EconomicLetter

Insights from the
FEDERAL RESERVE BANK OF DALLAS

A Historical Look at the Labor Market During Recessions

by Enrique Martínez-García and Janet Koech

The labor market during this recession is shaping up as the worst since the Great Depression—though it's a long way from the depths of the 1930s.

Turmoil in housing, credit and financial markets plunged the U.S. economy into a recession that has taken a heavy toll on the labor market. The weakness that began during the second half of 2007 gravely worsened during a period of extreme financial stress in 2008, and the labor market has yet to recover.

The unemployment rate surged to 10.1 percent in October 2009, the first double-digit reading in 26 years, and it held at 10 percent in November and December. The rate has increased 5 percentage points since the recession's start in December 2007, according to the Bureau of Labor Statistics (BLS). Nonfarm payrolls declined by 85,000 jobs in December, exceeding analyst expectations, though November figures were revised to a gain of 4,000 jobs. Thus far, nonfarm employment losses during this recession total 7.2 million.

To put the recession's labor-market impact into perspective, we compare the past two years to previous downturns, including the Great Depression. We also examine the data commonly used to assess labor market conditions. While unemployment rates and nonfarm payroll losses are widely reported, a firm grasp of what they measure is critical to understanding what they tell us about the current state of the labor market.

Unemployment Scenarios

The National Bureau of Economic Research (NBER) determines when U.S. recessions officially start and end. Its business-cycle dating work shows that the nation has been through 10 recessions since the one in 1948, not counting the current episode.[1] These slumps went from peak to trough in 10 months on average, while employment declines lasted an average of 12 months.

The past episodes, however, are anything but uniform. The longest recessions started in November 1973 and July 1981, each lasting 16 months. By contrast, recessions that began in July 1990 and March 2001 lasted only eight months but were followed by so-called jobless recoveries—prolonged periods of slow employment growth after gross domestic product starts to rebound.

The current recession will almost surely be the longest of the post-World War II era, although the official end date has yet to be determined. The only way it would not exceed the 16-month duration of the 1973 and 1981 recessions is if the NBER concludes that the current recession ended in April 2009 or earlier. To compare current and past recessions, we created scenarios by plotting the recent evolution of the unemployment rate against all post-World War II downturns. We used the rate prior to the current episode—4.7 percent in November 2007—as the common starting point.[2]

We find that the current recession's unemployment rate rose swiftly by historical standards (*Chart 1*). By December 2008, it had already surpassed the average of all post-World War II recessions—and it continued climbing through 2009.
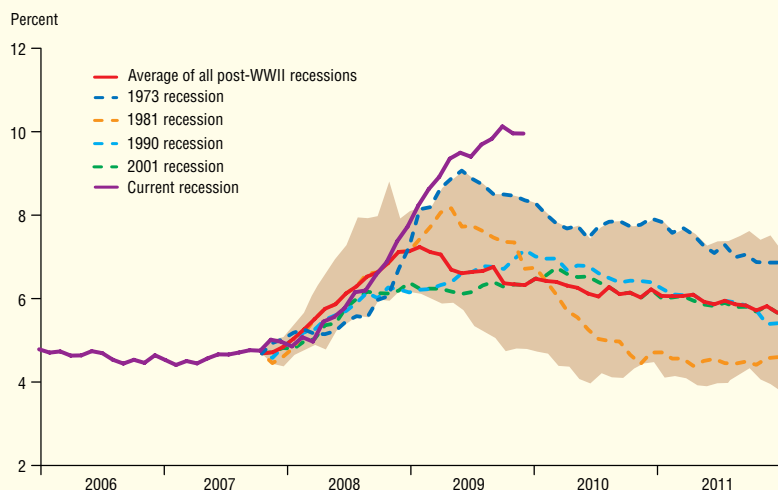
Looking at the evolution of the unemployment rate in depth and length, the 1973 and 1981 recessions are most similar to the current recession. The 1973 scenario warns us that unemployment could remain elevated for a long time. The 1981 scenario offers a more optimistic outlook, with a rather quick employment recovery and return to prerecession unemployment levels less than three years after the start of the recession.

