn is illustrated in figure 1.

Figure 1 shows US private nonfarm employment 12 months before and 18 months after the peak of the business cycle during the current (2007), the shallowest (1960),[3] the deepest so far (1957), and the average of the previous nine US business cycles, as defined by the National Bureau of Economic Research (NBER).[4] Figure 1 includes employment data up to June 2009.[5] Employment numbers for each business cycle have been adjusted to 1953 levels to allow for comparison.[6] Two things are clear from this figure: First, after 18 months, the 2007 recession is the deepest, having surpassed the (initially sharper) recession of 1957; and second, all nine previous US expansions except for 1957 had higher job growth in the 12 months leading up to the business-cycle peak than in the current recession.

Another way to illustrate the scale of the current labor-market crisis in the United States is to look

3. By some measures, the short recession of 1980–81 was shallower than the 1960 recession in employment terms. However, due to its short duration, 1960 was picked as the shallowest recession in figure 1.

4. For the NBER's demarcation of business cycles, see National Bureau of Economic Research, Business Cycle Expansions and Contractions, December 1, 2008, available at www.nber.org (accessed on July 18, 2009).

5. Employment data for April, May, and June 2009 in this paper are preliminary.

6. Total private nonfarm employment at the 1953 peak was 43.8 million, or just over one third of the 115.8 million at the peak in 2007. It makes no sense to compare absolute numbers of job losses in different recessions, as the starting points are different and the US labor market much larger during later recessions.

at the rate of long-term unemployment, i.e., the share of the unemployed who have been unemployed for more than 27 weeks. Typically, long-term unemployment will rise during a recession, as new job openings decline with the economic downturn. The flexible US labor market has historically had very low levels of long-term unemployment, especially compared with European countries. However, as can be seen in figure 2, which compares long-term US unemployment levels during the last 10 NBER recessions in a manner similar to figure 1, there has been a general increase in long-term unemployment levels in the United States since the business-cycle peaks of the early 1980s.

Figure 2 shows that the US long-term unemployment level in the current recession is significantly higher than during any previous postwar recession, is substantially above the two cycles that previously had the highest long-term unemployment rates (1981 and 2001), and is about three times the long-term unemployment level of the cycle with the lowest rate (1969). At a current level of 29 percent in June 2009,[7] it is increasingly legitimate to ask whether the much-acclaimed US labor market is turning increasingly "European," as it is progressively less able to generate sufficient new jobs to prevent persistent high levels of long-term unemployment.

It is also instructive to look beyond the standard unemployment rate and focus on the so-called labor underutilization rate, which in addition to all unemployed workers includes those marginally attached to the labor force and those who "unwillingly" work part time for economic reasons.[8] Figure 3 compares the December 2007 business-cycle peak with the 2001 peak, as in figures 1 and 2.[9]

Figure 3 shows that the US labor underutilization rate has risen far higher during the current recession than in the downturn in 2001, where labor underutilization was basically flat at 9 to 10 percent following the business-cycle peak. By contrast, during the current downturn, labor underutilization has continued to rise each month after December 2007 to a historic high (for the period of available data after 1999) of 16.5 percent in June 2009. This suggests that the level of "slack" in the US economy during the current recession, to a degree far higher than during the 2001 recession when labor underutilization was stable, has risen beyond what is indicated by the standard US unemployment rate.

Not only has the US unemployment rate risen faster than during earlier US recessions but also US workers unfortunate enough to lose their jobs are remaining unemployed for longer periods of time during this recession. And there are also far more marginally attached workers and "involuntary" part-time workers in this recession. The US labor market is in a downturn of historic proportions.

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7. Long-term unemployment is by nature a lagging indicator. During the 1981 cycle, long-term unemployment peaked at 26 percent in June 1983, 24 months after the business-cycle peak, while in the 2001 cycle it peaked at 23.6 percent in March 2004, 36 months after the business-cycle peak. Current levels of long-term unemployment throughout the 3-month period from April–June 2009 are already above the ultimate peak levels for all prior US business cycles.

8. The denominator for the labor underutilization rate is the total labor force plus marginally attached workers.

9. The earliest available data for labor underutilization are from January 1999, so comparisons cannot be made with earlier business cycles.

STRUCTURAL VS. CYCLICAL NET EMPLOYMENT EFFECTS IN THE US LABOR MARKET

What implications will this recessions' severe US labor-market downturn have for employment trends going forward? Will we see a powerful cyclical rebound, as employers suddenly begin to (re)hire workers, i.e., a V-shaped recovery? Or is the current downturn of a more structural character, where the jobs that have disappeared so far will not come back to the same industries but instead will come in other, new industries?

One way to cast some light on this issue, building on the methodology in Groshen and Potter (2003), is to look at the historical US business cycles as defined by the NBER and to separate the total US economy and workforce into four distinct sectoral categories:

- **Procyclical sectors**: sectors that show faster net employment growth rates than the total workforce during expansions but slower net employment growth (or faster relative net employment declines) during contractions. These sectors will see more jobs created during expansions and more jobs lost during contractions relative to the economy as a whole. As a result, procyclical sectors are likely to have a relatively stable share of total employment in the long run over multiple business cycles.
- **Countercyclical sectors**: sectors that show slower net employment growth rates than the total workforce during expansions but faster net employment growth (or slower relative net employment declines) during contractions. Countercyclical sectors will generate fewer jobs during expansions than the total economy, but will also lose fewer during recessions. These sectors generally provide for stable and secure employment, but also do not grow significantly as a share of the total labor market over several cycles.
- **Structural-gains sectors**: sectors that show faster net employment growth rates than the total workforce during expansions and faster net employment growth (or slower relative net employment declines) during contractions. Structural-gains sectors create a lot of jobs during expansions and shed relatively few of them during contractions. As a result, these sectors will expand their total share of employment in the economy over multiple business cycles.
- **Structural-losses sectors**: sectors that show slower net employment growth rates than the total workforce during expansions and slower net employment growth (or faster relative net employment declines) during contractions. Structural-loss sectors create relatively few new jobs during expansions and often shed many more during recessions than the economy as a whole. These sectors gradually decline in employment importance in the economy.

Typically, a business cycle is defined as a sequence of four phases: contraction, trough, expansion, and peak (followed again by a contraction).[10] A cycle's duration is usually measured from one peak to the

10. See National Bureau of Economic Research, Business Cycle Expansions and Contractions, December 1, 2008, available at www.nber.org (accessed on July 18, 2009).

next. Given that we are currently in the contraction phase of a US business cycle and thus are waiting for the next trough to occur, but also that it is highly desirable to use the most recent data for any forward-looking analysis, measuring the business cycle from peak to peak is not optimal, as we would have to stop at the most recent peak in December 2007.[11]

Instead, in order to utilize the most recent labor-market data, this paper adopts a methodology that measures the US business cycle from trough to trough, with the business cycle proceeding through the four phases of trough, expansion, peak, and contraction. Further, this paper assumes that the most recent available monthly data from the Bureau of Labor Statistics (BLS) are equal to the last trough, so that the last contraction runs from December 2007 to June 2009. This paper assumes, as do many market commentators,[12] that the US recession will bottom out in mid-2009 and that the US economy will resume growing in the second half of 2009.

Using this demarcation, this paper's focus is on the last 10 US trough-to-trough business cycles covering the 60 years from 1949–2009 described in table 1.

Furthermore, as indicated above, given that the total US labor force has been constantly increasing with population growth since World War II, the sectoral employment growth rates that are of interest for this paper are the employment growth rates *relative* to total US labor-force growth for a given period, i.e., this paper aims to assess whether a sector grows faster or slower over the business cycle than does the total US labor force.

All employment data, unless otherwise noted, are seasonally adjusted data from the BLS Current Employment Statistics (CES) database.[13] However, due to the regular industry reclassifications of CES data and in particular the switch from Standard Industrial Classification (SIC) to North American Industry Classification System (NAICS) industry classifications in 2003, industry data for the entire 10-cycle, 60-year period are available only at a relatively high level of aggregation.[14] More detailed CES

11. Moreover, since labor-market trends during the business cycles' contraction and expansion periods are used in this paper to identify which of the four sectoral categories a given industry belongs to, it is not necessary to measure a full business cycle from peak to peak. Instead, for our purposes a "business cycle" must merely include both an expansionary and a contractionary period.

12. See, for example, National Association for Business Economics (NABE 2009), Mussa (2009), and the cover story in *Newsweek*, August 23, 2009.

13. When compared with the BLS Current Population Survey (CPS), the BLS CES data do not include unincorporated self-employed, unpaid family workers, agriculture and related workers, private household workers, and workers absent without pay. Further, CES data count each nonagricultural wage and salary job held by multiple jobholders as separate jobs. Since 2001, the CPS and CES surveys have had very similar trend developments. Due to its far-larger sample size and annual benchmarking, the CES has a sampling error of only about one quarter of the CPS. Since the focus of this paper is employment trends, the CES is therefore the best data source. See Bowler and Morisi (2006) and BLS (2009) for additional details about the trends and methodological differences between the CPS and the CES.

14. See Morisi (2003) for a detailed description of historical CES data availability after the 2003 NAICS switch. All classifications used in this paper are NAICS 2007 classifications.

industry data are available only from 1990 onward and thus can be used only for comparisons between the last two US economic cycles, starting with the trough in March 1991. The CES data are all net data, which means that all reported data are net changes in employment within a given economic sector. These data provide no information regarding potential qualitative changes in employment occurring inside a given sector.

Aggregate Long-term Historical Trends in Structural vs. Cyclical Employment Effects

Starting at the most aggregate level, figure 4 plots the positions of relative employment growth in total US private nonfarm employment and total US government (federal, state, and local) employment over the 10 cycles described in table 1.

Figure 4 is constructed in the following manner: The x-axis shows the sectoral employment growth during contraction periods (table 1 column 3) of the 10 trough-to-trough cycles, minus the employment growth of total nonfarm employment for the same period in question. Sectors with a negative x-axis value in figure 4 grew relatively slower than the total US nonfarm labor market during contraction periods, and those with a positive x-axis value grew relatively faster. Similarly on the y-axis, which shows employment growth during expansion periods (table 1 column 2), sectors with a negative value grew relatively slower than total nonfarm employment during expansion periods, while those with a positive y-axis value grew relatively faster.

The four quadrants in figure 4 correspond to the four sectoral categories described above. Sectors in the lower-left quadrant experienced structural losses, with weaker employment growth than total nonfarm employment during both contraction and expansion periods. Sectors in the lower-right quadrant are countercyclical in character, having weaker job growth than total nonfarm employment during expansions, but stronger job growth during contractions. Sectors in the upper-right quadrant are structural-gains sectors, with faster job growth than total nonfarm employment during both contractions and expansions. In other words, these sectors experienced constant, relative job growth. Finally, sectors in the upper-left quadrant are procyclical, having faster job growth than total nonfarm employment during expansions, but slower job growth during contractions.

The 10-cycle, 60-year time-series of employment growth in total private nonfarm and total government employment in figure 4 verifies that government employment in the United States has typically played a countercyclical role in the economy. Further, figure 4 shows that for an approximately 15-year period between the mid-1950s and 1970, government in the United States was a structural-gains sector in job creation terms. This period of growth corresponds roughly with the large expansion of public school systems in the United States following the birth of the baby boomer generation and the introduction of President Johnson's government-dominated Great Society in 1965. Finally, it is

noteworthy that during the most recent economic cycle, US government employment grew almost as fast as total nonfarm employment during the expansion phase (November 2001 to December 2007), but much faster relatively during the contraction (December 2007 to June 2009). As such, government employment in the United States nearly switched back into the structural-gains category during this period. As we shall see below, this is likely related to the expansion of healthcare and the accelerating aging of the US population (see box 1 at the end of the paper).

Figure 4 also demonstrates that the much-larger private nonfarm employment sector, the mirror image of the government employment sector,[15] is generally procyclical in nature in the US economy, again with the historical exception from the mid-1950s to 1970. This generally cyclical character of private nonfarm and government-sector employment in the US economy has meant that their relative shares of total nonfarm employment have remained relatively stable at roughly 82 to 84 percent and 16 to 18 percent, respectively, since 1970.

However, this relative stability in sectors' weight in the US economy over time that comes from generally being either a procyclical or a countercyclical sector is not found when disaggregating the US labor market in other ways. This is illustrated in figure 5, which in a manner similar to figure 4 compares the 10-cycle, 60-year time-series of employment growth in the goods-producing and private services-providing sectors.[16]

Figure 5 shows that since the mid-1950s the US goods sector has experienced large structural losses in employment. Only during the first included business cycle, from 1949–54, was the goods sector solidly procyclical. In the early 1970s and briefly from 1980–82, it was marginally procyclical, as employment grew slightly faster during expansion periods. Figure 5 illustrates that for the last three decades, whether during expansions or contractions, US goods manufacturing has consistently experienced weaker job growth than total nonfarm employment.

Similarly, and again as an almost mirror image, figure 5 shows that the private services sector has generally experienced structural gains in employment over the last 60 years in the US labor market.[17] These historical structural losses and structural gains characteristic of the goods and private services sectors, respectively, have yielded a gradual shift in US employment away from goods sectors toward private services sectors. As a result, the share of total nonfarm employment in the goods sector has declined from 37 percent in 1949 to just 15 percent in 2009, while the share of total employment in the

15. Total nonfarm employment – government employment = total private nonfarm employment.

16. Given the relative stability of the government's employment share and its small size relative to private services-sector employment, including government employment with private services-sector employment would make virtually no difference in the results: Figure 5 would look virtually identical if the total services sector is used instead of just the private services sector.

17. Total nonfarm employment – goods-producing employment – government employment = total private services-providing employment.

private services sector has risen from 49 to 68 percent over the same period.[18] Figure 5 demonstrates this gradual employment shift toward the services sectors in the US economy over the last 60 years.

Long-Term Historical Trends in Structural vs. Cyclical Employment Effects in BLS Supersectors

Going into greater sectoral detail for private employment trends, it is possible to illustrate the same long-term trends in employment over the entire 10-cycle, 60-year time-series for each of the so-called BLS supersectors for which NAICS data have been reconstructed going back to before 1949.[19] Starting in figure 6 with the mining/logging and construction sectors, it is evident that the mining and logging supersector has shifted around the quadrants quite dramatically over individual business cycles.[20] It is noteworthy, however, that the sector is found in the upper-right, structural-gains quadrant during periods of rapidly rising energy and commodity prices, such as in the late 1970s and during the most recent economic cycle. Figure 6 also shows that the construction sector has generally been procyclical in recent decades.

Figure 7 shows the manufacturing sector, which looks very similar to the total goods sector shown in figure 5.[21] With the US manufacturing sector in the current business cycle far into the lower-left corner of figure 7, the sector is experiencing accelerating structural employment decline.

Shifting now to services sectors, which as we saw in figure 5 are expanding in aggregate, figure 8 shows the 10-cycle, 60-year time-series for the trade, transportation, and utilities and information sectors.[22]

It is striking that neither of these two services sectors is among the sectors that have been structurally gaining employment since 1949, and as such they have very much bucked the aggregate services sector's structural employment growth trend. Instead, figure 8 shows that for at least the last 20 years the trade, transportation, and utilities sector has been in structural decline. The emergence of Wal-Mart, just-in-time business models, and utilities liberalization have seemingly had a negative aggregate impact on the employment trends of this sector. It will likewise surprise few who have followed the current crisis in

18. Note that the share of government employment in total employment rose by about 4 percent from 1949 to 1970.

19. Reconstructed CES data going back to 1939 exist also for the sectors of durable goods, nondurable goods, wholesale trade, retail trade, and federal government employment. The included supersectors sum up to total US private employment.

20. This supersector includes NAICS categories 113, "Forestry and logging," and 21, "Mining, quarrying, and oil and gas extraction." Note that because the CES is a nonfarm data survey, large parts of NAICS category 11, "Agriculture, forestry, fishing, and hunting," are excluded. The construction sector equals NAICS category 23, "Construction."

21. The manufacturing sector equals NAICS categories 31-33, "Manufacturing."

22. The trade, transportation, and utilities supersector contains NAICS 22, "Utilities," NAICS 42, "Wholesale trade," NAICS 44-45, "Retail trade," and NAICS 48-49, "Warehousing and transportation." The information supersector consists of NAICS category 51, "Information."

the print media that the aggregate information-services sector shifted into the structural employment losses quadrant in the last business cycle after having been strongly procyclical during the 1990s. After having been cyclical for two decades (and two cycles), the information sector is currently in structural employment decline. Perhaps the positive impact of the internet on sector employment is receding.

Turning to the financial activities supersector, which as mentioned at the outset many commentators have recommended should shrink in the United States, figure 9 shows that this relative decline seems to already be under way.[23] It is striking that the US financial activities sector, for the first time in 60 years and 10 business cycles, shifted into the structural losses quadrant during the most recent business cycle. This is after having experienced structural gains for 30 years from 1961 to 1991 and countercyclical growth during the 1990s. Unlike aggregate services sectors as a whole, it is clear that structural employment gains in the United States have shifted away from financial activities.

