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Unemployment and Output in 1974

IN THE SECOND QUARTER of 1974, real gross national product stood 2.2 percent below its peak rate of the fourth quarter of 1973, reflecting one of the sharpest two-quarter declines in the postwar period. Yet, between these two quarters, the unemployment rate rose only 0.4 percentage point, from 4.7 to 5.1 percent, an unusually small rise against the background of historical experience and analytical expectations. In the third quarter, the rate moved up further, to 5.5 percent; but it still displayed puzzling sluggishness since, according to preliminary estimates, real GNP fell further in that quarter. This paper will focus on the behavior of unemployment in relation to output between 1973:4 and 1974:2.

The Record of Changes

In Table 1, movements of output and unemployment from 1973:4 to 1974:2 are compared with those in the first two quarters after the peak of the four post-Korean recessions.[1] By coincidence, the increase in the unemployment rate during three of the four previous two-quarter intervals

1. This comparison is relevant in my judgment whether or not 1973–74 is ultimately classified as another recession by the official scorekeepers at the National Bureau of Economic Research.

Table 1. Comparison of Changes in Unemployment Rates and Output, 1973:4–1974:2 and Post-Korean Recessions

Period	*Change in unemployment rate (percentage points)*		*Change in real GNP*	
	Actual (ΔU) (*1*)	*Estimated* (ΔU^*) (*2*)	*Actual (percent)* (*3*)	*Gap*[a] *(percentage points)* (*4*)
1973:4–1974:2	0.4	1.5	−2.20	4.36
1953:2–1953:4	1.1	1.2	−1.83	3.56
1957:3–1958:1	2.1	2.0	−3.89	6.07
1960:2–1960:4	1.1	1.1	−1.23	3.17
1969:4–1970:2	1.1	0.8	−0.41	2.46

Sources: Actual unemployment rates—official data from the U.S. Bureau of Labor Statistics; real GNP and gap—*Business Conditions Digest* (April 1974), p. 109, and (August 1974), p. 95; ΔU^* is calculated as one-third of the change in the gap.

a. The change in the difference between potential and actual GNP, expressed as a percent of actual GNP.

amounted to 1.1 percentage points; for the particularly severe 1957–58 recession, the increment was 2.1. Thus, although the drop in real GNP during the first two quarters of 1974 exceeded that in three of the four previous instances, as column (3) shows, the rise in the unemployment rate was much smaller.

The same result emerges when the actual movement of the unemployment rate is compared with the "estimated" change consistent with a rule of thumb that I set forth in 1961. According to this rule, the change in the unemployment rate (measured in points) between any two periods should approximate one-third of the change in the percentage gap between potential and actual GNP.[2] The change in the gap expressed as a percentage of actual GNP is shown in column (4) of Table 1. One-third of that change is then the crude predicted change in the unemployment rate, ΔU^*, recorded in column (2). That estimate agrees remarkably well with the actual change in the unemployment rate, ΔU, in the four previous instances, but is far from the mark in the most recent period.

2. See "Potential GNP: Its Measurement and Significance," reprinted in *The Political Economy of Prosperity* (Brookings Institution, 1970), Appendix, pp. 132–45. Also see my "Upward Mobility in a High-pressure Economy," *Brookings Papers on Economic Activity* (1:1973), pp. 207–13.

AN EXAMINATION OF THE PIECES

Given the path of output, changes in unemployment depend on the movements of (1) the labor force, (2) average weekly hours, and (3) productivity. When the behavior of these three factors is examined, the unusually small increase in unemployment during the first two quarters of 1974 can be clearly attributed to an especially sharp decline in productivity. The movements of the labor force and average weekly hours were reasonably consistent with previous experience. That of output per manhour was unprecedented.

Labor force. The labor force expanded by 0.74 percent from 1973:4 to 1974:2, a marked slowing from its growth of 1.54 percent from 1973:2 to 1973:4 (see Table 2). The slowdown of 0.8 percent is larger than that in three of the four preceding periods of declining output, although smaller than the 1.0 percent swing in the second half of 1953.

