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How did unemployment insurance extensions affect the unemployment rate in 2008–10?

by Bhashkar Mazumder, senior economist and director, Chicago Census Research Data Center

During recessions, it is common for the federal government to extend the standard unemployment insurance (UI) program. Many economic studies have shown that workers who receive UI extensions tend to take longer to find new employment, leading to a somewhat longer average duration of unemployment among all workers.

It is important for us to understand how much of the recent rise in the unemployment rate may be due to UI extensions.

The passage and creation of the Emergency Unemployment Compensation (EUC) federal program in July 2008 and subsequent extensions substantially increased the maximum number of weeks of eligibility for unemployment insurance (UI). As of February 2011, unemployed workers in 26 states and Washington, DC were eligible for a maximum of 99 weeks of UI benefits. The national average was about 95 weeks.[1] By contrast, during the deep recession in 1983, the maximum potential duration of UI coverage in any state was 55 weeks.

Providing monetary assistance to the unemployed for longer periods may benefit individuals and the aggregate economy, at least in the short run. However, there is some concern that UI extensions might also provide a disincentive for working. Some recent research suggests that longer spells of UI receipt are actually welfare enhancing for many individuals who have low levels of savings and who might otherwise be forced to take jobs that represent poor matches for their skill levels.[2] In any event, whether beneficial or not, longer spells of unemployment arising from UI extensions will automatically lead to higher rates of unemployment. Since policymakers place a great deal of weight on the unemployment rate as a measure of the degree of slack in the economy when formulating macroeconomic policy, it is important for us to understand how much of the recent rise in the unemployment rate may be due to UI extensions.

In this *Chicago Fed Letter*, I present new estimates of the extent to which the EUC program may have contributed to the rise in the unemployment rate during the recent recession and early recovery period. I use a simulation that applies to the current episode an estimate from the literature of the effects of UI extensions on the duration of unemployment. First, I review some other studies on the topic.

Research on the EUC program

The key challenge for researchers studying the effects of UI extensions on unemployment is distinguishing cause from effect because extensions are typically enacted in response to poor economic conditions that lead to rising unemployment. Therefore, researchers must use an identification strategy to either control for economic conditions or to create a suitable comparison group. Valletta and Kuang[3] identify the effects of UI extensions by comparing the unemployment durations of those who are likely to be eligible for UI with the durations of those who are not. They use questions from the *Current Population Survey* (CPS, conducted by the U.S. Bureau of

Labor Statistics) on the reason for unemployment to identify "involuntary job losers," who comprise most of those who would be eligible for UI. The control group consists of "voluntary job leavers" and labor force entrants, most of whom would be ineligible for UI. They estimate that UI extensions account for 0.8 percentage points of the increase in the unemployment rate from its pre-recession levels in 2006 and 2007 through June of 2010. An advantage of their approach is that it is relatively transparent and the results can be summarized visually in a chart. On the other hand, they must make some arguably strong assumptions in order for their treatment and control groups to be truly comparable.[4]

The extension of unemployment insurance benefits during the recent economic downturn can account for approximately 1 percentage point of the increase in the unemployment rate, with a preferred estimate of 0.8 percentage points.

Fujita[5] identifies the effects of the UI extensions by comparing the unemployment durations of men in the CPS who were unemployed in 2004–07 with the durations of men who were unemployed in 2009–10. He finds that extensions account for between 0.9 and 1.7 percentage points of the change in the steady-state unemployment rate for men.[6] By using the "pre" and "post" EUC program differences, the study provides a nice complement to Valletta and Kuang's (2010) cross-sectional analysis. However, Fujita (2011) focuses only on men, so we do not know whether the results generalize to the entire labor force.

In an earlier paper, Fujita[7] uses a simpler model of the unemployment rate and takes an estimate from the literature on the effects of UI extensions on the duration of unemployment to produce an estimate of the effect of the EUC program. He finds that the recent UI extensions may account for about 1.5 percentage points of the increase in the unemployment rate. A nice feature of this study is that it provides a useful theoretical framework that uses the flows into and out of unemployment to derive the steady-state unemployment rate. However, the approach implicitly assumes that *all* unemployed workers are covered by UI and it only considers extensions from 25 to 52 weeks, even though many workers can potentially collect UI for up to 99 weeks. The study also relies on an estimate based on data from several states during the 1970s and 1980s.[8] This could be problematic because the UI extensions during that period reflected responses to high unemployment, thereby possibly confusing cause and effect as described earlier.[9]

Finally, Aaronson, Mazumder, and Schechter[10] use a range of estimates from the literature on the effect of UI extensions on unemployment duration and apply them to argue that the recent UI extensions accounted for between 10% and 25% of the increase in observed unemployment durations between July 2008 and December 2009. This would roughly translate to an increase in the unemployment rate of about 0.5 to 1.25 percentage points. An advantage of their approach is that they incorporate data on the fraction of the unemployed actually receiving UI each month to calculate a time series of the effects of extensions and consider how the effects accumulate over time. However, they implicitly assume that all increases in UI coverage are due to the extensions as opposed to poor economic conditions. They also lack a theoretical framework in which to interpret their results.