Figure 10 shows a similar, if perhaps less dramatic, long-term trend in the professional and business services supersector.[24] From the mid-1950s to the early 1980s, the professional and business services sector experienced net structural employment gains in the US economy. Since then, however, this sector has become strongly procyclical, with relative employment gains moderating somewhat during the last expansion. It is again clear that the structural employment gains that have characterized the aggregate private services sector have not occurred in professional and business activities in the United States for almost 30 years.

From figures 8, 9, and 10 it is clear that the consistent, aggregate structural employment gains in the private services sector seen in figure 5 are unevenly distributed across individual services sectors, as no structural net employment gains have occurred in the trade, transportation, and utilities sector, the information sector, the financial activities sector, or the professional and business services sector during the last 20 years. However, figure 11 shows that very strong net structural employment gains have been consistent in the US education and healthcare sector, as well as in the US leisure and hospitality sector for more than 50 years.[25]

Finally, figure 12 shows that in the most recent business cycle, the last, residual supersector, "other services," moved away from net structural employment gains and became a countercyclical sector.[26] This makes it clear that structural net employment gains in the aggregate US private services sector are now

23. This supersector contains NAICS 52, "Finance and insurance," and NAICS 53, "Real estate and rental and leasing."

24. This supersector contains NAICS 54, "Professional, scientific, and technical services," NAICS 55, "Management of companies and enterprises," and NAICS 56, "Administrative and support and waste management and remediation services."

25. The education and healthcare supersector includes NAICS 61, "Education services," and NAICS 62, "Healthcare and social assistance." The leisure and hospitality supersector includes NAICS 71, "Arts, entertainment, and recreation," and NAICS 72, "Accommodation and food services."

26. This supersector equals NAICS 81, "Other services (except public administration)."

overwhelmingly concentrated in the education and healthcare sector and the leisure and hospitality sector. The net structural employment gains among private services sectors are much more narrowly focused than during earlier US business cycles, when net structural employment gains were also found in both the financial activities and the professional and business services sectors.

A DETAILED LOOK AT THE MOST RECENT US BUSINESS CYCLE

Another way to illustrate the structural and cyclical employment trends in different sectors in greater detail is to plot all industries in the economy during a given cycle. Figure 13 does this for the most recent business cycle by plotting the 11 available BLS supersectors (10 private sectors and the government sector) and weighting each sector by its share of total nonfarm employment in June 2009 (indicated by the size of the bubbles).

Figure 13 shows that during the most recent US economic cycle, in addition to the manufacturing sector, three services supersectors—trade, transportation, and utilities; financial activities; and information—are now in net structural employment decline (indicated by red bubbles). Three sectors—mining and logging, leisure and hospitality, and education and healthcare—are experiencing net structural employment gains (green bubbles). Finally, government and other services are countercyclical employment sectors, while construction and professional and business services are procyclical (blue bubbles).

As can be seen in figure 13, some of the BLS supersectors are relatively large in their share of total employment; the transportation, trade, and utilities sector is the largest sector at 19 percent of total employment. The increased data availability after 1990 allows for a more detailed analysis of the net employment trends within individual supersectors. This section will now look in greater detail at the manufacturing; trade, transportation, and utilities; information; financial activities; professional and business services; education and healthcare; and leisure and hospitality supersectors.

Figure 14 shows that the net structural employment losses in the manufacturing sector over the last business cycle were widely distributed across individual industries within manufacturing. These losses were greatest in industries related to transportation equipment, apparel and textiles, and wood and furniture production.[27] The two metagroups of durable and nondurable goods manufacturing were both in net structural employment decline, and only the sectors related to food, petroleum and coal products, and electronic and communication products were countercyclical in nature.

Figure 15 shows that within the trade, transportation, and utilities supersector, only the strongly government-linked transit and ground passenger transportation sector saw structural net employment

27. The location of the total supersector in figures 14 to 20 is shown by a dashed bubble.

gains in the most recent business cycle,[28] while structural net employment losses were concentrated in the large retail trade sector (especially among auto dealers) and in air, rail, and truck transportation. However, the diverse nature of the trade, transportation, and utilities supersector makes for an irregular distribution of subsectors, with large procyclical sectors in wholesale trade and in transportation and warehousing. The stable utilities sector was a straightforward countercyclical sector.

Figure 16 illustrates that there were very clear divisions within the information supersector, with "Hollywood" and the other information services sectors strongly countercyclical in employment terms, while publishing (which includes newspapers, periodicals, books, and software publishing) and noninternet broadcasting (radio, television, and cable) experienced net structural employment losses.[29] The telecommunications (wired, wireless, and satellite) sector was in slight structural decline, with job losses during the current contraction closely resembling those in the general economy.[30] Similarly, the data processing sector, which includes providers of infrastructure for hosting and data processing services such as web hosting, streaming, application hosting, and general time-share mainframe facilities, saw job losses that closely mirrored those of the total US economy in the current contraction. As such, there are few immediate signs of large-scale job losses due to offshoring and offshore outsourcing in this sector.

Figure 17 shows that the financial activities supersector, which as we saw in figure 13 experienced net structural employment losses in aggregate, includes highly diverse sectors located in all four quadrants of figure 17. The sectors of depository credit intermediation (which includes commercial banks, savings institutions, and credit unions); commercial banking; and funds, trusts, and other financial vehicles (a sector dominated by pension funds, but that also includes health and welfare funds and other insurance and investment pools and funds) all experienced structural net employment gains during the most recent business cycle, suggesting the continued expansion of retail-oriented financial activities in the United States.[31]

In contrast to gains in these sectors, the securities, commodity contracts, and other financial investments and related activities and nondepository and activities related to credit intermediation

28. Transit and ground passenger transportation equals NAICS category 485 and includes a variety of passenger transportation activities, such as urban transit systems; chartered bus, school bus, and interurban bus transportation; and taxis.

29. "Hollywood," or the motion picture and sound recording industries, equals NAICS category 512, "Motion picture and sound recording industries." This subsector also includes workers at movie theaters. The other information services subsector equals NAICS 519 and includes "News syndicates," "Libraries and archives," as well as "Internet publishing and broadcasting and web search portals." The publishing industries subsector equals NAICS 511, "Publishing industries (except internet)." It is not possible to break out the software publishing sector from NAICS 511 to examine it in isolation. The noninternet broadcasting, or broadcasting except internet, subsector equals NAICS 515, "Broadcasting (except internet)."

30. This sector equals NAICS 517, "Telecommunications."

31. The depository credit intermediation subsector equals NAICS 522, "Credit intermediation and related activities." The funds, trusts, and other financial vehicles subsector equals NAICS 525, "Funds, trusts, and other financial vehicles."

industries both experienced structural net employment losses in the most recent business cycle.[32] The former industry essentially equals "Wall Street" and includes many of the industries at the heart of the current financial crisis, such as investment banking and securities dealing, securities brokerage, commodity contracts dealing and brokerage, securities and commodities exchanges, portfolio and asset management, and investment advisory and financial investment activities. As such, it is possible that a longer-term shrinking of Wall Street through structural net employment losses has already begun in the United States. Similar losses were experienced in the nondepository and activities related to credit intermediation industry, which includes other crisis-related sectors such as credit card issuance, consumer lending, real estate financing, and mortgage loan brokerage. The long-term shrinkage of these sectors in the US economy seems to have already begun, as job losses in the most recent cycle were of a structural nature.

The intense structural net employment losses in the rental and leasing services industry during the most recent cycle are not surprising, considering that this sector includes industries such as rental cars and trucks and video tape rental (e.g., Blockbuster) that have moved heavily toward internet-based services provision in recent years.[33] The findings that the real estate industry is procyclical while insurance carriers and related activities are countercyclical are likely in line with most observers' prior intuitions about these sectors.[34]

Figure 18 shows that the seemingly diverse professional and business services supersector experienced more-uniform net employment trends than the financial activities supersector. It will surprise few that temporary help services is a strongly procyclical industry, as are the larger administrative and waste services sector and the services to buildings and dwellings sector (which includes janitorial and landscaping services).[35] It is noteworthy and perhaps a good omen for US environmental awareness that the only subsector of the administrative and waste services sector in the structural net employment gains category during the most recent business cycle was waste management and remediation services, which includes waste collection, treatment, and disposal services.[36]

The large and human-capital-intensive professional and technical services sector experienced net structural employment gains in the aggregate, as did several of its individual subsectors: Legal

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32. The securities and commodity contract investments subsector equals NAICS 523, "Securities, commodity contracts, and other financial investments and related activities." The nondepository and activities related to credit intermediation subsector contains NAICS 5222, "Nondepository credit intermediation," and NAICS 5223, "Activities related to credit intermediation."

33. This sector equals NAICS 532, "Rental and leasing services."

34. The real estate subsector equals NAICS 531, "Real estate." The insurance carriers and related activities subsector equals NAICS 524, "Insurance carriers and related activities."

35. The temporary help services sector equals NAICS 56132, "Temporary help services." The administrative and waste services sector equals NAICS 56, "Administrative and support and waste management and remediation services." The services to buildings and dwellings sector equals NAICS 5617, "Services to buildings and dwellings."

36. This subsector equals NAICS 562, "Waste management and remediation services."

services continues to grow structurally, as does the consulting subsector of management and technical consulting services.[37] It is also significant that, despite continuing media attention on the threats to the US information technology services industry and the fear that this sector may be offshored to India, the computer systems design and related services industry was among the sectors with the strongest net structural employment gains during the most recent US business cycle.[38] Public concerns over the employment prospects of this sector in the United States are misguided.

Figure 19 shows the structural employment gains engine of the US economy, the education and healthcare sectors.[39] Both sectors were strongly and almost exclusively in the net structural employment gains category during the most recent business cycle. Only the nursing care facilities subsector was mildly countercyclical. Both sectors seem destined to continue to add jobs relative to other sectors in the years ahead.

Finally, figure 20 shows that the net structural employment gains in the leisure and hospitality sector over the last business cycle were overwhelmingly concentrated in the large food services and drinking places industry.[40] Meanwhile, the accommodation (hotels, etc.); amusement, gambling, and recreation; and performing arts, spectator sports, and related industries subsectors were all procyclical.[41] As such, the often-heard quip that gambling is a recession-proof industry is not borne out by these data for the current business cycle.

A LOOK AT OCCUPATIONS IN THE MOST RECENT US BUSINESS CYCLE

This paper has focused so far on the different net employment trends in individual industries of the US economy during the most recent business cycle. However, it is also instructive to slice up the labor market in another way and to look at how different occupational groups have fared across industries, rather than vice versa. This effort is hampered, however, by the limited availability of US occupational employment data. But, relying on NBER quarterly peak and trough dates and the detailed quarterly BLS CPS occupational employment data (table 3 in the CPS),[42] it is possible to reconstruct the last trough-

37. The professional and technical services sector equals NAICS 54, "Professional, scientific, and technical services." The legal services subsector equals NAICS 5411, "Legal services." The management and technical consulting services subsector equals NAICS 5416, "Management, scientific, and technical consulting services."

38. This sector equals NAICS 5415, "Computer systems design and related services."

39. The education sector equals NAICS 61, "Education." The healthcare sector equals NAICS 62, "Healthcare and social assistance."

40. This sector equals NAICS 722, "Food services and drinking places."

41. The accommodation subsector equals NAICS 721, "Accommodation." The amusement, gambling, and recreation subsector equals NAICS 713, "Amusement, gambling, and recreation." The performing arts, spectator sports, and related industries subsector equals NAICS 711, "Performing arts, spectator sports, and related industries."

42. These detailed CPS data are available on request from the BLS.

to-trough business cycle from Q4 2001 to the most recently available data from Q2 2009 and to present detailed occupational data in a manner similar to figure 13 above. This is done in figure 21.

Figure 21 shows the 22 major occupational categories in the BLS Occupational Employment Statistics (OES) program, as well as several suboccupations of special interest.[43] It is immediately clear that production occupations have been most heavily affected by structural net employment losses, almost certainly reflecting the heavy presence of these blue-collar occupations in the manufacturing sector. The net structural employment losses in the arts, design, entertainment, sports, and media occupations and in the transportation and material moving occupations are also likely the result of the structural employment declines in the individual industries that these occupations dominate. Further, it is worth mentioning that the two largest occupational categories, office and administrative support and sales and related occupations, both relatively low-wage services occupations, have been in structural decline during the most recent economic cycle.[44]

Similarly, in the upper-right quadrant, it is clear that the strong structural net employment gains in healthcare support; personal care and services; healthcare practitioners and technical; community and social services; and education, training, and library occupations reflect the relevant industrial trends shown in figure 19. The same is also true for the gains in food preparation and serving-related occupations and the employment gains in the food services and drinking places industry shown in figure 20. The structural net employment gains in professional and technical industries (figure 18) are correspondingly reflected in the same gains among business, finance, computer, and mathematical occupations in figure 21. The location of construction and extraction occupations and of installation, maintenance, and repair occupations in the procyclical quadrant corresponds with the location of the construction and real estate industries in figures 13 and 17, respectively.

Finally, figure 21 adds some further nuance to debates on offshoring, as it illustrates disparate net employment trends within the US computer software workforce. Relatively for this particular group of workers, low-skilled and low-wage computer programmers have experienced net structural employment losses, while higher-skilled and higher-wage computer software engineers continue to see strong net structural employment gains. A powerful skill-biased growth pattern that only benefits the highest-skilled US software workers seems to be occurring in these occupations.

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43. The CPS occupational employment data include farm workers, and unlike the CES, where survey replies are filled out by employers, CPS surveys are sent directly to individuals. Both these circumstances tend to increase the weight of the management sector, which includes owner-occupied farms as well as numerous self-reported "managers," who likely inflate their job responsibilities. These factors account for the surprisingly large size of the management occupations in figure 21.

44. Occupational wage data from the BLS OES database from May 2008 show that sales and related occupations earn more than $5,000 less a year on average than the survey average of $42,270, and office and administrative occupations earn more than $10,000 less a year than the survey average. See Bureau of Labor Statistics (BLS), Occupational Employment and Wages News Release, May 1, 2009, available at www.bls.gov (accessed on July 18, 2009).

HISTORICAL EMPLOYMENT SHARES OF INDUSTRIES IN DIFFERENT NET EMPLOYMENT TRENDS

Figure 21 shows that over the last business cycle, 37 percent of total occupational employment was in the lower-left quadrant and thus experienced net structural employment losses, while 39 percent of the occupational workforce saw net structural employment gains in their occupations. Fourteen percent of occupations were countercyclical, and just 9 percent were procyclical. Similar estimates can be made for the 10 historical cycles that this paper has analyzed, such that for each trough-to-trough business cycle all supersectors can be separated into the four employment trend categories, which can then be weighted by their share of total nonfarm employment at the last trough. This is done in table 2.[45]

Table 2 shows that since the mid-1950s employment gains or losses by industry in the US labor market have more frequently been structural than cyclical in nature. The highest levels of structural employment change took place from 1954–70 and again from 1975–80. However, during the most recent cycle and for the first time since 1980, the share of industries that experienced structural rather than cyclical employment gains or losses once again exceeded 60 percent. And more importantly, during the last two cycles the weight of industries in net structural employment decline has increasingly surpassed the weight of industries seeing net structural employment gains, with the employment share of industries in net structural employment decline at an all-time high of 36.2 percent during the most recent cycle.

The finding in table 2 that an increasing share of the US labor market is undergoing net structural employment changes, combined with the rapidly increasing long-term unemployment rates during the current recession (figure 2), has possibly led to what economists call an outward shift of the US Beveridge curve during the most recent US business cycle. The Beveridge curve is a graphical representation of the negative short-term relationship between the number of unemployed workers in an economy and the number of job vacancies. A simplified outward shift in the Beveridge curve from X1 to X2 is shown in figure 22.[46]

The underlying theory of the Beveridge curve is that due to the process of labor-market matching between employers and job seekers, short-term cyclical co-movements in unemployment and vacancy rates occur along a single, fixed curve. In figure 22, during the tight labor markets of expansions we would typically be above the 45° line, with a high level of vacancies and low unemployment, and below the 45° line during economic contractions, with low levels of job vacancies and high(er) unemployment. An outward shift in the Beveridge curve, as shown in figure 22, means that for a given level of vacancies, given by A in figure 22, the associated level of unemployment in an economy rises, as shown in figure 22 where the unemployment level increases from B to the higher level C.

45. The result of such exercises of weighting individual industries will depend heavily on the level of aggregation available in industry-level data.

46. See also Beveridge (1944); Blanchard and Diamond (1989); and Layard, Nickell, and Jackman (2005).

Theoretically, this outward shift implies a decline in the underlying effectiveness of the job-matching process and a corresponding increase in the level of structural unemployment in an economy. It is precisely such an increase that this paper (figure 2 and table 2) suggests may be occurring in the US economy during the most recent business cycle. This development would be a reversal of earlier reported inward shifts in the US Beveridge curve during the 1990s.[47] The period of improved functioning of the US labor market with corresponding very low, but still noninflationary, unemployment rates associated with the 1990s may be drawing to an end.