The jobless recoveries that followed the recessions of 1990 and 2001 suggest a bleak medium-term employment picture. Both recessions were rather mild in the short term, with small increases in the unemployment rate over the first year, but their effects lingered and kept unemployment above prerecession levels long afterward. Unlike the 1973 and 1981 episodes, the 1990 and 2001 experiences became closer to the post-World War II average over time.

Total civilian employment during the current recession also shows the stresses under which the labor market has operated. The percent decline in civilian employment wasn't much different from previous recessions until October 2008, when it began to deteriorate rapidly, falling outside the historical range within a few months (*Chart 2*). This coincided with the onset of financial market turmoil, which shook the economy and led employment to weaken further.

Civilian employment is still declining, 24 months from the start of the current recession. By contrast, employment losses in past recessions tended to stabilize after six months and show tentative

Chart 1
Unemployment Rate Rising Faster than in Any Post-World War II Recession

Percent

Legend:
— Average of all post-WWII recessions
- - 1973 recession
- - 1981 recession
- - 1990 recession
- - 2001 recession
— Current recession

NOTE: Shaded area represents upper and lower bounds of historical scenarios for all post-World War II recessions.

SOURCES: Bureau of Labor Statistics' Current Population Survey; authors' calculations.

signs of recovery after one year.

The acceleration in employment losses after October 2008 isn't matched by a rise in the unemployment rate. This discrepancy can be partly attributed to workers leaving the labor force.

The current recession, in fact, differs from previous episodes in the evolution of the civilian labor force. While the 1973 and 1981 recessions saw significant labor force growth, the 1990 and 2001 episodes had meager increases. In the current recession, the civilian labor force moved between those experiences until October 2008 (*Chart 3*). From then on, the labor force continued on a somewhat unusual path of minimal growth that dipped below the historical range two months later and stayed there every month except May 2009. In the last few months of 2009, the civilian labor force fell noticeably below its level at the start of the recession in December 2007.

Nonfarm Payroll Losses

To assess aggregate labor market conditions, analysts and policymakers often look beyond the unemployment rate, civilian employment and labor force numbers, all of which come from the BLS' Current Population Survey (CPS).

The BLS produces another monthly employment series with different definitions of employment and different survey and estimation methodologies. The Current Employment Statistics (CES) survey is derived from a sampling of business establishments and is the source of the widely reported nonfarm payroll numbers. The CES survey counts jobs—the number of workers on payrolls—while the CPS counts individuals working.

Both surveys have their strengths and weaknesses. The CPS provides a broader picture of nonfarm employment because it includes the unincorporated self-