The slowdown of growth in the labor force during 1974 was especially pronounced viewed against the rapid growth during the second half of 1973; the annual rate of 3.1 percent in that period far exceeded trend growth. Viewed against normal trend growth the exact size of the slowdown is hard to estimate, because the trend growth rate is uncertain. At the start of the decade, Labor Department projections put the trend growth of the total labor force from 1970 to 1975 at 1.54 percent per year. In retrospect, that was clearly too low. In the second quarter of 1974, in fact, the size of the total labor force already exceeded the projection for 1975. From 1970 to mid-1974, the growth of the total labor force has averaged about 2.0 percent a year.[3] If par for the course is 2 percent a year, or 1.0 percent in two quarters, the actual growth experienced during the first two quarters of 1974 represented a shortfall of only 0.26 percent of the total labor force, or about 250,000 persons. If the recent behavior of the labor force is at all mysterious, the puzzle is why it is holding up so well in the face of a weakening economy rather than why it has slowed. The unemployment

3. Sophia C. Travis, "The U.S. Labor Force: Projections to 1985," Bureau of Labor Statistics, Special Labor Force Report 119 (1970; processed), p. 4. More generally, the evident imbalance between the availability of capital and the availability of labor in 1973 may have reflected the extraordinary growth of the labor force as well as the relatively slow growth of capital stock in manufacturing. The big surprise of recent years has been the spurt in teenage participation rates, which kept the Perry shift in motion long after it was scheduled to stabilize on demographic grounds.

Table 2. Comparison of Changes in Labor Force, Employment, Average Hours, and Productivity, 1973:4–1974:2 and Post-Korean Recessions

Period	*Change in total labor force*[a]				*Change in total employment*[a]		*Change in average weekly hours*[b] (*percent*)	*Change in output per manhour*[b] (*percent*)
	Two-quarter period		*Previous two quarters*					
	Thousands	*Percent*	*Thousands*	*Percent*	*Thousands*	*Percent*		
1973:4–1974:2	684	0.74	1,397	1.54	257	0.29	−0.8	−1.7
1953:2–1953:4	−96	−0.14	572	0.87	−788	−1.22	−1.2	0.5
1957:3–1958:1	−44	−0.06	304	0.44	−1,439	−2.15	−1.7	0.5
1960:2–1960:4	552	0.76	904	1.27	−195	−0.28	−0.5	−0.1
1969:4–1970:2	746	0.88	1,105	1.32	−234	−0.29	−0.8	0.6

Source: Bureau of Labor Statistics, published and unpublished data.
a. Includes armed forces; based on household surveys.
b. Total private economy, all persons (including self-employed).

rate rose so little, not because the labor force behaved weakly, but because total employment performed relatively strongly. Employment rose, although very slowly, from 1973:4 to 1974:2, in contrast to its declines in the previous downturns shown in Table 2.[4]

Average weekly hours. Average weekly hours for all persons in the total private economy declined from 37.7 hours in 1973:4 to 37.4 hours in 1974:2, or by 0.8 percent.[5] The shortening of hours was widely diffused; it extended to most industrial sectors and most manufacturing industries. As indicated in Table 2, the drop in hours is a little smaller than the average in the four previous periods; nonetheless, it is a bit larger than the estimate of 0.6 percent associated with a 4.36 percent swing in the gap according to the average relationships underlying the three-to-one rule of thumb.[6] By any standard, the behavior of average hours stayed reasonably on track, and does not account for the sluggish movement of unemployment.