It is beyond the scope of this paper to attempt to overcome the empirical difficulties involved in constructing historical levels of vacancies in the US economy to verify this assertion for the most recent cycle.[48] However, looking instead at available data for the gross levels of job gains and losses from the BLS Business Employment Dynamics (BED) survey from Q3 1992 to Q3 2008 (figure 23), it is highly likely that the frictional level of unemployment in the US economy has declined over the most recent cycle.[49] The rates of both gross job creation and gross job losses in the United States have declined by perhaps as much as 20 to 25 percent between the 1990s and the last cycle, indicating a serious reduction in the labor-market churn or turnover rate in the United States. Such an implied decline in US frictional unemployment is a reflection of rising long-term unemployment rates and is indicative of an outward shift in the US Beveridge curve.

A final noteworthy implication of the findings in table 2 relates to the relationship between US GDP growth and unemployment levels. Several have noted, as phrased by Lawrence Summers, the "significant residual in the Okun's Law relationship" that has developed in recent quarters in the United States.[50] In other words, the US unemployment rate has risen more than one would normally expect

47. See, for instance, Abraham (1987), Katz and Krueger (1999), and Valletta (2005).

48. See Valletta (2005) for an empirical depiction of the US Beveridge curve from 1960–2005, which relies on both the Conference Board's Help Wanted Index and on data adjusted with information from the post-2000 BLS Job Openings and Labor Turnover Survey (JOLTS). The accuracy of long-term data, however, is problematic, since it is hard to take account of technological change, such as whether or not the rise of internet-based employment portals (Monster.com, etc.) has impacted the use of help wanted ads.

49. The data from the BLS BED program (available at http://www.bls.gov/bdm/) are available from Q3 1992 onward and thus allow for comparisons between most of the previous two US business cycles. This makes these data more useful for the purposes of this paper than the newer data from the BLS Job Openings and Lab or Turnover Survey (JOLTS; available at www.bls.gov/jlt), which, while more relevant in aim and scope, are unfortunately only available from December 2000 onward and hence do not allow for complete comparisons with earlier cycles. However, when comparing available JOLTS data from the end of the previous US business cycle from December 2000–November 2001 with the available data from the current business cycle from November 2001–present, two things are clear: First, total job openings in the United States are now (April 2009) at a lower level than during any period of the 2001 recession; and second, at no time during the November 2001–December 2007 economic expansion did the number of US nonfarm or nonfarm private job openings reach the level seen between December 2000 and April 2001. As such, the JOLTS data provide support for the conclusions drawn in this paper.

50. Speech at the Peterson Institute for International Economics, July 17, 2009, available at www.piie.com (accessed on July 18, 2009). See also Ball and Koenig (2009).

given the level of contraction in US GDP in recent quarters. While it is beyond the scope of this paper to attempt to reestimate Okun's Law coefficients for the United States, making use of the most recent data, figure 24 illustrates how the Okun's Law relationship has developed since the first quarter of 1983.[51]

Figure 24 illustrates Summers's point clearly by showing that during the first two quarters of 2009 the US unemployment rate has risen far faster than the historical US Okun's Law relationship would predict.[52] Evidently, US employers have shed workers more willingly during this recession than during the recessions of 1990–91 and 2001. Perhaps unusual cash-flow constraints arising from unsettled financial markets and expectations among employers of a long and deep US recession have played a part, as suggested by Summers in his remarks on July 17, 2009. However, it is also plausible that the rapid increase in unemployment is related to the higher share of the economy undergoing structural employment changes during the current business cycle, as indicated in table 2.

Indeed, when looking at the US Okun's Law relationship over a longer period of time and including data from 1971–2009 (figure 25), the Okun's Law relationship found during the first half of 2009 is not unprecedented for the US economy. Figure 25 shows that the Q1 and Q2 2009 Okun's Law relationship closely resembles the situation found in the US economy in 1975. This, combined with table 2's finding of high levels of structural employment changes during 1975–80, strengthens the suggestion that the rapid rise in US unemployment in 2009 is related to increasing levels of structural employment changes in the economy today.

CONCLUDING REMARKS

The current US labor-market slowdown is the worst in the postwar period. Unemployment has risen faster than during any earlier recession, while long-term unemployment and labor underutilization levels are higher. Expanding on the methodology of Groshen and Potter (2003), this paper has analyzed the net structural and cyclical employment trends in the US economy during the last 10 trough-to-trough business cycles from 1949 to the present.

The paper has illustrated the historical countercyclical role of government employment, the long-term structural net employment gains of the aggregate services sector, and the similar long-term net structural employment losses in the US manufacturing sector. This paper has also shown that net structural employment gains in the US services sector during the most recent cycle have been concentrated in

51. Q1 1983 was chosen as a starting point because it marks the first quarter after the end of the 1981–82 recession. The unemployment rates on the x-axis refer to the quarterly BLS CPS US national unemployment rate for 16 year-olds and older, and the real GDP data on the y-axis are standard quarterly BEA data from NIPA table 1.1.6. Unemployment data are lagged one quarter to allow for the delayed response of unemployment to changes in output growth. This lag further facilitates the utilization of the latest available data at the time of this writing, such that Q2 2009 refers to Q1 real GDP data (rate of change from Q1 2008 to Q1 2009) and Q2 unemployment data (rate of change from Q2 2008 to Q2 2009).

52. Figures 24 and 25 are robust to reproductions relying instead on estimated US output gaps and potential growth rates prepared by the Congressional Budget Office (CBO 2009).

healthcare, education, food services, professional and technical services, and in retail and consumer-oriented financial sectors. Other US services industries that have historically enjoyed net structural employment gains, such as subsectors of the retail trade, publishing, broadcasting, telecommunications, and the Wall Street financial sectors, have instead seen net structural job losses in the most recent recession. Meanwhile, some procyclicality (i.e., employment volatility) has been found in several professional and business support industries, such as accounting, bookkeeping, engineering, and architectural services.

Findings at the industry level are largely confirmed by the similar results found by viewing the US labor market in terms of occupational employment trends over the last economic cycle. Production, office and administrative, sales-related, and transportation occupations have experienced net structural employment losses, while healthcare, education, food preparation, and business and financial occupations have seen net structural employment gains.

The relative employment weight of industries undergoing structural change in the current cycle has been found to be just over 60 percent of total nonfarm employment, an increase over the two previous US business cycles. Meanwhile, the employment share of industries seeing net structural employment losses during the current cycle is at 36.2 percent, the highest level since the early 1950s, while just 25 percent of total industries have experienced net structural employment gains during the current cycle, the lowest level in the nine previous US business cycles.

Finally, this paper has found that the unusual Okun's Law relationship between GDP growth and unemployment rates in the United States during the first two quarters of 2009 closely resembles the Okun's Law relationship found in 1975. These results have several implications.

First, these results verify that the structural employment decline in the US manufacturing sector is both a long-term trend and one that is broadly based throughout the various manufacturing subsectors. As such, this decline seems likely to continue. The prospects for the reindustrialization of the United States in employment terms thus seem grim. However, US manufacturing output has remained stable in recent decades—real value-added in the manufacturing sector accounted for 14 percent of US GDP in 2008, the same share as in 1988 (BEA 2009). This points to the continuing strong productivity performance of the US manufacturing sector.

Second, this paper has suggested that the employment-generating potential of US services sectors is waning outside of education, healthcare, food preparation, and the highest-skilled professional occupations. Employment generation in US services sectors has become more narrowly concentrated in these latter sectors. US structural employment growth in other services sectors, such as trade, transportation, and utilities; information; and many financial services sectors has stopped. Correspondingly, US employment-growth prospects for many low- and middle-skilled jobs outside of healthcare, education, and food preparation correspondingly look relatively bleak.

Third, the increasing relative level of structural employment losses in the United States during the

most recent business cycle, which ceteris paribus can be expected to increase the necessity for unemployed Americans to take new jobs in industries different from the ones in which they were previously employed, will only add further to the already high need to expand the US workforce's access to worker retraining programs, new skill acquisition, and life-long learning opportunities. Congress should acknowledge this important development and should substantially increase the allocation of sustained long-term funding for these purposes. No better way is available for Congress to help struggling US workers.

Fourth, the continued increase in the relative employment weight of what have traditionally been regarded as low-productivity services sectors in the United States—healthcare, education, and food preparation—seems likely to have a negative impact on the future trend of the US potential growth rate. Baumol's cost disease may infect us yet again, as it is far from clear that the US services economy can maintain high productivity as it becomes increasingly dominated by restaurants and hospitals. As such, this paper is generally in line with the bearish projections for long-term US potential output and productivity growth found in, for example, Gordon (2006 and 2008).

Fifth, the record levels of long-term unemployment and labor underutilization seen in the current contraction, combined with the increasing employment weight of US industries undergoing net structural employment changes and declining levels of labor-market turnover, suggest that the Beveridge curve for the United States may have shifted outward, reversing the inward shift reported during the 1990s. The likelihood that the US economy will return to the very low levels of noninflationary unemployment seen during the last two expansions therefore seems much reduced. This is corroborated by the finding that the US Okun's Law relationship in 2009 resembles that found in the US economy in 1975.

Sixth and finally, it is important to note that the methodology employed in this paper to identify sectors undergoing structural and cyclical net employment changes does not possess a great deal of direct predictive power in terms of forecasting the immediate employment generating potential of the next US economic recovery. The finding in this paper of an increasing structural nature of net employment changes in the US economy does not necessarily point in the short term to a very weak or a jobless recovery. However, the results of this paper do suggest that once the immediate job-creating effects of the unprecedented fiscal stimulus spending, zero interest rate policy, and cyclical business inventory and real estate investments recede, the US labor market is in for a long, hard slog.

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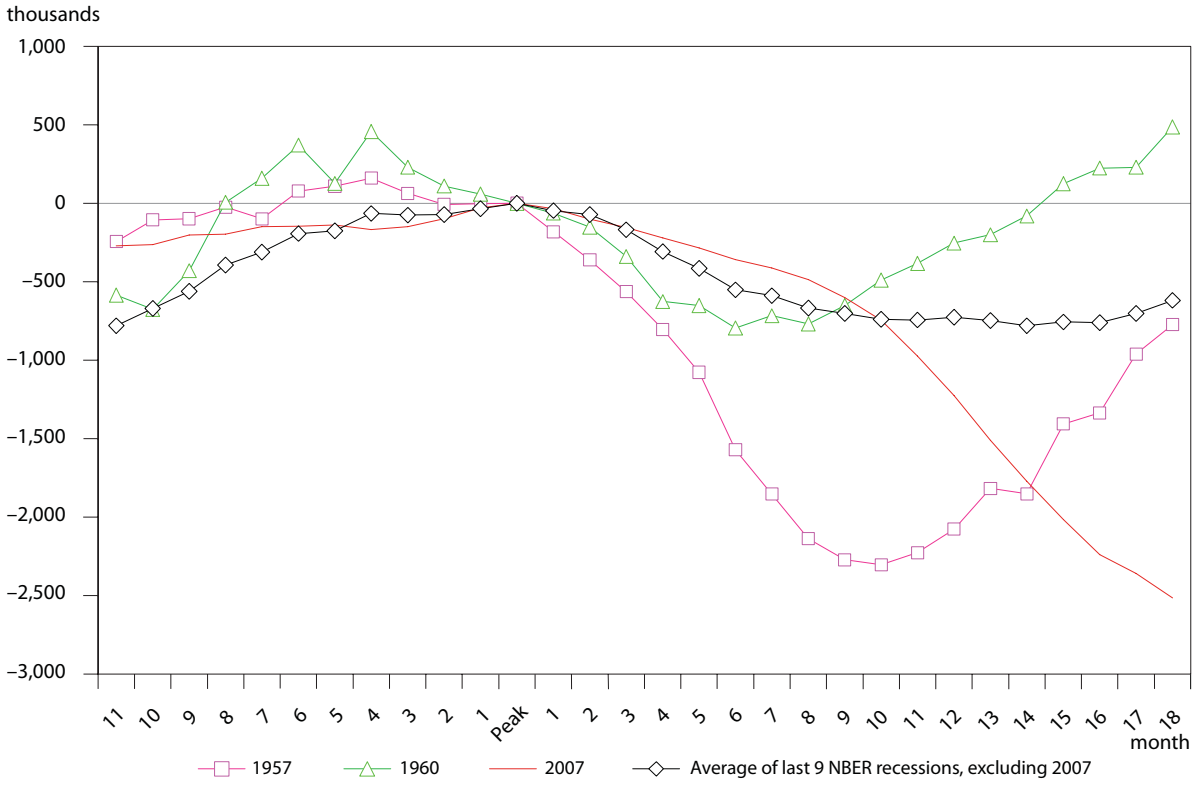
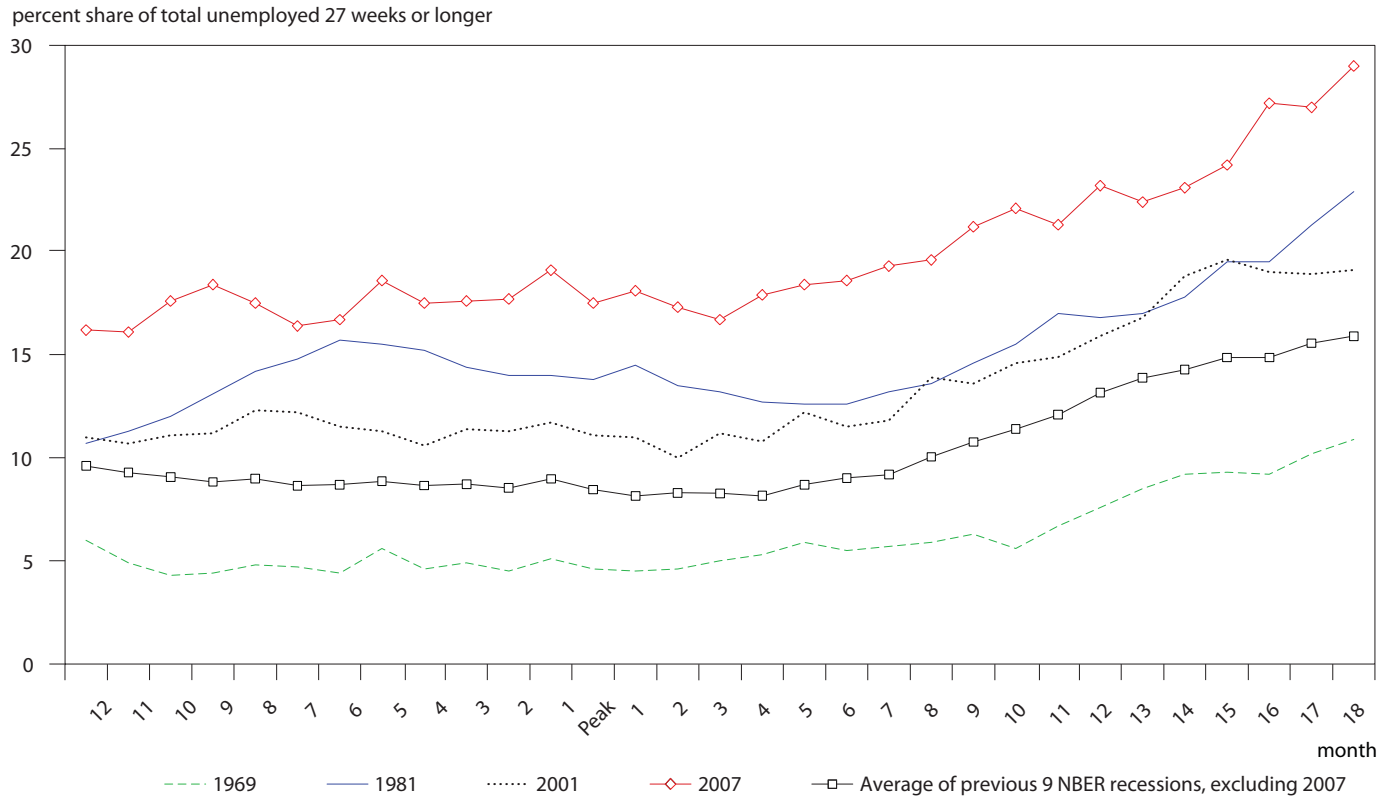
Figure 1 Cumulative US private, nonfarm employment changes in last 10 NBER recessions, measured at business cycle peak