Chart 2
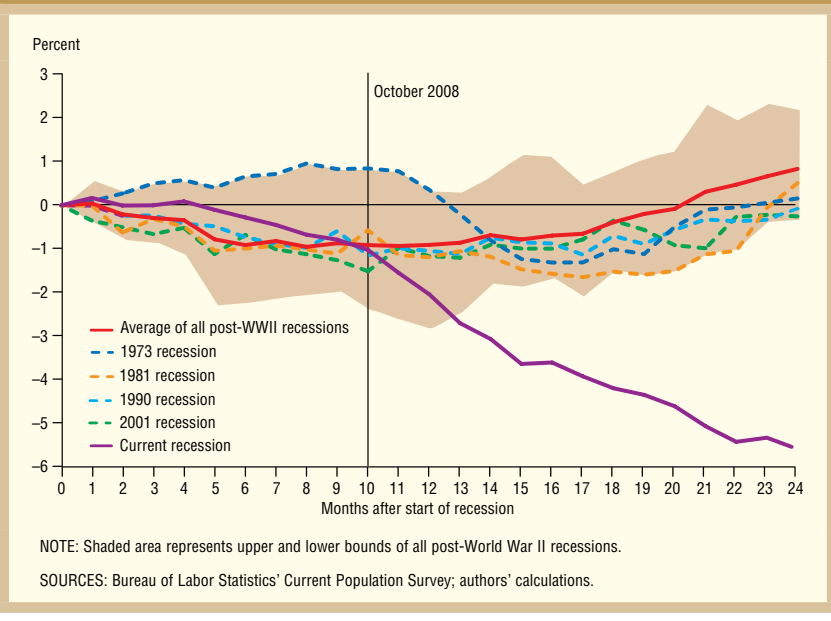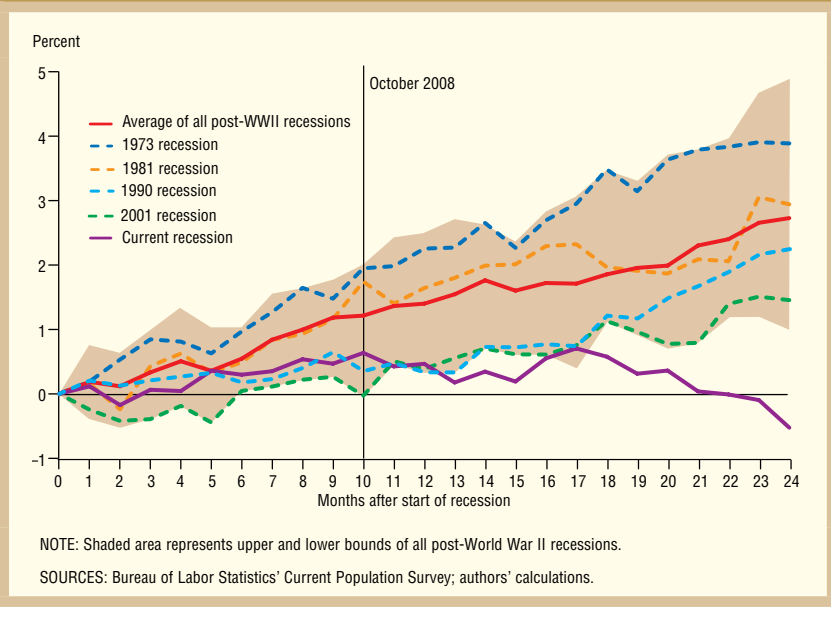**Civilian Employment Falling Steeply in Current Recession**

Percent

NOTE: Shaded area represents upper and lower bounds of all post-World War II recessions.

SOURCES: Bureau of Labor Statistics' Current Population Survey; authors' calculations.

Chart 3
Civilian Labor Force Growth Slowing in Current Recession

Percent

NOTE: Shaded area represents upper and lower bounds of all post-World War II recessions.

SOURCES: Bureau of Labor Statistics' Current Population Survey; authors' calculations.

employed, unpaid family workers, private household employees and workers absent without pay. It may even partly capture off-the-books employment not reported in the CES. However, the CPS employment classification is based on interviewees' descriptions of their jobs and doesn't always agree with employers' reporting in the CES (*see Box 1, page 6*).

Analysts often view the CES as a better gauge of cyclical movements in employment by sector because of its higher sampling ratio. However, it's subject to double counting because it may include persons with more than one job or those who change jobs in a given payroll period. In the end, the CES nonfarm payroll numbers aren't always easy to reconcile with the CPS household data (*see Box 2, page 7*).

To achieve a clearer comparison of CES nonfarm employment in past and current recessions, we account for an important struc-

tural change in the labor force. Agriculture's share of total civilian employment averaged more than 10 percent before 1970 and less than 10 percent after, according to CPS data. This shift away from agriculture coincides with other structural shifts, such as increased participation of women in the labor force, that give rise to different growth patterns in nonfarm payroll employment. We take care of the structural change in agriculture by splitting the CES nonfarm employment data into pre- and post-1970 periods.

U.S. nonfarm payrolls often experienced abrupt changes prior to the 1970s. Examined through this historical lens, the current recession's nonfarm job losses weren't out of the ordinary at the beginning. While less than average in the early months of the downturn, nonfarm employment losses exceeded the pre-1970 norm only after October 2008 (*Chart 4*). Unlike in the pre-1970 experience, the recovery of nonfarm employment hasn't taken hold yet.

In the post-1970 period, total civilian employment and nonfarm payroll employment behaved more similarly, due in part to the decline in agriculture's employment share. Nonfarm payroll losses under the post-1970 norm were somewhat milder than they were pre-1970, but recovery took longer as well—closer to 17 months on average (*Chart 5*).

In the first eight months of the current recession, nonfarm payroll losses were similar to the post-1970 average. After October 2008, however, we see a significant divergence. The current recession's acceleration of losses is unusual compared with both the pre- and post-1970 periods. Only in the last few months has the rate of nonfarm payroll employment decline started to appreciably slow.