Output per manhour. Among the components determining the impact of weak output on unemployment, productivity presented the one startling performance. Output per manhour for the total private economy fell 1.7 percent during the first two quarters of 1974, reflecting a 2.5 percent drop in real private GNP and a reduction of only 0.8 percent in private manhours. The decline of 1.7 percent essentially reverses the sign of the increase that would be expected on a normal trend path over a two-quarter interval. During the previous four periods recorded in Table 2, productivity experienced slow growth or a tiny dip, but no drop like that of the first two quarters of 1974. Indeed, no precedent for this nose dive in productivity can be found in any two-quarter interval of the past generation. The relationships underlying the three-to-one rule of thumb imply that about one-third of the widening of the gap should be reflected in a slowdown of productivity relative to trend. That would have pointed essentially to a tiny

4. In previous downturns, employment as measured from employers' reports has typically fallen more sharply than it has according to the figures derived from household data. But that was not true during the first two quarters of 1974. Although the household data had shown surprising strength relative to the establishment data during the brisk part of the expansion, the establishment data actually performed a little more strongly in the first half of 1974.

5. Based on unpublished data of the Bureau of Labor Statistics. The published indexes (1967=100) record a decline from 97.4 to 96.8, which is slightly smaller, presumably reflecting differences in rounding. Also, if average hours in government (which presumably are unaffected by cyclical conditions) were included, the economy-wide decline would be a bit smaller.

6. Okun, "Upward Mobility," p. 211.

Table 3. Difference between Actual and Estimated Unemployment Rates, 1973:4–1974:2 and Post-Korean Recessions

Percentage points; seasonally adjusted

Period	*Peak quarter (1)*	*Two quarters after peak (2)*	*Six quarters after peak (3)*
1973:4–1974:2	0	−1.1	?
1953:2–1953:4	−0.7	−0.8	0.3
1957:3–1958:1	−1.0	−0.9	−0.2
1960:2–1960:4	−0.8	−0.7	0
1969:4–1970:2	−1.0	−0.7	0

Source: Same as Table 1. Estimated rates are calculated as 4.0 plus one-third of the gap.

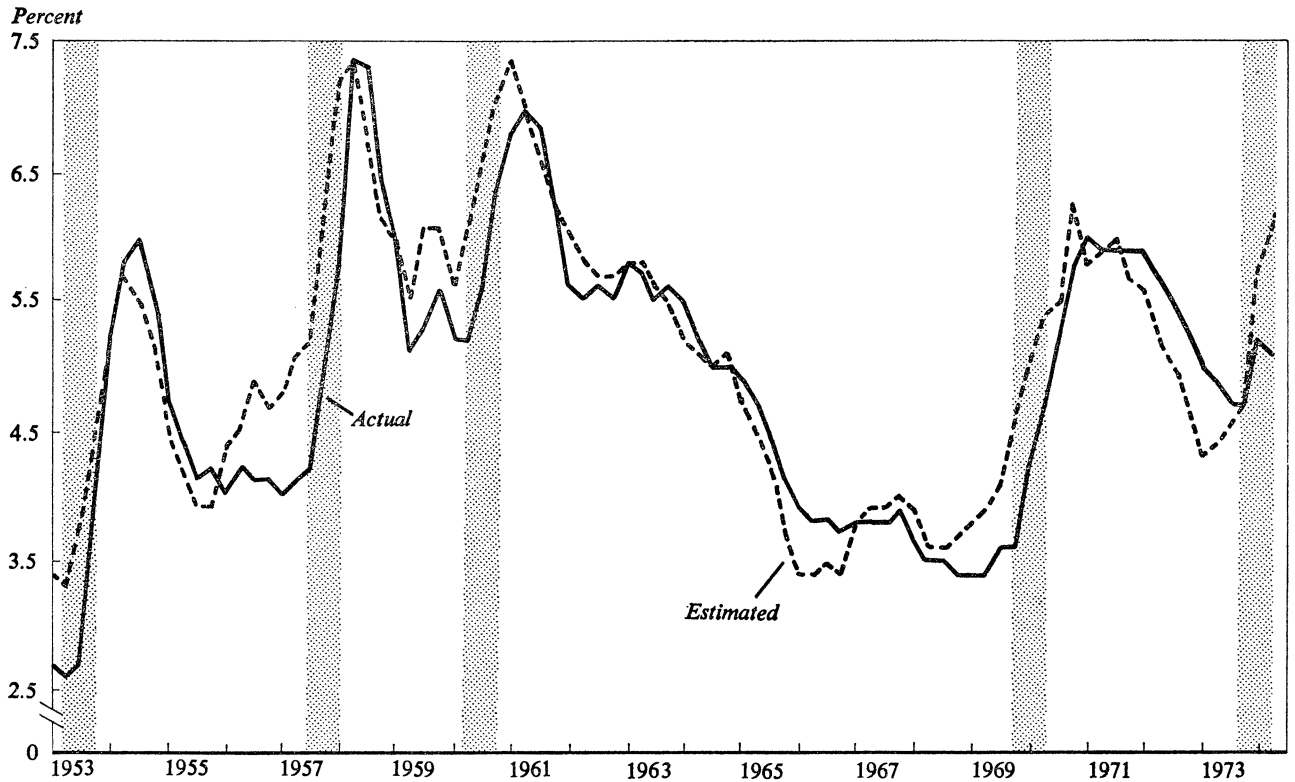
increase in productivity during these two quarters, given the normal trend growth of 1.5 percent in two quarters and the widening of the gap of about 4.4 percent.