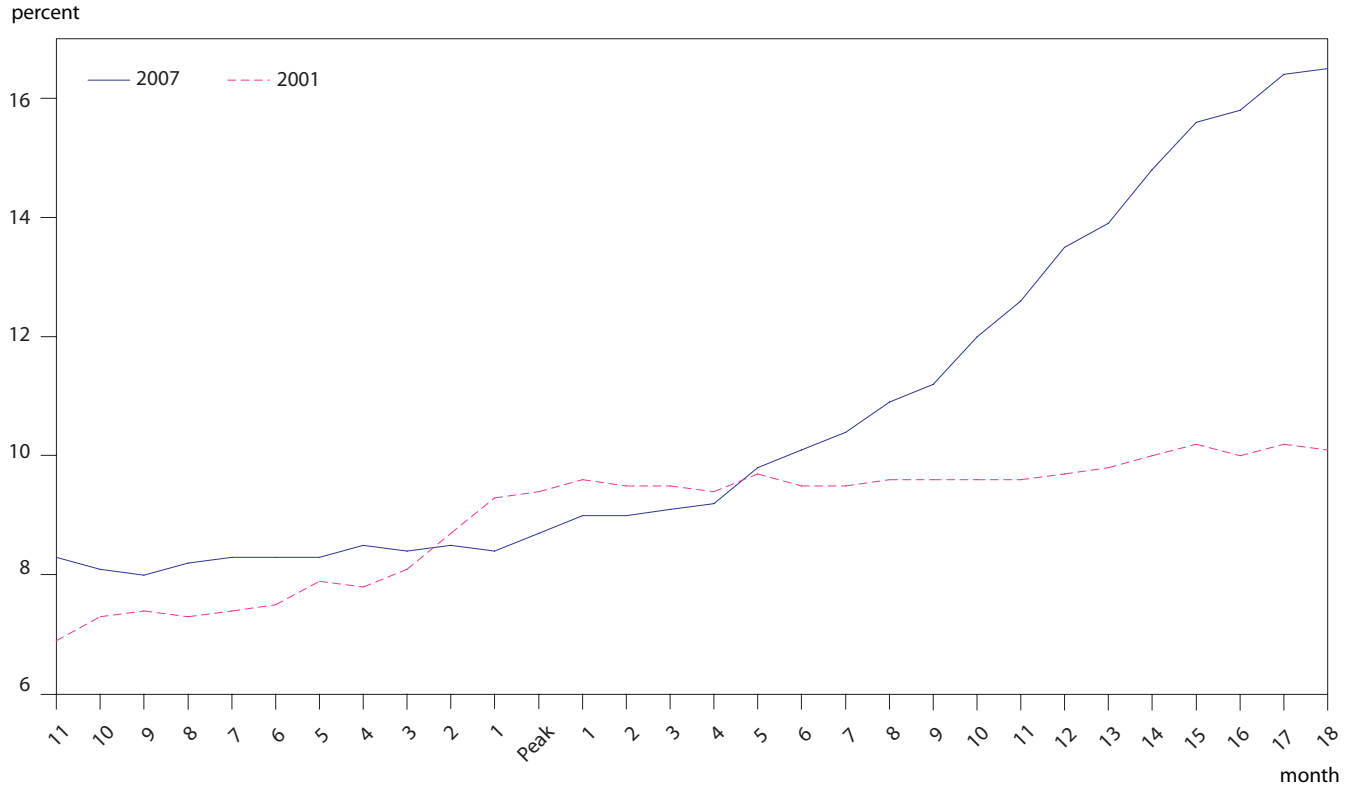
Source: BLS Current Employment Statistics (CES) database, adjusted to 1953 employment levels.

Figure 2 Development of long-term unemployment rates in last 10 US NBER recessions



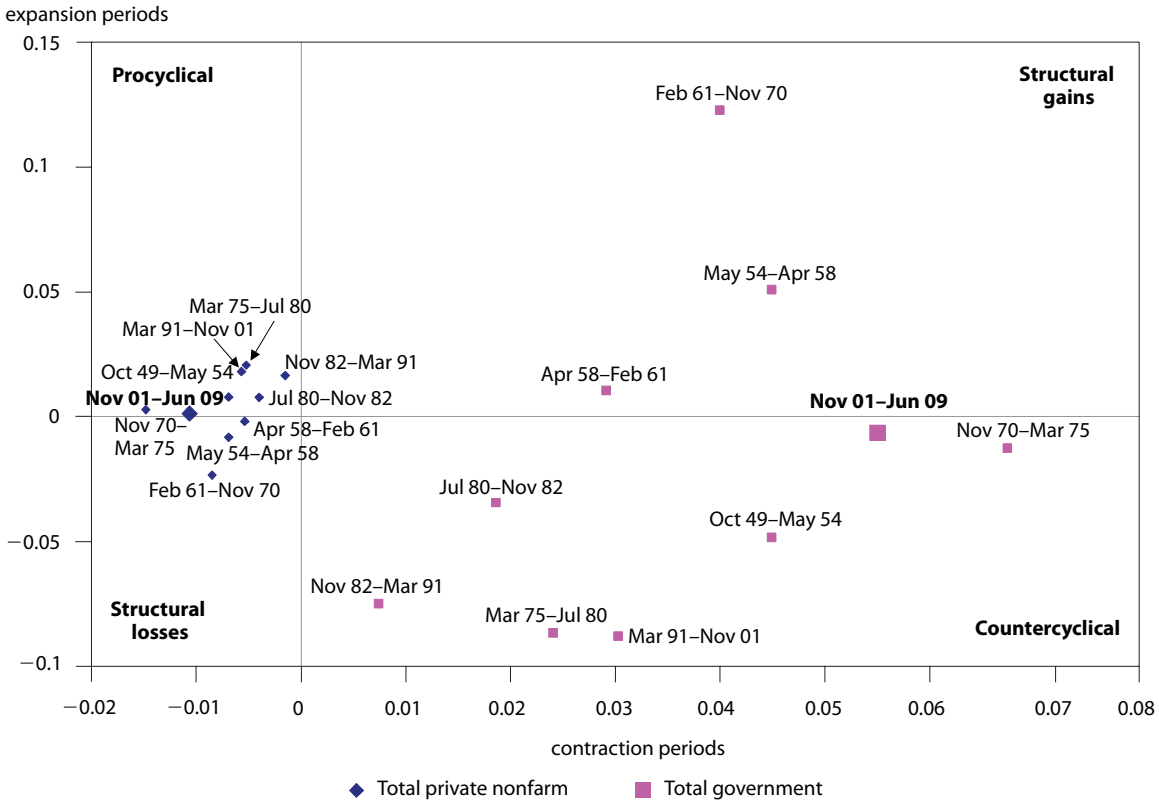
Source: Author's calculations based on BLS data.

Figure 3 US underemployment rate, 2001 and 2007 business cycle peaks



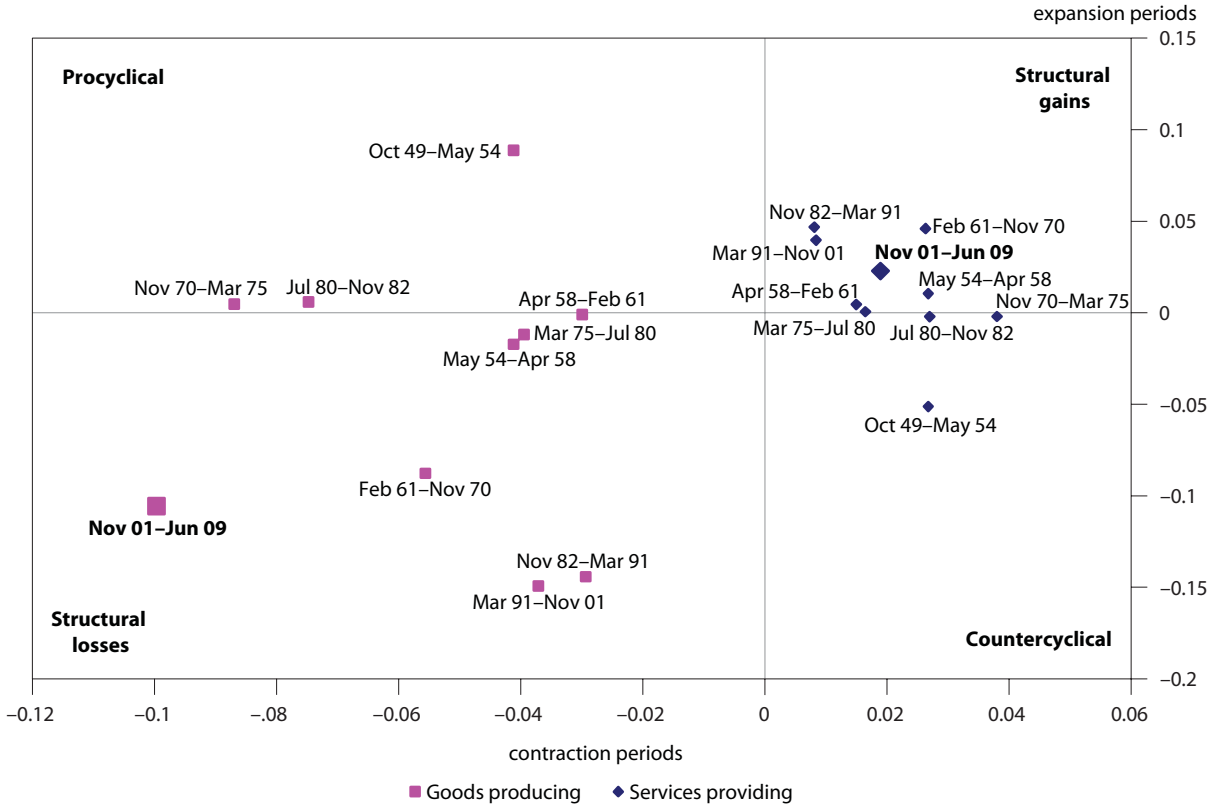
Source: Author's calculations based on BLS data.

Figure 4 Structural or cyclical growth in private and government employment, 1949–2009



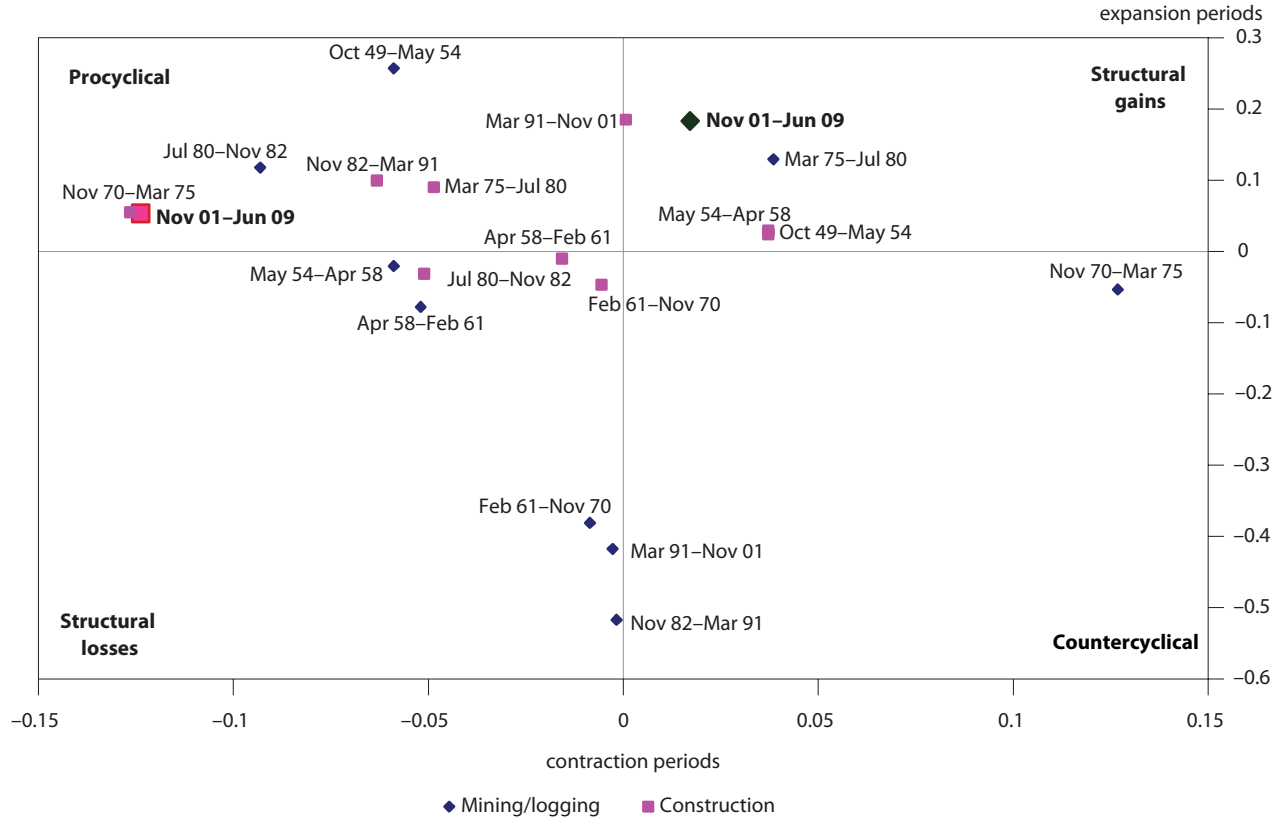
Source: Author's calculations based on BLS CES database.

Figure 5 Structural and cyclical employment trends in the goods and private services sectors, 1949–2009



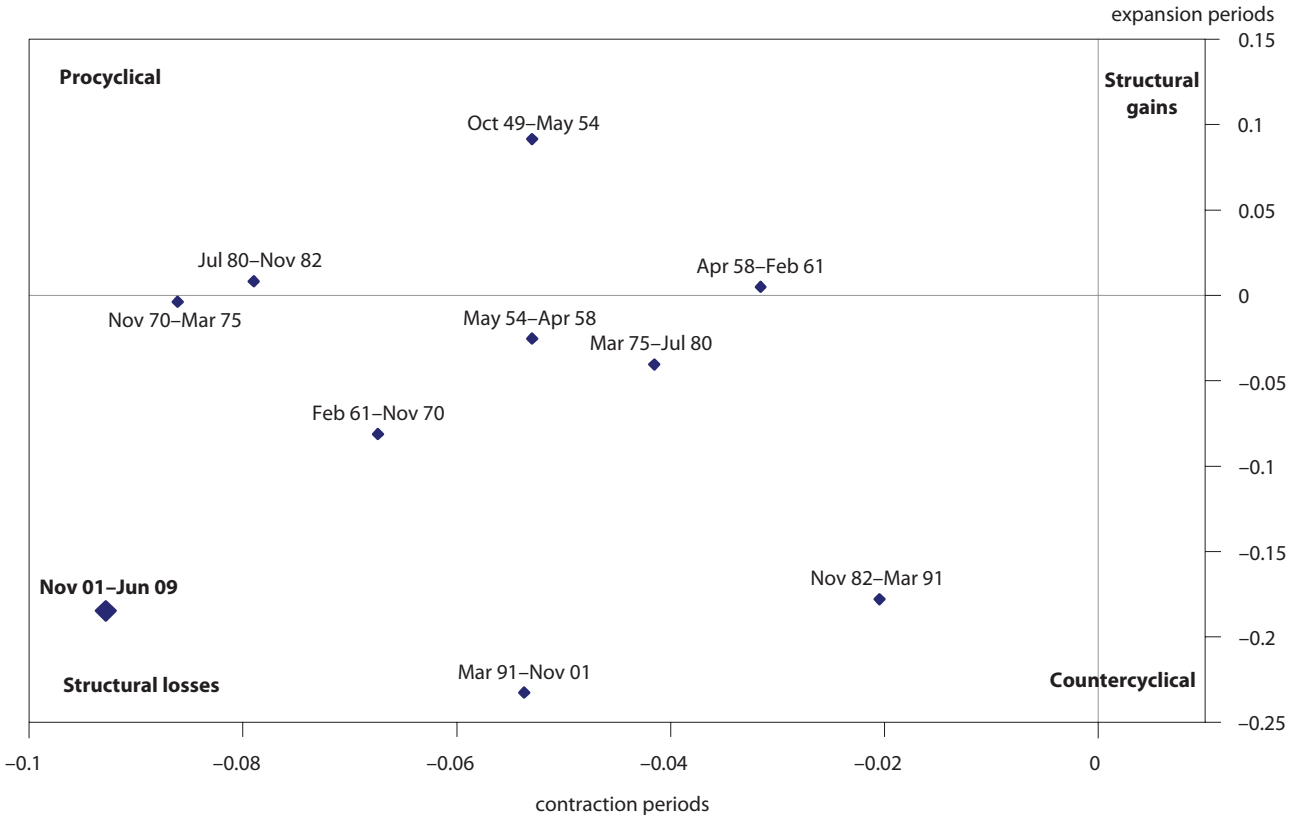
Source: Author's calculations based on BLS CES database.