Nonfarm payroll losses show

Chart 4
After October 2008, Nonfarm Payroll Losses Surpass Pre-1970 Average
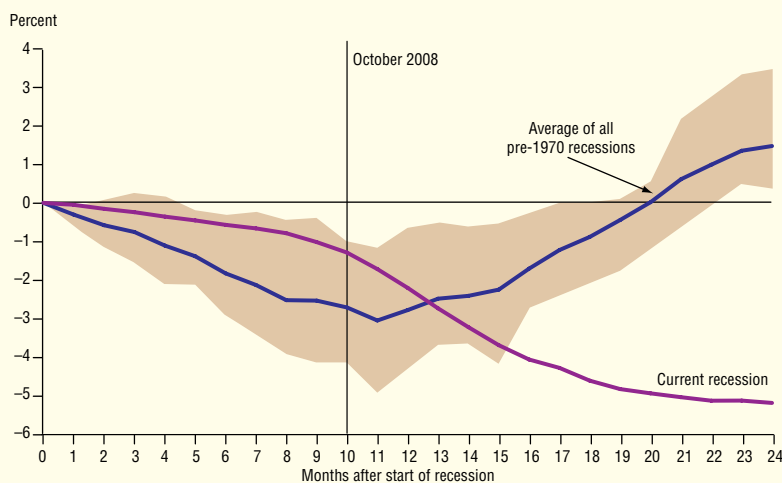
NOTE: Shaded area represents upper and lower bounds of all pre-1970 recessions.

SOURCES: Bureau of Labor Statistics' Current Employment Statistics survey; authors' calculations.

the same deterioration after October 2008 that we observe in total civilian employment in Chart 2, which isn't apparent from the evolution of the unemployment rate, as seen in Chart 1.

Unemployment Scenarios Redux

The rapid deterioration of the labor market after October 2008 led to fears the economy might sink into a second Great Depression, a nightmarish period when unemployment rose from 3.2 percent in 1929 to 20.9 percent in 1933.[3] A look back at the 1930s tells us just how close the current recession has come to the greatest economic calamity in the past century.

Employment data for the interwar years comes from the influential work of Stanley Lebergott, amended by the addition of emergency workers as suggested by Michael R. Darby.[4] Lebergott worked with the decennial censuses and other sources to create census-year labor force and employment estimates that would be consistent with the CPS definitions.

For the years between censuses, Lebergott relied on CES employment data by sector, subjecting them to a variety of refinements to reach his final numbers. He also used the CES data because of their fairly complete coverage back to 1929.[5] The CPS household sample didn't start until 1940. However, due to a lack of complete CES survey data prior to 1929—with the notable exception of manufacturing—he had to use more heterogeneous sources to extend his employment series further back in time.