The Record of Levels

The estimates discussed so far use the rule of thumb on an incremental basis to estimate the *change* in unemployment from the *change* in the output gap. Quite a different picture of accuracy emerges when the *level* of the unemployment rate is calculated as 4 percent plus one-third of the percentage gap. In previous instances, that estimate has erred by a considerable margin for particular quarters, as Figure 1 reveals. Indeed, 1974:2 has five previous companions with errors of 1 percentage point or a little more.[7] The errors have a distinct cyclical pattern. As column (1) of Table 3 indicates, the estimated unemployment rate significantly exceeded the actual rate in the peak quarters preceding each of the four post-Korean recessions. And in tracking the *change* in the unemployment rate during the next two quarters, the estimated rate remained substantially above the actual rate, as is evident in the shaded periods of Figure 1. The overpredictions in the four previous instances ranged between 0.7 and 0.9 percentage point, quite similar to the 1.1 point error of 1974:2 reported in column (2) of Table 3. On this way of looking at it, the main irregularity of 1973–74 is that the

7. In using a growth rate of 4.0 percent for potential GNP in recent years, I am following (blindly) the judgment of the Council of Economic Advisers, as reported in *Business Conditions Digest*. See, for example, the August 1974 issue, p. 95.

Figure 1. Seasonally Adjusted Unemployment Rates, Actual and Estimated, 1953:1–1974:2



Source: Same as Table 1. The estimated unemployment rate, U^*, is calculated as 4.0 plus one-third of the gap.

rule of thumb *was* working in the peak quarter; it was, unusually, right on the button in 1973:4. Then it behaved more typically in *not* working during the decline and hence overestimating unemployment during the first half of 1974.

The typical lead of the rule-of-thumb estimate over the actual unemployment rate is evident in Figure 1. During periods when output is rising particularly rapidly and thus the gap is shrinking a lot, productivity moves up very sharply and average weekly hours are especially expanded; these responses tend to dampen the decline in unemployment, and keep the actual rate (U) above the estimates of the rule of thumb (U^*). Periods in 1955, 1965–66, and 1972–73 exemplify this pattern in Figure 1. But when output slows down, employment keeps expanding strongly. This is typically reflected in a major slowdown in productivity (and sometimes a pronounced cut in average weekly hours), which produces the tendency for the rule of thumb to overestimate the unemployment rate in the late stages of expansion. Periods of pronounced slowdown took place prior to the peak in actual real GNP in 1957, 1960, and 1969, resulting in U^* substantially above U at the cyclical peaks. In fact, a slowdown did get started after 1973:1 and, during it, U^* caught up with U. But the slowdown was neither prolonged nor pronounced before real GNP turned down.