Figure 6 Structural and cyclical employment trends in the mining/logging and construction sectors, 1949–2009



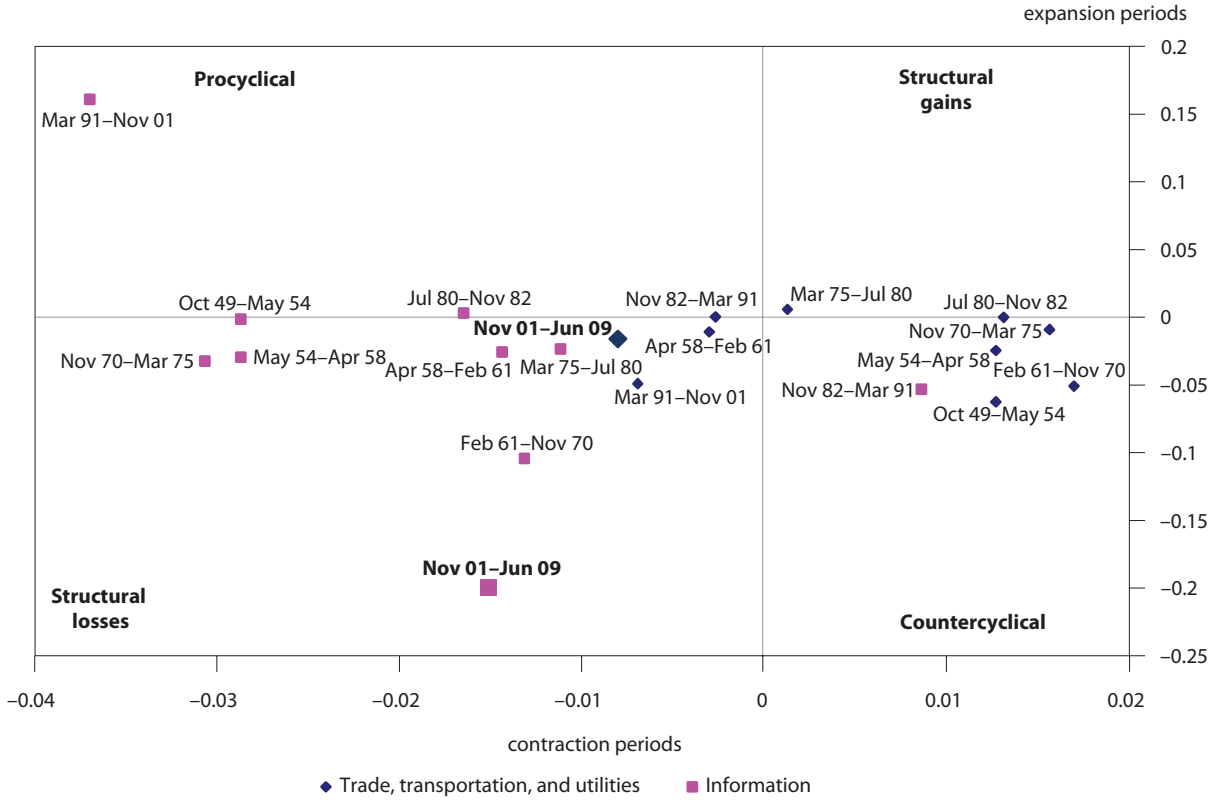
Source: Author's calculations based on BLS CES database.

Figure 7 Structural and cyclical employment trends in the manufacturing sector, 1949–2009



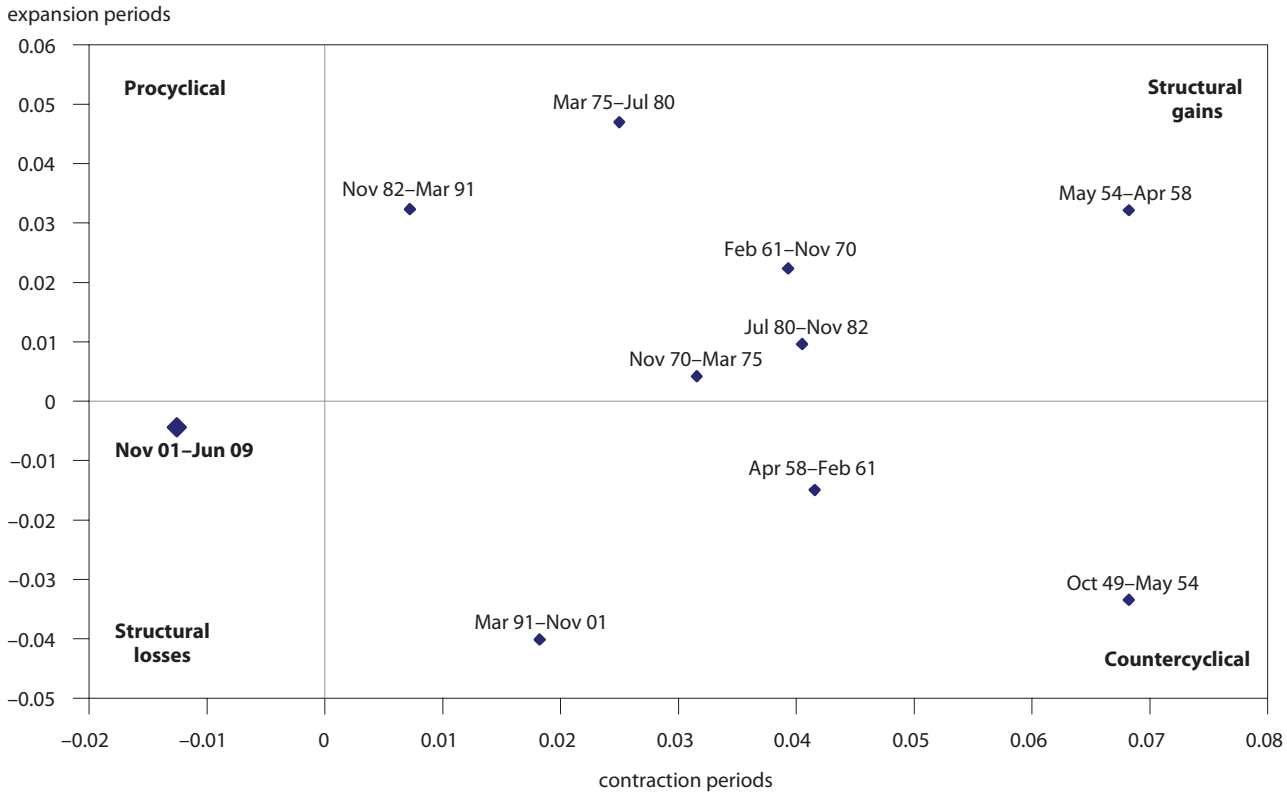
Source: Author's calculations based on BLS CES database.

Figure 8 Structural and cyclical employment trends in the trade, transportation, and utilities and information sectors, 1949–2009



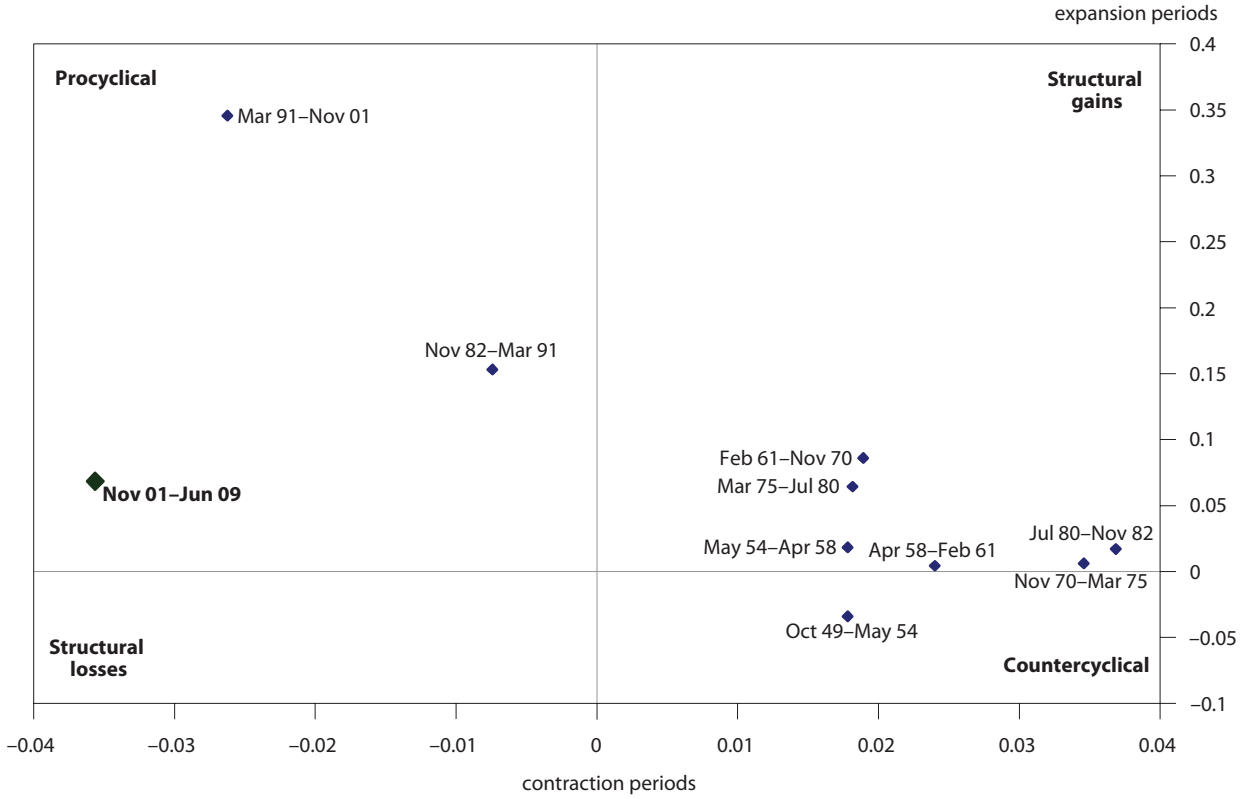
Source: Author's calculations based on BLS CES database.

Figure 9 Structural and cyclical employment trends in the financial activities sector, 1949–2009



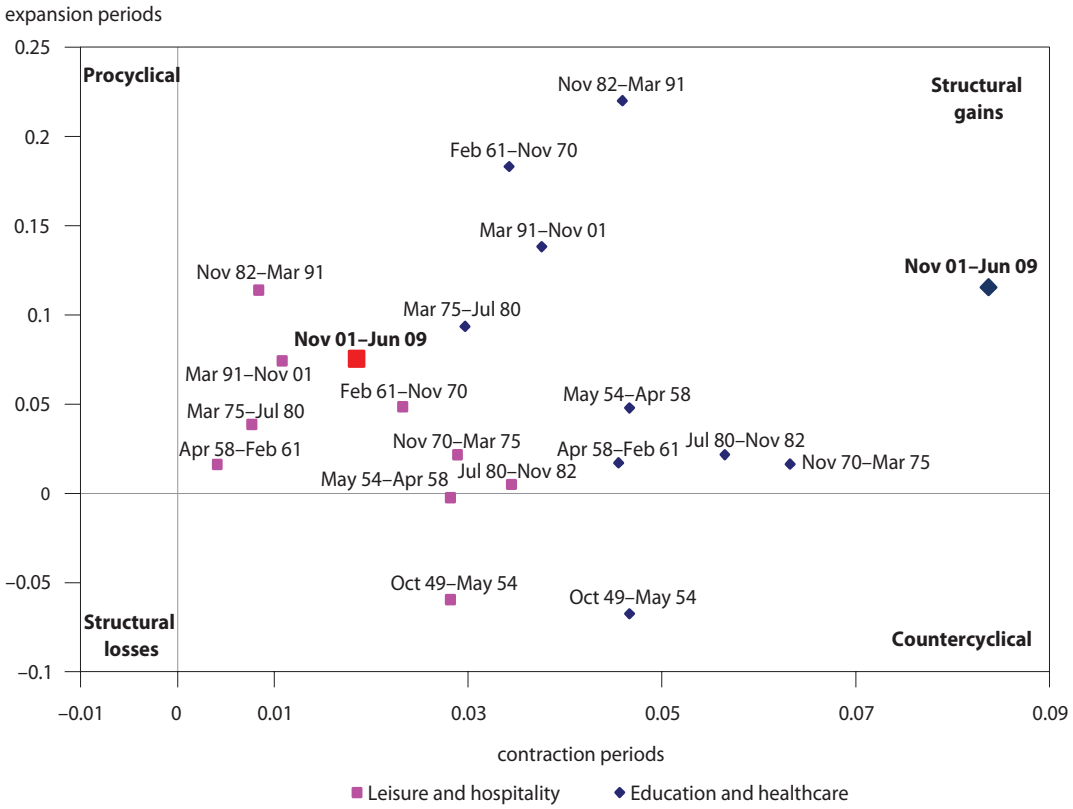
Source: Author's calculations based on BLS CES database.

Figure 10 Structural and cyclical employment trends in the professional and business sectors, 1949–2009



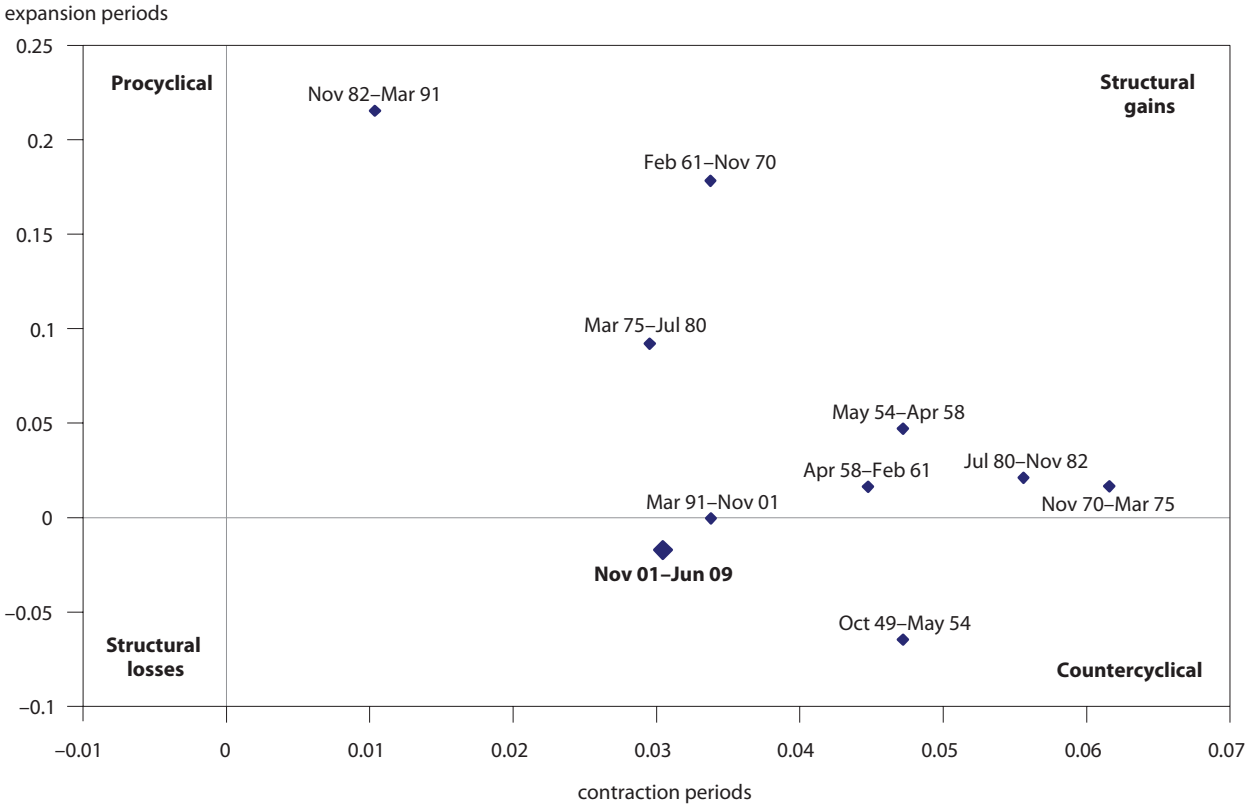
Source: Author's calculations based on BLS CES database.