There are many differences between the Great Depression—as characterized by the Lebergott–Darby employment numbers—and the current recession. Looking at the interwar period between 1919 and 1941, it becomes clear that unemployment-rate effects are
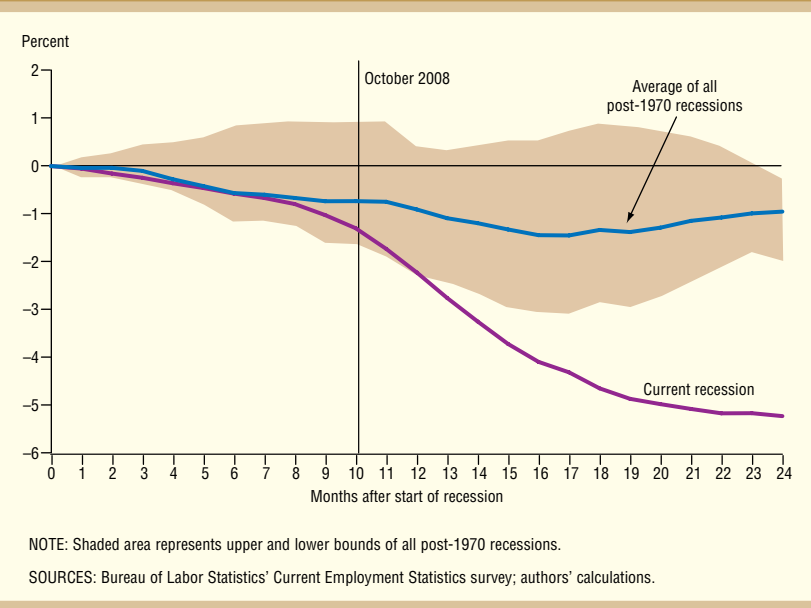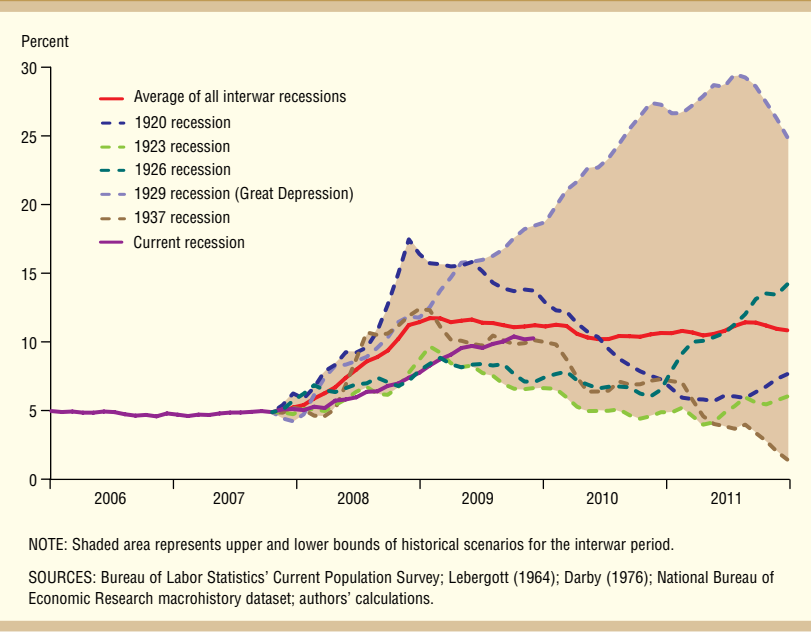
significantly smaller in the current recession than they were in the interwar period (*Chart 6*).[6]

The current recession has

been longer and deeper than the 1923 and 1926 recessions but not the 1937 relapse in the Great Depression decade. The major

Chart 5
After October 2008, Nonfarm Payroll Losses Surpass All Post-1970 Recessions

Percent

October 2008

Average of all post-1970 recessions

Current recession

Months after start of recession

NOTE: Shaded area represents upper and lower bounds of all post-1970 recessions.

SOURCES: Bureau of Labor Statistics' Current Employment Statistics survey; authors' calculations.

Chart 6
Unemployment Nowhere Near Great Depression Levels

Percent

— Average of all interwar recessions
- - 1920 recession
- - 1923 recession
- - 1926 recession
- - 1929 recession (Great Depression)
- - 1937 recession
— Current recession

NOTE: Shaded area represents upper and lower bounds of historical scenarios for the interwar period.

SOURCES: Bureau of Labor Statistics' Current Population Survey; Lebergott (1964); Darby (1976); National Bureau of Economic Research macrohistory dataset; authors' calculations.

differences that emerge from the data are due to the order of magnitude and duration of the Great Depression—although we can't fully appreciate how the current episode will compare until we turn the corner on the current slump and move from job losses to steady job creation.

Not Created Equal

A historical look shows that the labor market impact hasn't been as severe in the current recession as it was in the Great Depression. While the latest episode has a lot in common with the post-World War II experience, it's unusual in the length and depth of its labor market reach. It was the acceleration of employment losses after October 2008 that transformed an otherwise average recession into the worst episode since World War II.

Different labor market data sources use different conceptual definitions and methodologies. Measurement issues can complicate the interpretation of aggregate data, and sometimes aggregation itself can mask important structural changes.

The historical precedents show that when looking at labor market conditions, it pays to examine a broad range of data, to understand the sources and what they measure and to get a more disaggregated view of the numbers. Even then, inferences should be made with great care.

Different labor market data sources use different conceptual definitions and methodologies.

