Discussion of Laurence Ball's "Hysteresis in Unemployment"

Jordi Galí
CREI and Universitat Pompeu Fabra
January 2009

Ball's paper deals with a very important subject, namely, the possibility that monetary policy may have permanent (or nearly-permanent) effects on unemployment. Ball casts this question in terms of the NAIRU (i.e., the non-accelerating rate of unemployment) and the degree to which the latter may vary in response to changes in unemployment itself, a phenomenon known as "hysteresis," and originally put forward by Blanchard and Summers (1986) as a possible explanation for the behavior of European unemployment. (One may want to view this as one particular aspect of a more general question, namely, that of long run neurality of monetary policy).

Ball expresses some frustration at the little attention given to hysteresis in recent years. It is hard to disagree with him on this point. There has been little empirical or theoretical work on unemployment hysteresis. The workhorse New Keynesian model widely used for monetary policy analysis does not allow for hysteresis or other long run non-neutralities of monetary policy. In fact, standard versions of that model do not even incorporate involuntary unemployment. Given that the presence of any hysteresis effects is likely to have important implications for monetary policy design, their absence in those models is worrysome if those effects are empirically relevant. One possible explanation is that those models have been originally developed as representations of the U.S. economy, where hysteresis effects do not seem so important. But to the extent that those models are being developed and used in the euro area and other economies this should be more of a concern. A piece of good news is that progress has been made in recent years in incorporating unemployment explicitly into optimizing monetary models with nominal frictions. Using those models to understand the mechanisms that can generate the highly persistent fluctuations observed in unemployment should be a fruitful research avenue in the upcoming years.[1]

The objective of Ball's paper is to provide some additional evidence on the presence and importance of hysteresis effects in OECD countries. As a

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[1]See, e.g. Blanchard and Galí (2007).

framework of reference for that exploration Ball adopts a traditional, accelerationist Phillips curve of the form

$$\pi_t = \pi_{t-1} - \alpha \left(u_t - u_t^* \right) \tag{1}$$

where π_t denotes inflation, u_t is the unemployment rate, and u_t^* is the natural rate of unemployment.This model is used to estimate a time series for the natural rate for each country, which is then used to identify episodes of *large* changes in the natural rate. Under the conventional view, tracing back to Friedman and Phelps, changes in u_t^* are the result of structural changes in labor markets unrelated to aggregate demand. Thus, we would expect any change in u_t^* to be accompanied by a change in inflation in the same direction at least under the maintained assumption that u_t does not vary in that case by more than the natural rate itself, which seems reasonable (though not strictly necessary!). On the other hand, the hysteresis hypothesis implies that changes in u_t^* may be a consequence of a change in u_t resulting from variations in aggregate demand conditions, in which case we would expect changes in inflation and the natural rate to have the opposite sign (again, under the plausible assumption that u_t^* varies less than u_t in this case). Ball's analysis of 17 episodes of large changes in the natural rate and the corresponding changes in inflation point to a clear prevalence of comovement signs that one would expect if hysteresis is the main factor behind large changes in the natural rate. That finding would seem to warrant Ball's call for further research on the nature and mechanisms behind the hysteresis phenomenon.

My comments to Ball's paper are organized in three parts. First, I review and discuss Ball's measure of the natural rate of unemployment. After that, I suggest possible alternative approaches one could take to evaluate the relevance of the hysteresis hypothesis. I conclude with some final thoughts.

Ball's Natural Rate Measure

Even if we take (1) as an accurate description of the relationship between unemployment and inflation, a basic identification problem plagues any attempt to come up with measures of the natural rate, since $u_t^* = u_t + \frac{1}{\alpha} \Delta \pi_t$ cannot be directly computed using data on unemployment and inflation if α is not known (which is the case). Some assumptions have to be made in order to overcome this identification problem. Ball's approach, described in

an appendix, also relies on some assumptions. Unfortunately, the latter are not discussed explicitly in the text. Let me fill that gap next.

Ball (plausibly) assumes that (1) doesn't really hold exactly, but instead we have

$$\pi_t = \pi_{t-1} - \alpha \left(u_t - u_t^*\right) + \varepsilon_t \tag{2}$$

where ε_t represents a (possibly serially correlated) supply shock. Then, and given an estimate of α (denoted by $\widehat{\alpha}$ and obtained as described below), Ball computes the natural rate of unemployment as the Hodrick-Prescott trend of $u_t + \frac{1}{\widehat{\alpha}} \Delta \pi_t$. Note, however, that (2) implies $u_t + \frac{1}{\widehat{\alpha}} \Delta \pi_t = u_t^* + \frac{1}{\widehat{\alpha}} \varepsilon_t$. Thus, by taking the HP trend of $u_t + \frac{1}{\widehat{\alpha}} \Delta \pi_t$ as a measure of u_t^*, Ball is implicitly assuming that the latter variable evolves much more smoothly than the error term ε_t. This could very well be true, but it is not an immediate implication of the theory. If the opposite were true, Ball's natural rate would effectively be measuring supply shocks. Interestingly, however, Ball's findings may justify ex-post that interpretation since they point to a negative comovement between (large) changes in the natural rate measure and the change in inflation, which we would not expect if the HP-trend was proxying ε_t instead.

Ball estimates α through an iterative procedure which consists in regressing $\Delta \pi_t$ on $u_t - u_t^*$, given a series for u_t^* and using the resulting $\widehat{\alpha}$ estimate to compute a new series for u_t^*, as described above. But in order for this approach to yield a consistent estimate for α, the regressor $u_t - u_t^*$ should be orthogonal to the supply shock, which also seems an arbitrary assumption. Unfortunately no discussion of that assumption and its plausibility is offered in the paper.