Figure 11 Structural and cyclical employment trends in the education and healthcare and leisure and hospitality sectors, 1949–2009



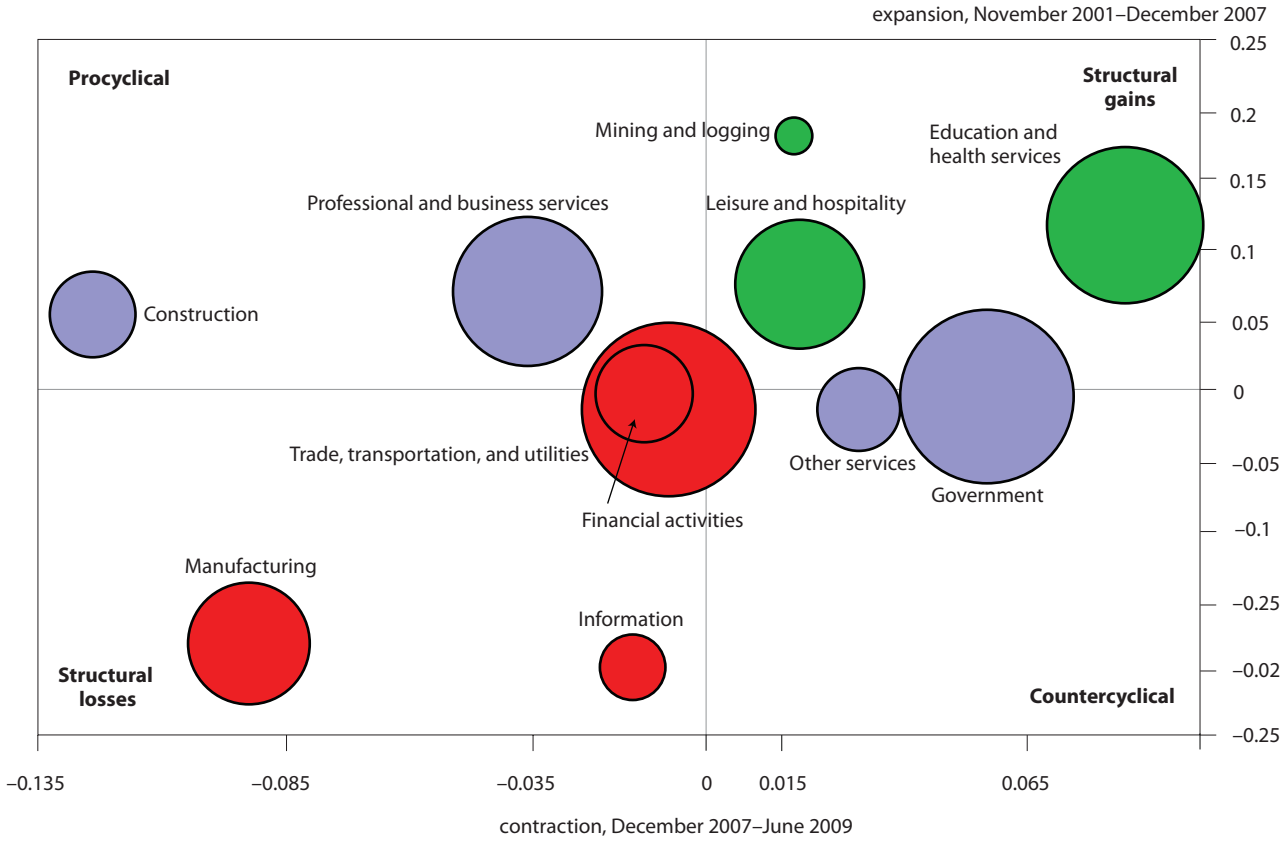
Source: Author's calculations based on BLS CES database.

Figure 12 Structural and cyclical employment trends in the "other services" sector, 1949–2009



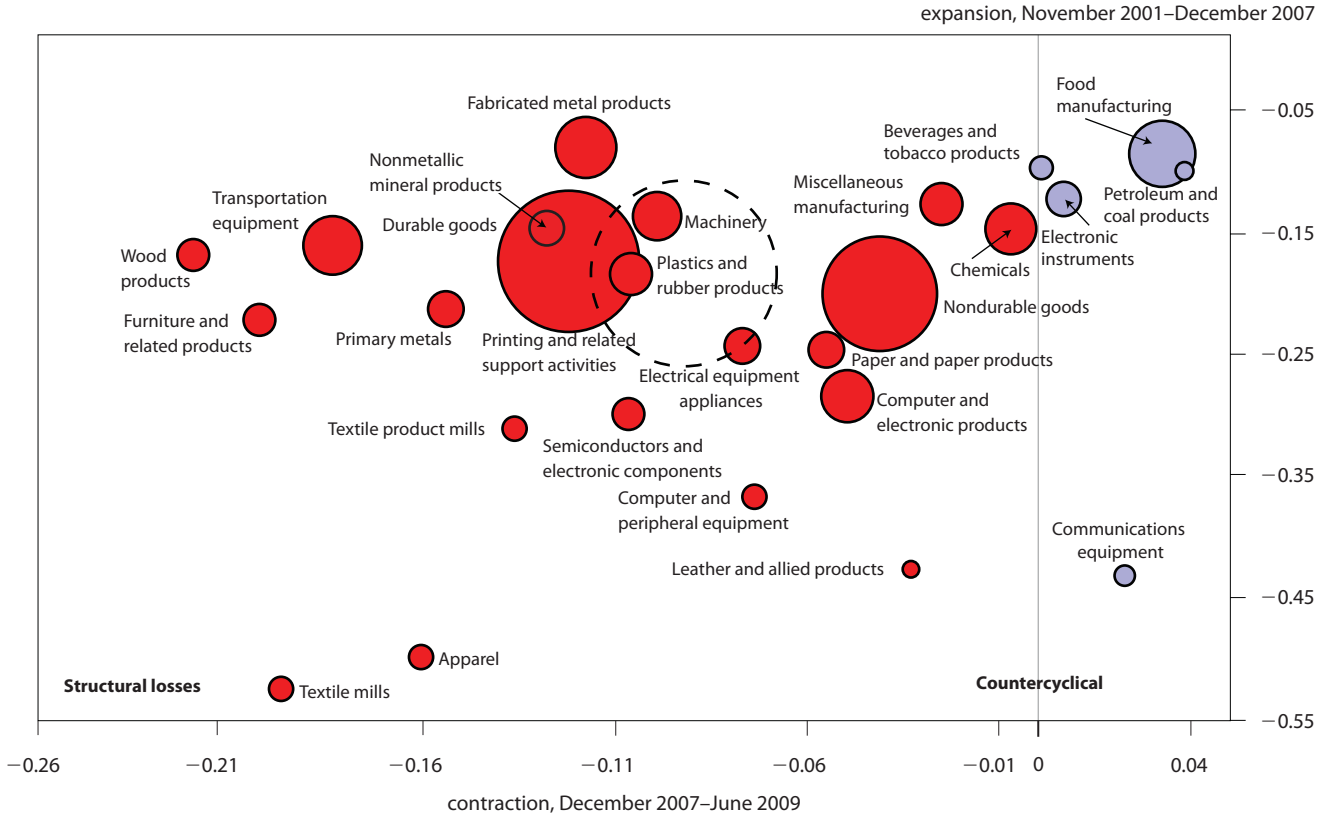
Source: Author's calculations based on BLS CES database.

Figure 13 Structural and cyclical employment trends during the last business cycle, weighted by industry



Source: Author's calculations based on BLS CES database.

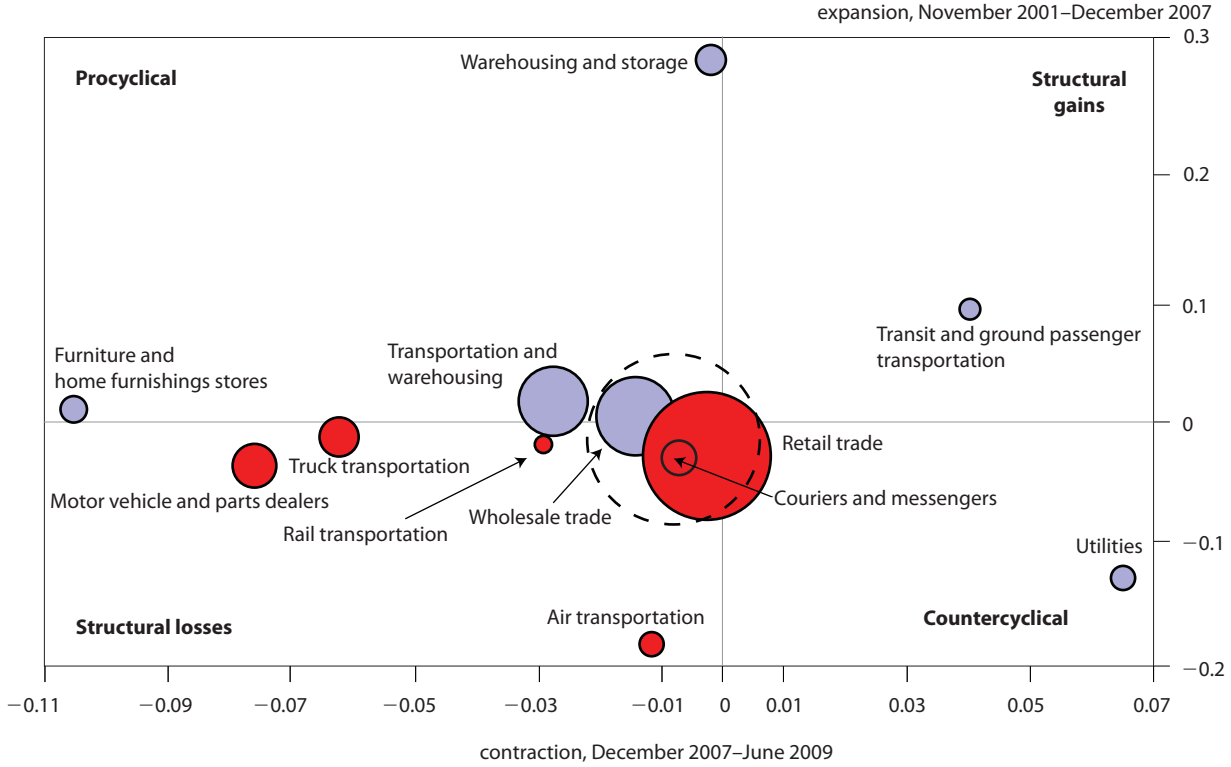
Figure 14 Structural and cyclical employment trends in the manufacturing sector, by detailed industry



Note: The dashed bubble represents the manufacturing supersector.

Source: Author's calculations based on BLS CES database.

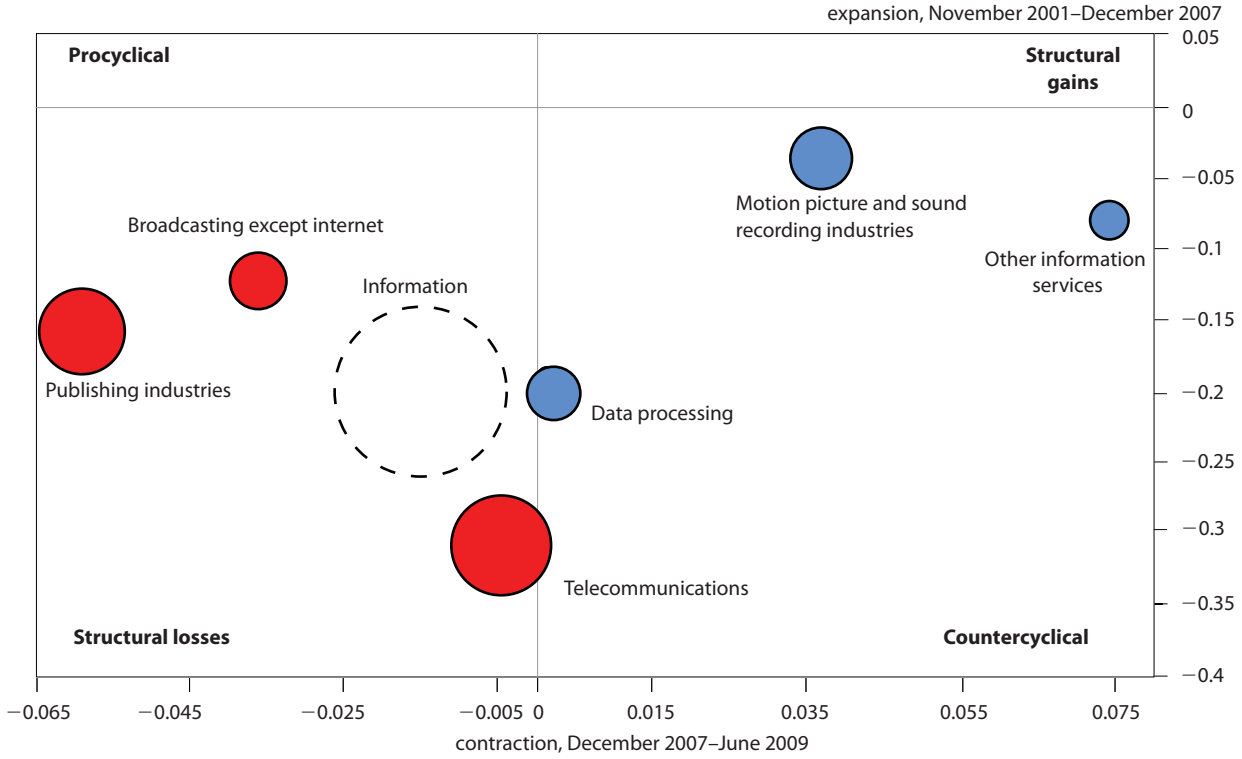
Figure 15 Structural and cyclical employment trends in the trade, transportation, and utilities sector, by detailed industry



Note: The dashed bubble represents the entire trade, transportation, and utilities sector.

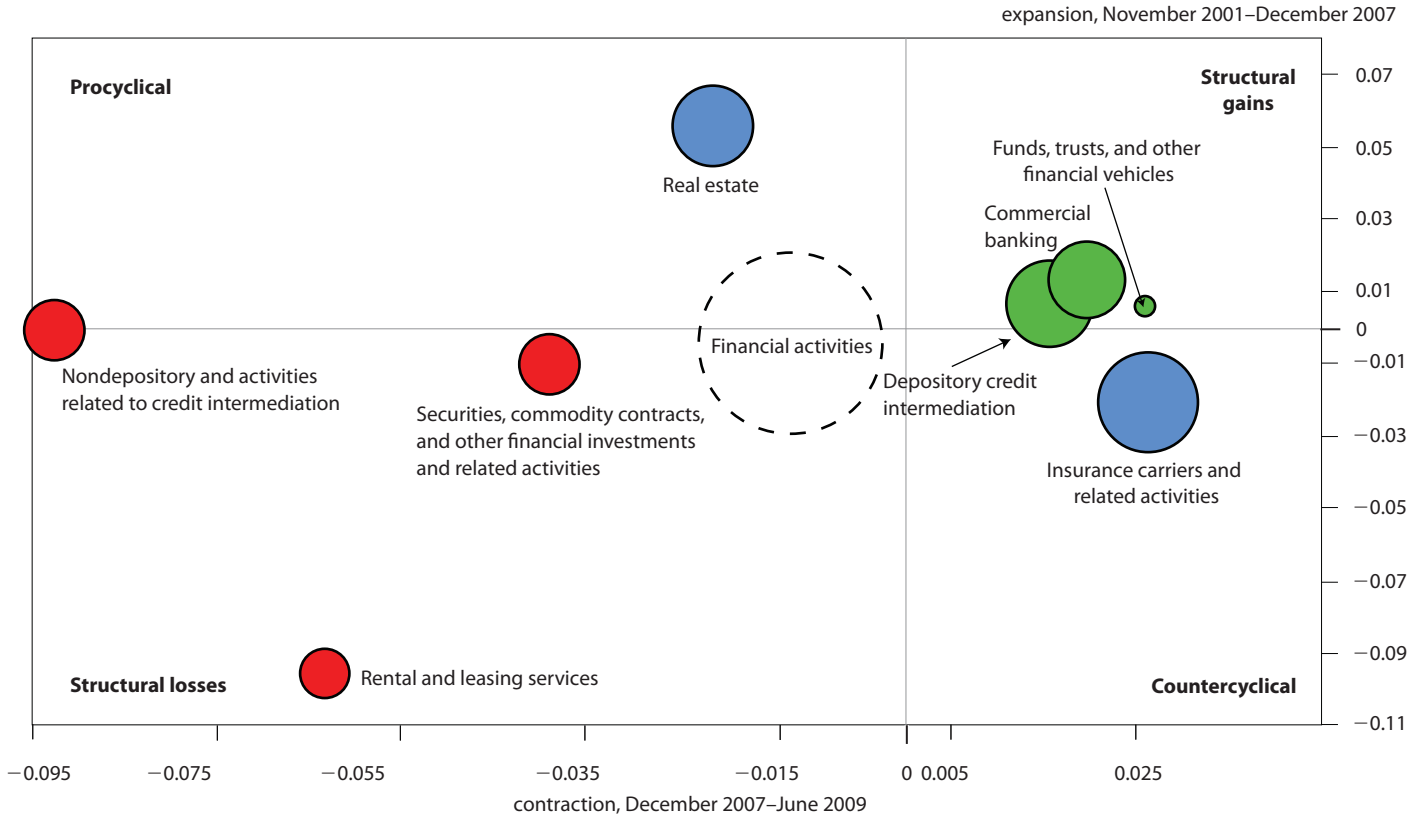
Source: Author's calculations based on BLS CES database.