Base case estimates

My approach starts with the framework of the steady-state unemployment rate used by Fujita (2010), but tries to incorporate many of the empirical details used by Aaronson, Mazumder, and Schechter (2010). The steady-state unemployment rate is given by:

$$U = \frac{s}{s+f},$$

where s is the rate at which employed workers "separate" into unemployment, f is the rate at which unemployed workers "find" employment, and U is the unemployment rate.[11] I start by taking advantage of two key facts that characterized the labor market in the six months prior to the increase in UI extensions (January to June 2008). First, the unemployment rate averaged 5.1%, which I assume was its steady-state value. Second, the mean duration of an ongoing spell of unemployment was 17 weeks; this implies that f is about 0.253.[12] Plugging these numbers into the equation above implies that s was about 0.0136.[13]

I then estimate how f changes as a result of the UI extensions. I use Card and Levine's[14] estimate that a 1-week increase in the maximum potential duration of receipt of UI leads to a 0.1-week increase in the duration of unemployment. To define the increase in the maximum potential period of UI receipt, I follow Aaronson, Mazumder, and Schechter (2010) and use the triggers relevant for each state for each month to calculate a time series of the nationally weighted average of the maximum potential duration of UI receipt. As of February 2011, this stood at about 95 weeks. Therefore, the change in potential duration of UI receipt is 69 weeks.[15] I assume that the take-up rate of UI among the unemployed is 40%, which was the coverage rate prior to the UI extensions in July 2008. I also assume that this take-up rate is the same for the UI extensions.

In combination, these assumptions imply that unemployment durations would increase from 17 weeks to 19.8 weeks with the extension of UI benefits.[16] This implies that f would fall to 0.22. Using the equation above, the steady-state rate of unemployment would be 5.9%, or a 0.8 percentage point increase in steady-state unemployment due to UI extensions. It is worth noting that this may be a conservative estimate for the size of effect going forward. If the unemployment

rate declines over the next year, as it is projected to do, the maximum duration of benefits will also decline, because many states will no longer set off the triggers that lead to automatic benefit extensions.

Alternative assumptions

Card and Levine's (2000) estimate of the effect of UI on unemployment duration is based on an extension of UI benefits in New Jersey in 1996. The extension was due to a political tradeoff during a period of stable economic conditions rather than a response to rising unemployment. As a result, unlike most other estimates, it is unlikely to reflect reverse causality. There may be some concern, however, that the Card and Levine estimates are downwardly biased for the current situation, because workers may have a more muted behavioral response to UI extensions during expansions than recessions. Therefore, I consider as an alternative the estimate from Katz and Meyer[17] that a week of extended benefits leads workers to remain unemployed an additional 0.16 weeks. It should be noted that the Katz and Meyer estimate also suffers from possible bias, because it was derived from data from the 1970s and 1980s. In any event, this alternative assumption changes my estimate of the new steady-state unemployment rate to 6.3%, or a 1.2 percentage point increase—0.4 percentage points higher than my base case figure.

My baseline estimates assume a UI take-up rate of 40%. This was the take-up rate at the time that the extensions were implemented; since then, however, the take-up rate has risen to close to 70%. In unpublished work, my colleague Luojia Hu finds that this increase in take-up can be fully explained by worsening economic conditions and, thus, should not be used in calculating the independent effects of UI extensions on unemployment. Nonetheless, as a robustness check, I reran my calculations under the alternative assumption that the UI extensions alone caused the UI take-up rate to increase from 40% to 55%. This change boosts the increase in the steady-state unemployment rate due to UI extensions from 0.8 to 1.1 percentage points.[18]

Conclusion

In summary, the base case and alternative estimates using the approach outlined in this article suggest that the extension of unemployment insurance benefits during the recent economic downturn can account for somewhere in the neighborhood of 1 percentage point of the increase in the unemployment rate, with a preferred estimate of 0.8 percentage points. One should keep in mind that this effect is also likely to be reversed over the coming years, as the extensions are removed in response to an improving labor market.

[1] This is a weighted average across all states where the weights correspond to the state share of the total number of unemployed individuals.

[2] See Raj Chetty, 2008, "Moral hazard versus liquidity and optimal unemployment insurance," *Journal of Political Economy*, Vol. 116, No. 2, April, pp. 173–234.