Box 1
Two Views on Employment: Comparing the CPS and CES

Comparison by	Household survey (Current Population Survey, CPS)	Payroll survey (Current Employment Statistics, CES)
Universe	Civilian noninstitutional population age 16 and older	Nonfarm wage and salary jobs
Type of survey	Monthly sample survey of approximately 60,000 households	Monthly sample survey of approximately 150,000 businesses and government agencies covering 390,000 establishments
Major outputs	Measures labor force, employment and unemployment with significant demographic detail	Measures employment, hours and earnings with significant industrial and geographic detail
Reference period	Calendar week that includes the 12th of the month	Employer pay period that includes the 12th of the month
Employment concept	Estimates the number of employed persons • Counts multiple jobholders once • Includes individuals absent from work without pay	Estimates the number of nonfarm payroll jobs • Counts multiple jobholders for each payroll job • Includes only those receiving pay for the reference period
Employment definition differences	Includes unincorporated self-employed persons, agriculture and related workers, private household workers, unpaid family workers (persons working without formal pay in their family's business) and workers on leave without pay	Excludes all the groups listed at left, except for the logging component of agriculture and related industries
Benchmark adjustments	No direct benchmark for employment; adjustments to underlying population base revised annually to intercensal estimates and every 10 years to the decennial census	Employment benchmarked annually to employment counts derived primarily from unemployment insurance tax records

SOURCE: Bureau of Labor Statistics, "Employment from the BLS Household and Payroll Surveys: Summary of Recent Trends," Jan. 8, 2010. For more details on the CPS and CES, also see www.bls.gov/cps and www.bls.gov/ces.

Box 2
Reconciling CPS and CES Nonfarm Employment

To reconcile its two often-divergent employment measures, the Bureau of Labor Statistics (BLS) calculates an alternative nonfarm payroll series that adjusts the Current Population Survey (CPS) to more closely align with the Current Employment Statistics (CES) definition.

This requires subtracting agriculture and related employment, the nonagricultural self-employed, unpaid family and private household workers, and workers absent without pay, and then adding nonagricultural wage earners and multiple jobholders to civilian employment. The resulting series is seasonally adjusted.

This adjustment brings the two series much closer together—but discrepancies remain. Between 1998 and 2001, for example, nonfarm payroll growth was more robust in the CES than in the adjusted CPS series (*see chart*). In both cases, a jobless recovery ensues; however, the adjusted CPS shows stagnation and the CES an outright decline between 2001 and 2003. From December 2007 to December 2009, the current recession's nonfarm payroll losses totaled 7.2 million, according to the CES, and 8.5 million, according to the adjusted CPS.

The BLS identifies several possible causes of these discrepancies, mainly related to differences in definition, size and concept of the two surveys. These differences range from sampling errors and benchmark revisions to off-the-books employment, the birth of new firms and varying job-to-job movements. The existence of these discrepancies reminds us that employment surveys can give conflicting signals, so it's important to track the numbers and understand what they measure before making any inferences.

Number, in millions
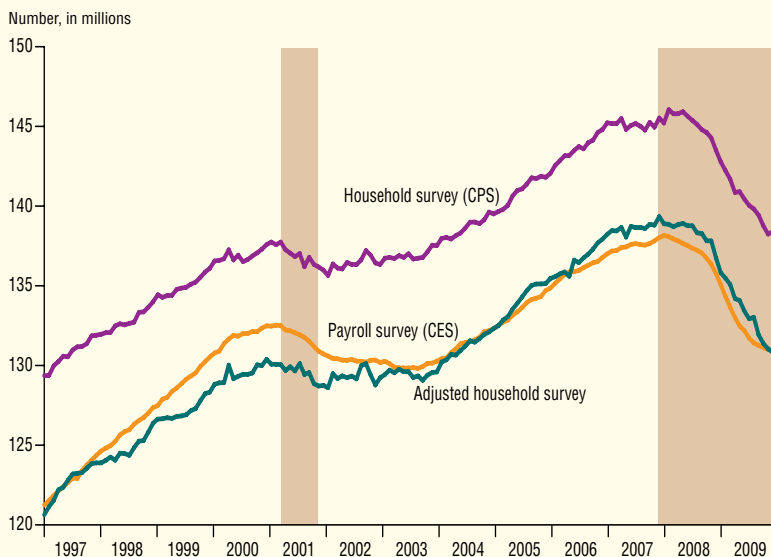
NOTES: Shaded areas represent recessions. The official end of the current recession has yet to be declared.