Since Ball's subsequent analysis relies heavily on his natural rate measure, its credibility is not independent of that of the above assumptions.

Alternative Approaches

Ball's analysis of the comovement between his natural rate measure and inflation during episodes characterized by large changes in the former provides a way of testing the hysteresis hypothesis only under the maintained assumption that the Phillips curve (1) is a good representation of the joint dynamics of inflation and unemployment. An alternative, more direct, approach would involve a comparison of the size of the changes in unemployment u_t and those in the natural rate u_t^* during the Ball episodes. Under Ball's logic, if changes in the natural rate during those episodes are driven by the chages

in the unemployment rate itself we would expect the inequality $|\Delta u| > |\Delta u^*|$ to hold. As shown in Figure 1, that condition is satisfied in fourteen out of seventeen Ball episodes, i.e. more than 80% of the cases. That evidence, which is not distorted by changes in inflation by factors other than those captured by (1), appears to reinforce Ball's findings and conclusions.

Unfortunately, Ball's evidence pointing to significant unemployment hysteresis effects in OECD economies does not shed any light on the mechanisms that may underlie that phenomenon. One of the potential mechanisms put forward by Ball involves the behavior of the long-term unemployed, which may become detached from the labor market and stop searching vigorously for jobs. As a result they may stop putting downward pressure on wages, and lead to a permanent increase in measured unemployment. One way to assess the validity of that hypothesis would consists of redoing Ball's analysis from scratch after excluding the long term unemployed from the unemployment data. If there is no longer evidence favorable to hysteresis once the adjusted unemployment data are used, one would have to conclude indeed that it is through changes in long-term unemployment that hysteresis comes about.

Final Thoughts

I sympathize with Ball's assessment of the insufficient attention that the profession has given to the topic of hysteresis in unemployment. One can think of several reasons for this. First, it is a fact of life that economic research is largely driven by developments in the real world. The relative stability of unemployment fluctuations in the U.S. and Europe over the past two decades (albeit about very different means) may partly explain the diminished interest. But that era of mild fluctuations is likely to come to an end as a result of the current crisis, with unemployment rates bound to skyrocket to levels much higher than the ones we had become used to. When the current downturn comes to an end and growth resumes, natural questions will be raised as to how long it will take to bring back the unemployment rate to the levels that prevailed in recent years (about 5 percent in the U.S. and 8 percent in the euro area), or about the possibility that unemployment remains for a long period above those levels. Those questions, spurred by unfolding events, will likely trigger a renewed interest in the subject of hysteresis and the related literature. Secondly, empirical work on hysteresis is bound to be plagued with all sort of difficulties. Some of the difficulties are conceptual (how do we define the natural rate of unemployment?). Others are statistical, including the need to disentangle exogenous variations in the

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natural rate (e.g. due to demographic factors or exogenous changes in relevant labor market parameters) from those that may have been induced by a change in unemployment itself as a consequence of other, non-labor market related, shocks. Such difficulties make it hard to avoid taking some shortcuts or relying on often questionable assumptions. But the importance of the topic, given the likely large welfare consequences of persistent unemployment fluctuations (and, even more so, of permanent effects of transitory shocks on the level of activity), may make us more tolerant and open to experimentation. Ball's paper in the present volume is a good example of research in that spirit.

References

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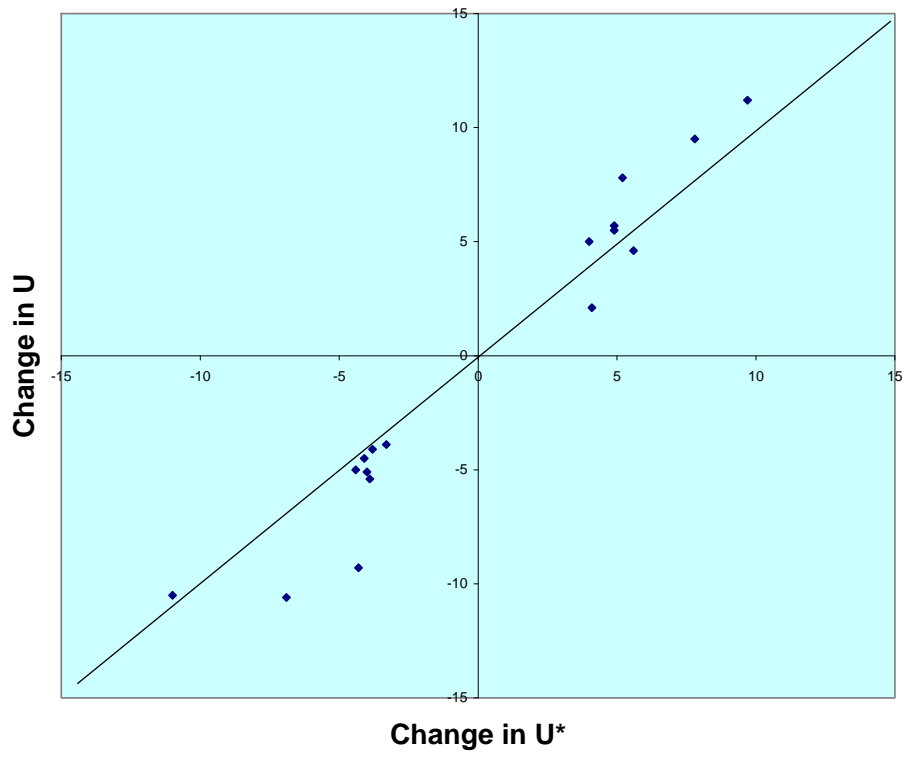
Figure 1