Figure 16 Structural and cyclical employment trends in the information sector, by detailed industry



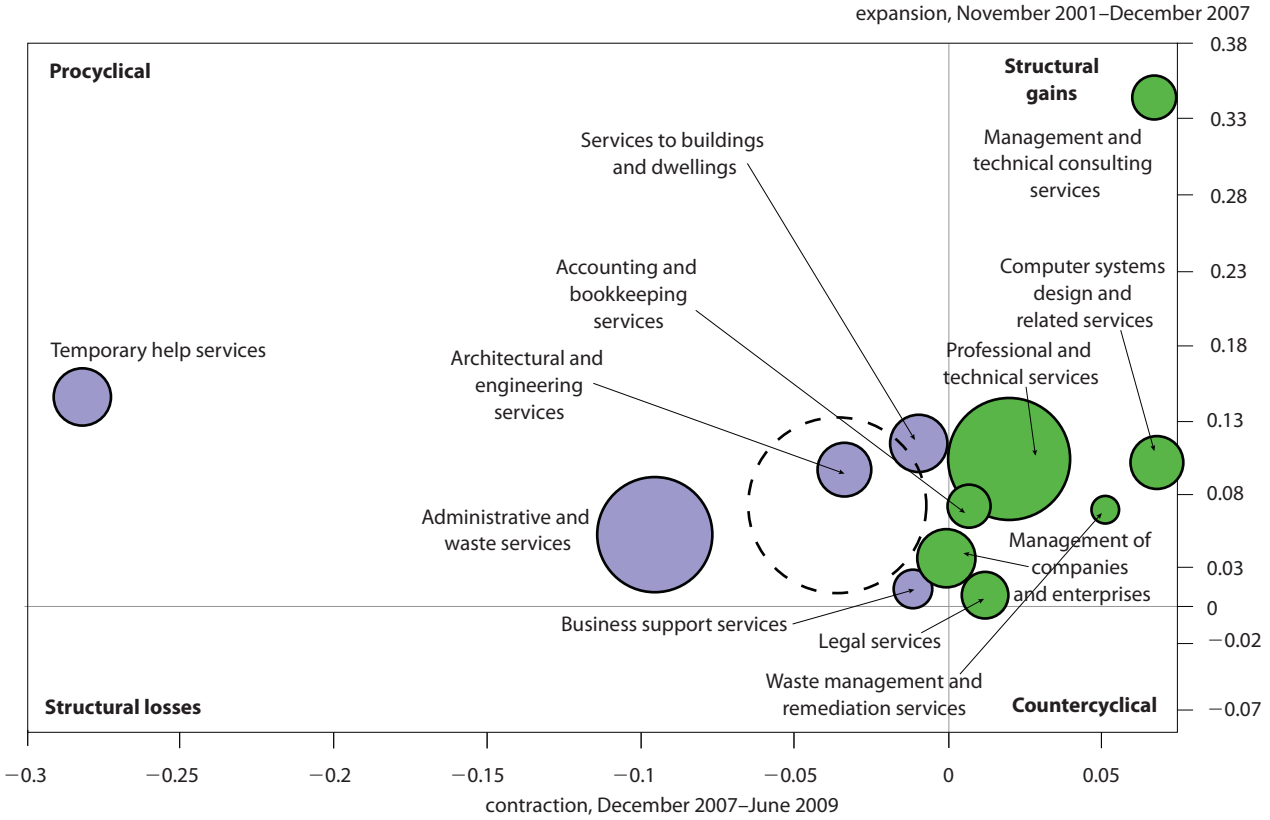
Source: Author's calculations based on BLS CES database.

Figure 17 Structural and cyclical employment trends in the financial activities sector, by detailed industry



Source: Author's calculations based on BLS CES database.

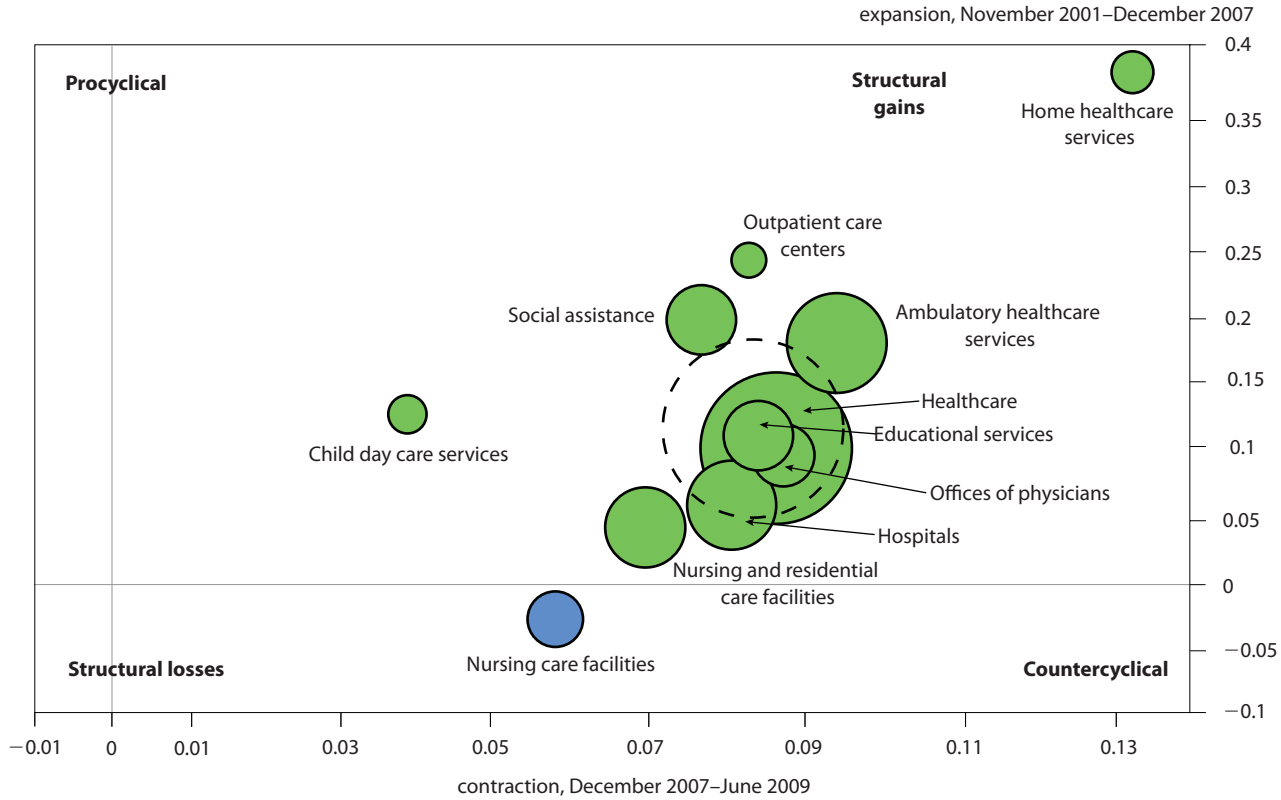
Figure 18 Structural and cyclical employment trends in the professional and business services sector, by detailed industry



Note: The dashed bubble represents the entire professional and business services sector.

Source: Author's calculations based on BLS CES database.

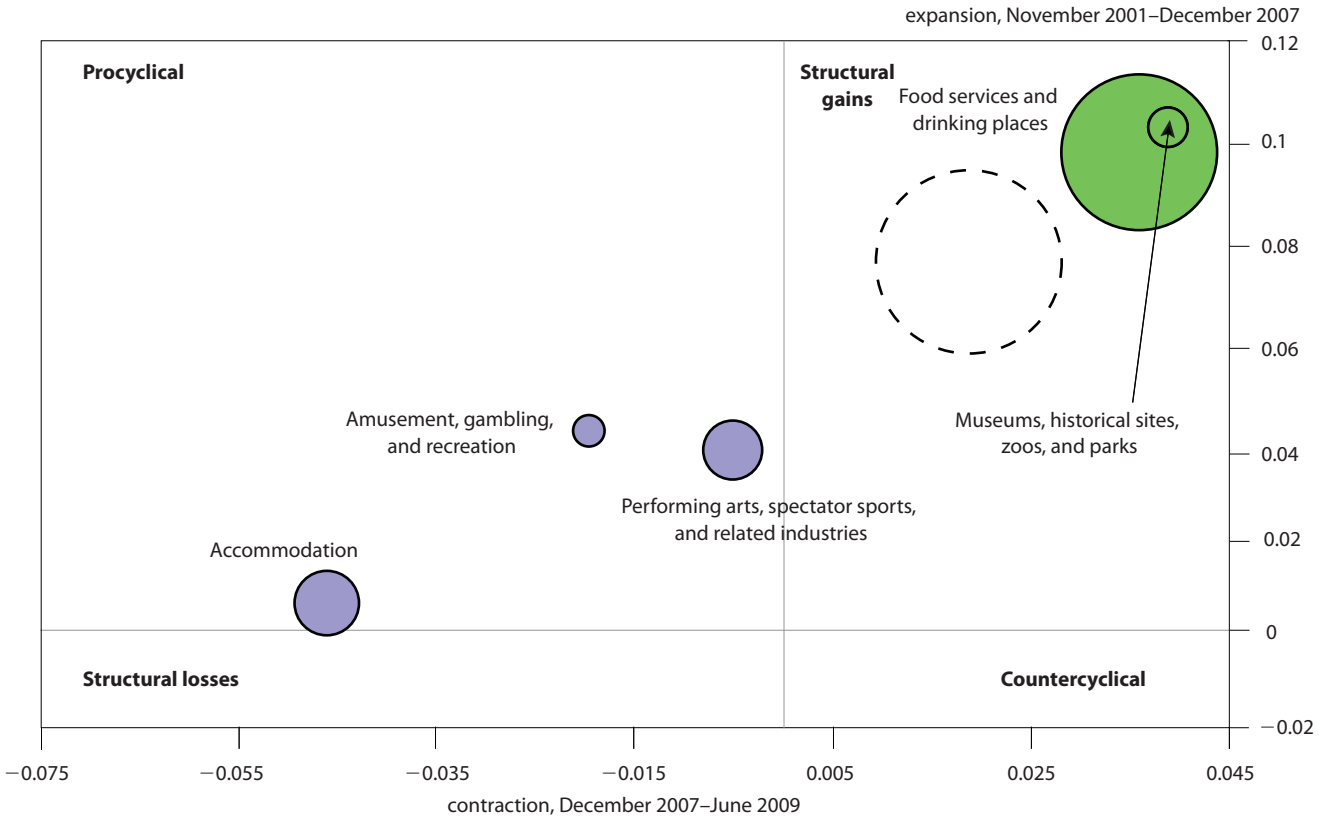
Figure 19 Structural and cyclical employment trends in the education and healthcare sectors, by detailed industry



Note: The dashed bubble represents the education and healthcare sectors.

Source: Author's calculations based on BLS CES database.

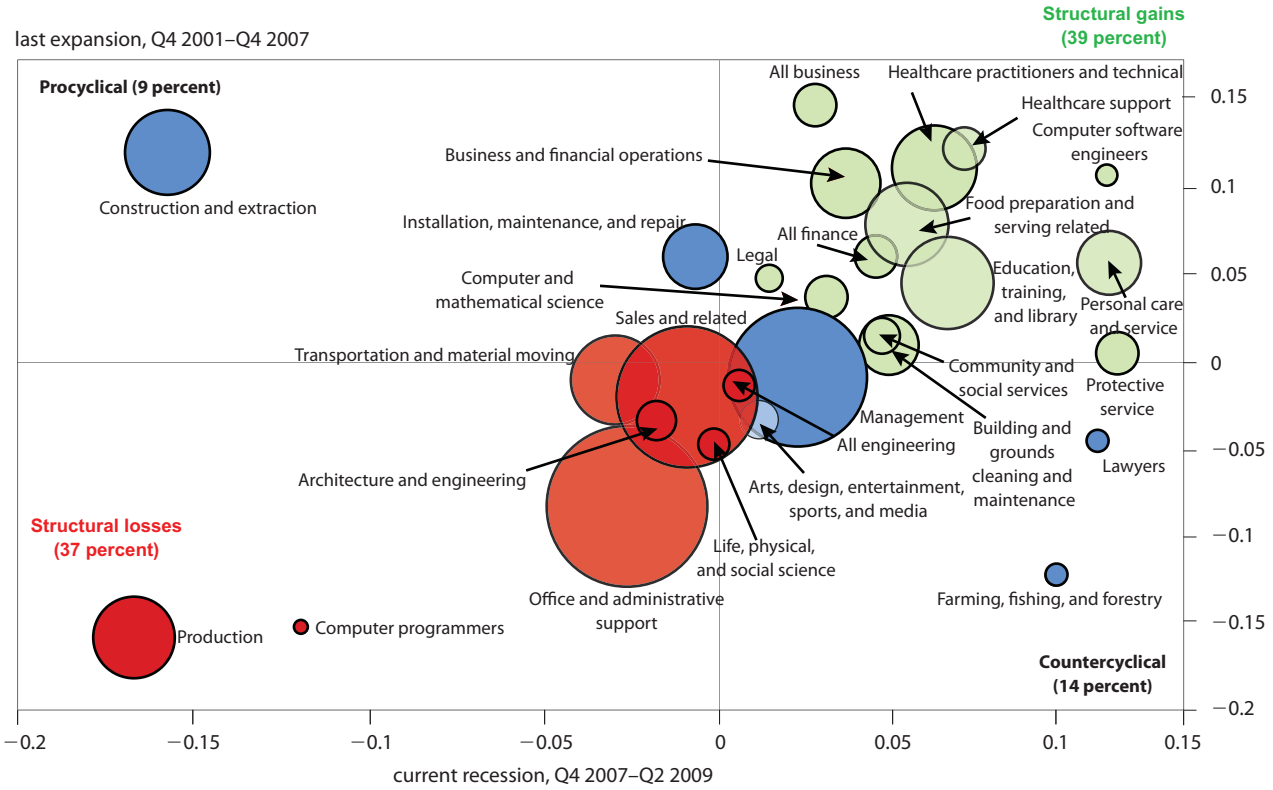
Figure 20 Structural and cyclical employment trends in the leisure and hospitality sectors, by detailed industry



Note: The dashed bubble represents the leisure and hospitality sectors.

Source: Author's calculations based on BLS CES database.

Figure 21 Structural and cyclical net employment trends during the last business cycle, by occupation relative to total employment



Source: BLS Current Population Statistics (CPS) detailed data in table 3 and author's calculations.