SOURCE: Bureau of Labor Statistics, "Employment from the BLS Household and Payroll Surveys: Summary of Recent Trends," Jan. 8, 2010.

The acceleration of employment losses after October 2008 transformed an otherwise average recession into the worst episode since World War II.

We should be mindful that no two recessions are created equal. Structural changes—for example, the fall in agriculture's employment share—can be relevant to gauge the evolution of the labor market but can also make comparisons with past episodes difficult. Other structural changes matter as well— such as labor force participation

rates, the skill level of workers and the shift from manufacturing to services.

While data limitations hinder comparisons across recessions, this historical analysis helps us better understand the relative severity of the current episode. Notably, this recession is unusual in the depth and breadth of employment losses. The reasons for this will continue to be examined by analysts and the public for years to come.

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Notes

[1] See the National Bureau of Economic Research (NBER), www.nber.org/cycles.html.

[2] All data are from the Bureau of Labor Statistics (BLS) Current Population Survey (CPS), at monthly frequency, and are for individuals 16 years and over. The unemployment rate is defined as the ratio $u_t = U_t/L_t$. By definition, the civilian labor force (L_t) must be equal to employment (E_t) plus unemployment (U_t). Working with this identity, the current unemployment rate can be expressed in terms of the previous-period unemployment rate as,

$$u_t = [u_{t-1} - (1 - u_{t-1})(dE_t/E_{t-1}) + (dL_t/L_{t-1})]/[1 + (dL_t/L_{t-1})],$$

where $dL_t = L_t - L_{t-1}$ and $dE_t = E_t - E_{t-1}$. We use this simple mathematical formula as a recursive algorithm to derive the historical scenarios. Our initial condition is the unemployment rate in November 2007, one month before the official start of the current recession. Then we use the growth rate of the civilian labor force (dL_t/L_{t-1}) and of employment (dE_t/E_{t-1}) in every past recession to infer recursively the unemployment rate that would have prevailed given the November 2007 unemployment rate. We plot selected historical scenarios as well as the upper and lower contour of all past scenarios. To

compute this contour, only 26 months of the 1980 recession are included. The 1980 episode was short-lived and was followed in rapid succession by the 1981 recession, so we do not include more values for the 1980 recession to avoid the overlap with the 1981 recession.

[3] The unemployment rates are taken from Table 3 in "Three-and-a-Half Million U.S. Employees Have Been Mislaid: Or, an Explanation of Unemployment, 1934–1941," by Michael R. Darby, *Journal of Political Economy*, vol. 84, no. 1, 1976, pp. 1–16.

[4] The seminal work on pre–World War II unemployment estimates is *Manpower in Economic Growth: The American Record since 1800*, by Stanley Lebergott, New York: McGraw-Hill, 1964. Darby (1976) objected that these estimates did not include emergency workers (employees of government programs such as those sponsored by the Works Progress Administration), who were instead counted as unemployed. At the peak in 1936, emergency workers totaled 3.7 million, according to Darby. In our historical analysis of the interwar period, we choose to bundle the employed as defined by Lebergott with the emergency workers as counted by Darby.

[5] See "A Century of U.S. Unemployment, 1890–1990," by David A. Weir, in *Research in Economic History*, vol. 14, Roger L. Ransom, ed. Greenwich, Conn.: JAI Press, 1992, pp. 301–46.

[6] The data of Lebergott (1964), including emergency workers during the 1930s as suggested by Darby (1976), are at annual frequency. To replicate the pre–World War II scenarios, we first interpolate the data using the Chow–Lin method ("Best Linear Unbiased Interpolation, Distribution, and Extrapolation of Time Series by Related Series," by Gregory C. Chow and An-loh Lin, *Review of Economics and Statistics*, vol. 53, no. 4, 1971, pp. 372–75). For the civilian labor force, we use a time trend as the reference for the interpolation. For the employment series, we use a time trend as well as the employment data on manufacturing from the NBER Macrohistory dataset (series m08010b, U.S. Production Worker Employment, Manufacturing, Total, 01/1919–03/1969, www.nber.org/databases/macrohistory/contents/chapter08.html).