[3] See Rob Valletta and Katherine Kuang, 2010, "Extended unemployment and UI benefits," *FRBSF Economic Letter*, Federal Reserve Bank of San Francisco, No. 2010-12, April 19.

[4] For example, suppose those who quit their jobs or enter the labor force (and, thus, are ineligible for UI) are, on average, higher-quality workers than those who are laid off (and, thus, eligible for UI). Then the quitters/new entrants would have shorter spells of unemployment, regardless of the effects of UI on the unemployment spells of the eligible workers.

[5] See Shigeru Fujita, 2011, "Effects of extended unemployment insurance benefits: Evidence from the monthly CPS," Federal Reserve Bank of Philadelphia, working paper, No. 10-35/R, revised January 2011.

[6] The steady–state unemployment rate refers to a period in which economic conditions are relatively stable, so that the key variables that determine the unemployment are at their average values.

[7] See Shigeru Fujita, 2010, "Economic effects of the unemployment insurance benefit," *Business Review*, Fourth Quarter, Federal Reserve Bank of Philadelphia, pp. 20–27.

[8] Specifically, Fujita (2010) uses estimates from Robert Moffitt, 1985, "Unemployment insurance and the distribution of unemployment spells," *Journal of Econometrics*, Vol. 28, No. 1, April, pp. 85–101.

[9] In addition, during that period it was far more common for firms to use temporary layoffs and to time the recall dates to coincide with the time limits on UI receipt. Therefore, using estimates of the effects of UI extensions from this period may lead to overestimation of the effects for the current period (see Lawrence F. Katz, 2010, "Long-term unemployment in the Great Recession," testimony before the U.S. Congress Joint Economic Committee, Washington, DC, April 29).

[10] See Daniel Aaronson, Bhashkar Mazumder, and Shani Schechter, 2010, "What is behind the rise in long-term employment?," *Economic Perspectives*, Vol. 34, Second Quarter, Federal Reserve Bank of Chicago, pp. 28–51. In a separate exercise, they suggest that the UI extensions could account for about 0.7 percentage points of the increase in the unemployment rate if all of the effect were due to people who would have normally dropped out of the labor force but remained in the labor force and were classified as unemployed in order to receive UI benefits.

[11] This formula can be derived by starting with a simple model of the evolution of the unemployment rate. The unemployment rate in the current period is equal to the unemployment rate in the previous period, plus the fraction of the employed who separate, minus the fraction of the unemployed who find work: $u_t = u_{t-1} + sE - fu_{t-1}$, which implies that in the steady state, $u_{ss} = u_{ss} + s(1 - u_{ss}) - f u_{ss}$. Solving for u_{ss} yields $u_{ss} = s/(s+f)$.

[12] An estimate of the job-finding probability in a week is given by 1/17. I convert this

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to a monthly probability by multiplying it by 4.3 (the average number of weeks in a month). An implicit assumption is that s does not change. In addition, ideally, one would want to use data on completed spells rather than ongoing spells. Using estimates of completed spells from Valletta and Kuang (2010) rather than ongoing spells leads to very similar results.

[13]The value for f is very close to empirical estimates of the U to E (unemployment to employment) transition rates for the January to June 2008 period in Aaronson, Mazumder, and Schechter (2010) using CPS microdata. The empirical E to U estimate of s is a bit lower at 0.0096. This may be due to classification error in the CPS among those who report unemployment versus nonemployment. I have conducted the same experiment using the empirical estimates of f and s from the CPS and have found similar results. Although the *level* of U is much lower with the lower estimate of s, the proportional effects of UI extensions on the unemployment rate are very similar to what I obtain here.

[14]See David Card and Phillip B. Levine, 2000, "Extended benefits and the duration of UI spells: Evidence from the New Jersey extended benefit program," *Journal of Public Economics*, Vol. 78, Nos. 1–2, October, pp. 107–138.

[15]This is the 95 weeks, minus the 26 weeks available to workers prior to the UI extensions.

[16]This is the result of multiplying 69 weeks by the 0.1 elasticity and scaling this down by the 0.4 coverage rate. This 2.8 effect on weeks is added back to the 17-week duration prevailing at the time of the UI extension.

[17]See Lawrence F. Katz and Bruce D. Meyer, 1990, "The impact of the potential duration of unemployment benefits on the duration of unemployment," *Journal of Public Economics*, Vol. 41, No. 1, February, pp. 45–72.

[18]If we use the Katz and Meyer (1990) estimate and also assume that the UI extensions increased the take-up rate to 55%, this would imply that the UI extensions led to a 1.7 percentage point increase.