Figure 22 The Beveridge Curve

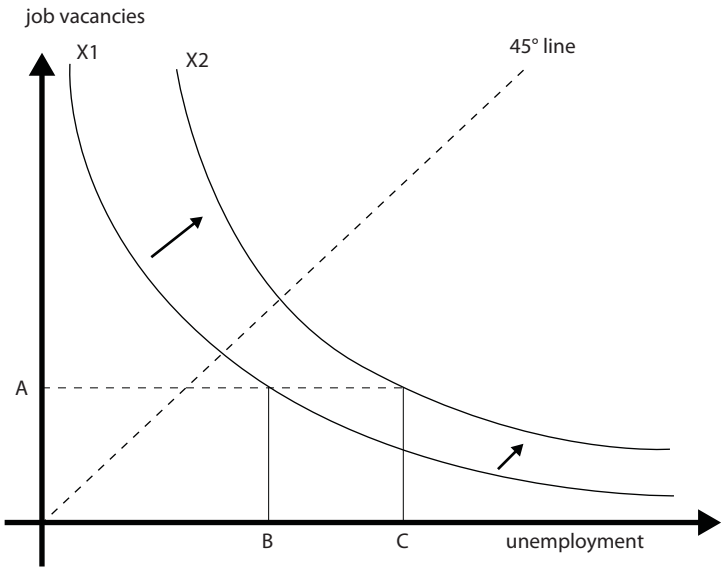
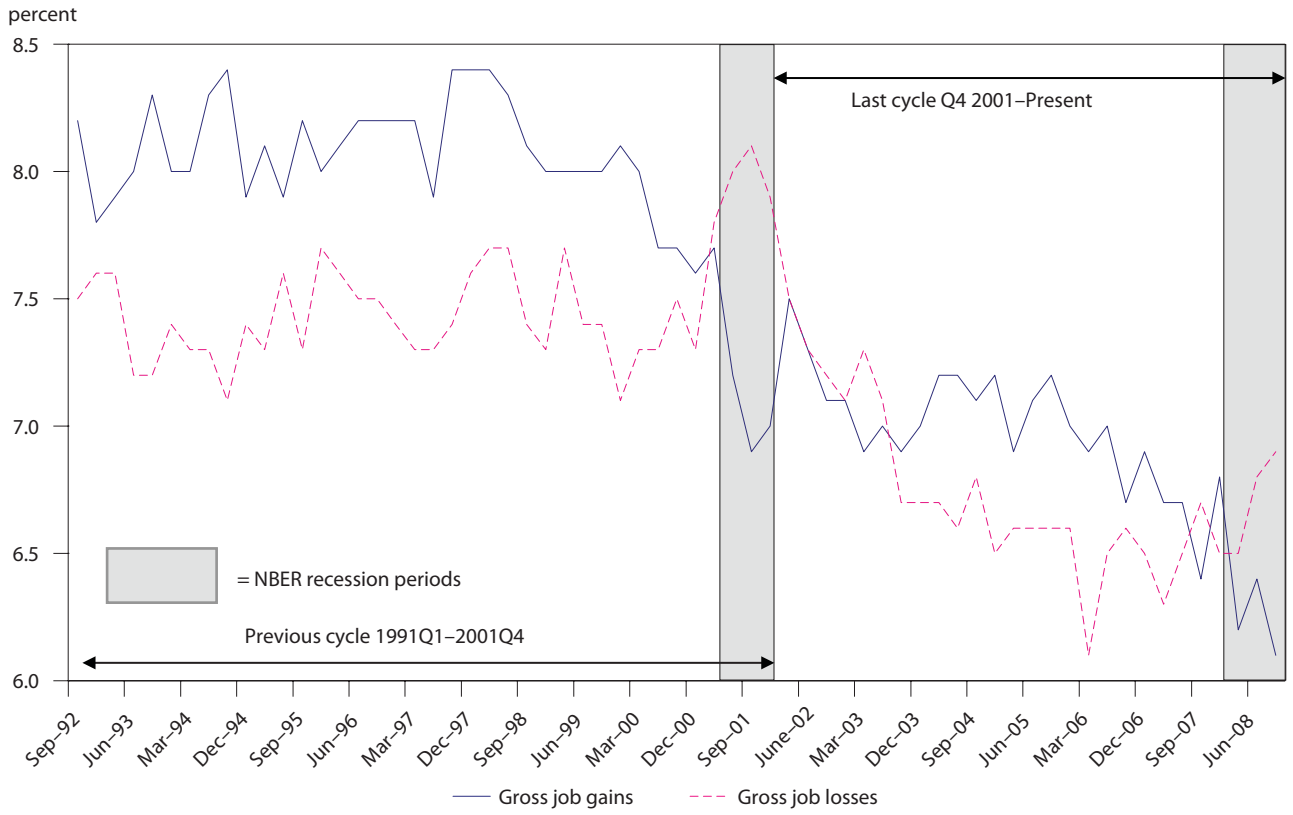
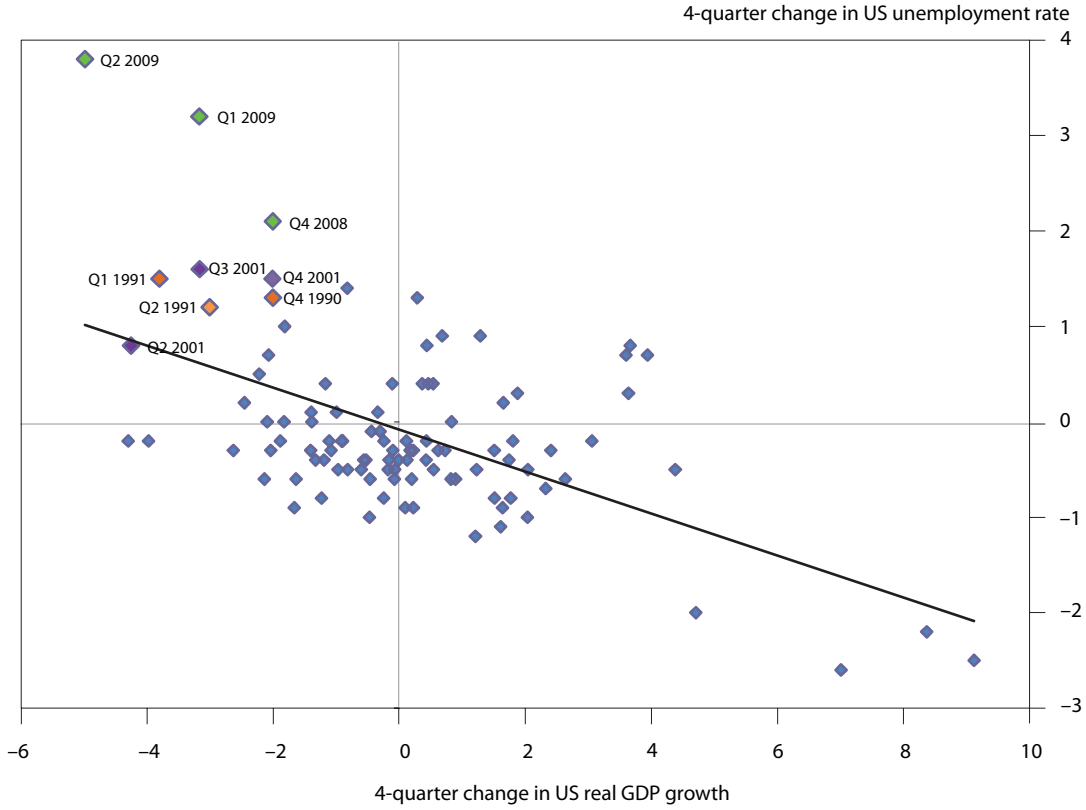


Figure 23 Total quarterly gross private job gains and losses, 1992–2008 (percent of total private payroll employment)



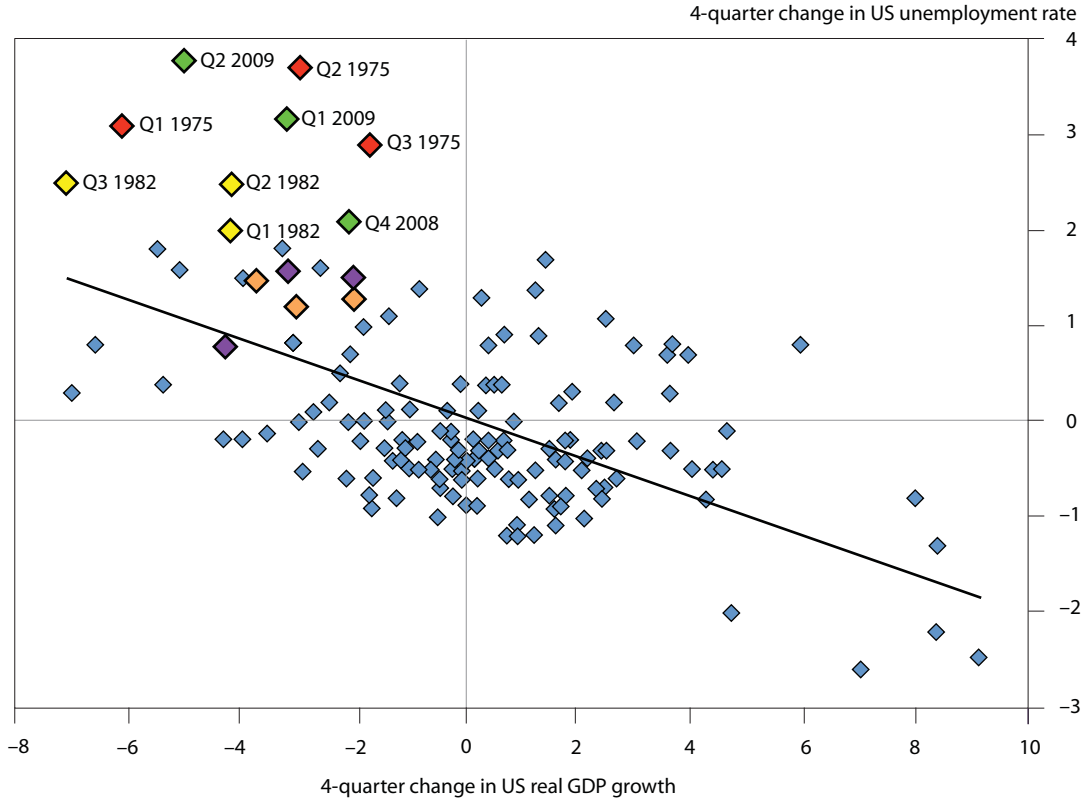
Source: BLS Business Employment Dynamics Survey.

Figure 24 Okun's Law in the United States, Q1 1983–Q2 2009



Sources: Bureau of Labor Statistics and Bureau of Economic Analysis.

Figure 25 Okun's Law in the United States, Q1 1971–Q2 2009



Sources: Congressional Budget Office and Bureau of Labor Statistics.

Table 1 Last 10 US expansion and contraction business cycles, measured trough to trough, 1949–2009

Recession	Expansion	Contraction	Full cycle trough to trough	Duration (months)
1	Oct 49–Jul 53	Jul 53–May 54	Oct 49–May 54	56
2	May 54–Aug 57	Aug 57–Apr 58	May 54–Apr 58	48
3	Apr 58–Apr 60	Apr 60–Feb 61	Apr 58–Feb 61	35
4	Feb 61–Dec 69	Dec 69–Nov 70	Feb 61–Nov 70	118
5	Nov 70–Nov 73	Nov 73–Mar 75	Nov 70–Mar 75	53
6	Mar 75–Jan 80	Jan 80–July 80	Mar 75–Jul 80	65
7	Jul 80–Jul 81	Jul 81–Nov 82	Jul 80–Nov 82	29
8	Nov 82–Jul 90	Jul 90–Mar 91	Nov 82–Mar 91	101
9	Mar 91–Mar 01	Mar 01–Nov 01	Mar 91–Nov 01	129
10	Nov 01–Dec 07	Dec 07–June 09	Nov 01–June 09	92

Source: National Bureau of Economic Research (NBER).

Table 2 Employment weight by net employment trend, share of total nonfarm employment at end of cycle

Net employment trend	Oct 49–May 54	May 54–Apr 58	Apr 58–Feb 61	Feb 61–Nov 70	Nov 70–Mar 75	Mar 75–Jul 80	Jul 80–Nov 82	Nov 82–Mar 91	Mar 91–Nov 01	Nov 01–Jun 09
Procyclical	32.3	0.0	27.6	0.0	4.7	4.8	3.8	35.0	15.0	17.4
Countercyclical	58.8	27.1	4.8	20.1	40.5	18.3	38.7	19.5	26.3	21.2
Structural gain	5.5	39.6	37.1	46.7	30.1	53.9	34.3	29.0	26.5	25.2
Structural decline	3.5	33.2	30.4	33.2	24.7	22.9	23.3	16.5	32.2	36.2
Total share undergoing cyclical net employment changes	91.1	27.1	32.4	20.1	45.3	23.1	42.4	54.5	41.4	38.6
Total share undergoing structural net employment changes	8.9	72.9	67.6	79.9	54.7	76.9	57.6	45.5	58.6	61.4
Total share seeing larger net employment gains during expansions	37.7	39.6	64.8	46.7	34.8	58.8	38.1	64.0	41.5	42.5
Total share seeing lower net employment gains during expansions	62.3	60.4	35.2	53.3	65.2	41.2	61.9	36.0	58.5	57.5
Total	100	100	100	100	100	100	100	100	100	100

Box 1 Sixty years of employment in the US government, education, and healthcare sectors

One of the striking, if unsurprising, findings of this paper is the 50 plus years of structural employment gains in the US education and healthcare sectors. Given the Obama administration's public commitments both to a historic expansion of healthcare coverage in the United States and to continued improvements in US educational attainment, and combined with the accelerating aging of the US population and high and stable US fertility levels, this structural employment trend is unlikely to change in the coming years if not decades. It is not a coincidence that the healthcare sector is the only sector in the US economy that has consistently added jobs every month throughout the current historic downturn in the labor market.

This paper mentioned earlier that the share of government employment in the US nonfarm workforce has remained basically constant since the early 1970s. This relative stability of the share of government employment in the total US workforce stands in marked contrast to the continued expansion of the government sector elsewhere in the OECD and particularly in European countries. Yet before celebrating the United States' victory over the destructive growth of "big government," it must be kept in mind that the stability of the government's employment share in the United States is partially due to the fact that a large share of education and healthcare services in the United States are provided through the private sector, unlike in Europe, where both education and healthcare are almost exclusively tax-financed, government-provided services.

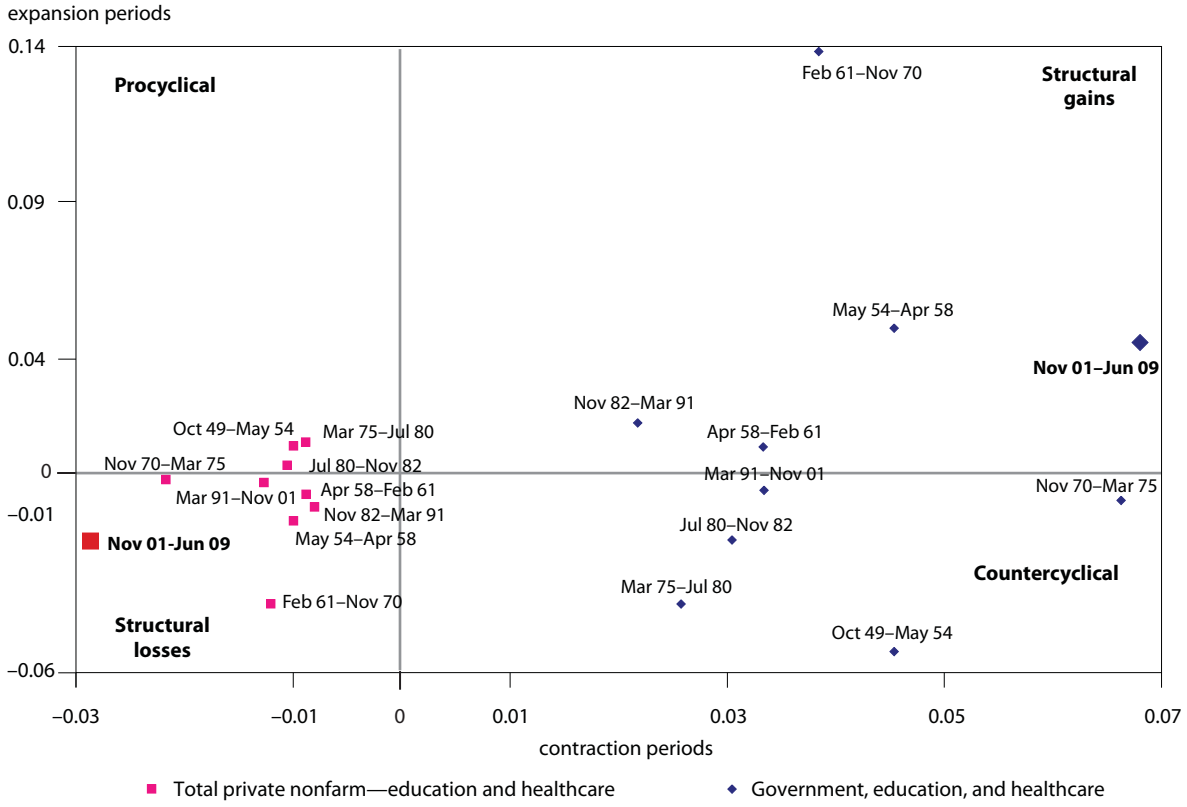
In thinking about what is occurring in the US labor market, it is therefore useful to compare what US net employment trends would look like over the 10 business cycles that have been the focus of this paper when broken down into "private-sector employment" and "welfare-state employment" (i.e., existing government workers, plus the private education and healthcare sectors). This is done in box figure 1 (see next page).

Unlike what we saw in figure 4, where the government net employment trend was generally countercyclical in nature while private nonfarm employment was procyclical, box figure 1 shows that welfare-state employment in the United States has been characterized by net structural gains, including during two of the last three business cycles. Meanwhile, private-sector employment in the United States excluding the education and healthcare sectors has tended to see net structural employment losses, rather than being procyclical.

As such, the employment growth of welfare-state services provision in the United States has in many ways mirrored the expansion of European welfare states since the 1950s. Small government advocates in the United States have merely succeeded in keeping the provision of many of these welfare-state services of education and healthcare within the private sector; they have not restrained the level and scope (although certainly the distribution) of their provision.

Much of the post-1995 productivity acceleration in the US economy relative to other OECD countries came from higher levels of productivity in the US services sectors (Jorgenson, Ho, and Stiroh 2008; Oliner, Sichel, and Stiroh 2007; van Ark 2005). However, while productivity levels are exceedingly hard to measure in the education and healthcare sectors (Bosworth and Triplett 2004), a cursory view of costs and output in both sectors hardly suggests that the United States has enjoyed noteworthy international efficiency advantages in either sector (Kirkegaard 2009). Since these sectors will nonetheless continue to expand their share of the total US economy—proposed reforms are likely to accelerate this trend—they seem likely to constitute an increasingly large low labor-productivity "millstone" around the neck of US potential growth rates. Perhaps Baumol will have the last laugh after all.

Box figure 1 Structural and cyclical net employment trends with a "European" welfare state in the United States, 1949–2009



Source: Author's calculations based on BLS CES database.