As the momentum of increasing demand for labor vanishes during the later stages of recession and as labor demand rebounds only gradually in the initial quarters of recovery, the rule of thumb comes back on track. Six quarters after each cyclical peak in the previous periods, it was working remarkably well, as column (3) of Table 3 demonstrates.

A Suggested Explanation

The fact that the *level* of the actual unemployment rate in mid-1974 was substantially below that estimated by the rule of thumb is entirely consistent with the previous performance of that rule in periods of declining output. The unusual behavior of the *change* in unemployment, relative to the rule-of-thumb estimate, arises because the rule of thumb was correct in 1973:4 whereas it had overestimated at previous peaks. In my judgment, that difference emerged because the 1971–73 expansion never developed the symptoms of senility usual in the late stages of expansions, simply because the period of increasing real GNP was interrupted by the Arab oil

embargo. If 1974 had followed the scenario (widely predicted prior to the embargo) of sluggish but continuing growth in output, U^* would have risen; but employment demand would have reflected the momentum that it had gathered during the 1973 upswing, and U would not have increased much. Hence, U^* would have exceeded U in the pattern typical of late expansions. The suddenness of the downturn in real GNP accentuated the rise in U^* relative to that of U. In particular, the business community may have continued strongly expansive personnel policies because of the initial expectation that early 1974 represented merely a temporary, energy-induced, dip in activity. Operating under that belief, businessmen adapted to 1973 demands, hiring more workers and preparing to use them efficiently after a brief energy crisis. They did cut the workweek in response to existing conditions. Because corporate profits (at least those of companies that use first-in–first-out accounting practices) kept rising, businessmen felt no great pressure to retrench personnel.

I can conceive of two other explanatory factors: the impact of the energy shortage on productivity, and the possible overdeflation of real GNP in the national accounts. But I believe that the principal explanation lies in the momentum and overoptimism of personnel policies.

SUPPLY SHORTAGES

The shortage of energy and other items probably has reduced the productive potential of the economy and hence productivity, but not by nearly enough to unravel the mystery, in my judgment. When trucks drive at 55 rather than 70 miles per hour, labor is essentially serving as a substitute for energy, and productivity is depressed. But the reduction in energy consumption cannot begin to explain a productivity shortfall amounting to at least $15 billion. Suppose petroleum consumption per unit of business output is down as much as 10 percent from the pre-crisis norm. If as much as half of total U.S. petroleum use is intermediate business product, that sacrifice would amount to 300 million barrels (annual rates). Each barrel not consumed by business would presumably be worth an amount between the 1973 price of $4 and the current "new" oil and import price of roughly $10. Assuming that every sacrificed barrel imposed a cost of $10 in the form of extra use of labor, the productivity dent could not exceed $3 billion. Nor, I suspect, would throwing chemicals, paper, and metals into the shortage hopper help much. Of course, to the extent that assembly lines

can be held up for want of a nail or an oil can, all sorts of terrible things can happen to productivity. But it takes a tremendous intellectual strain to provide a plausible explanation for the productivity gap that relies on shortages.

OVERDEFLATION

Still another explanation might argue simply that, in the recent period of rapidly rising prices, the increase in the GNP deflator has been overstated by the Department of Commerce, and thus real output has been understated. To be sure, the national accounts were not designed to be precise under any circumstances, and certainly not under the confusions of double-digit inflation. It is not incredible that the annual rate of the deflator for the first two quarters of 1974 might be off by a couple of points. But the deflator could be too low as well as too high. The only evidence (other than the productivity mystery itself) that I know suggesting the latter error is that the Federal Reserve index of industrial production has been running strong in relation to real GNP. Based on my experience with the relation of GNP and the index of industrial production, I believe that only a drowning economist should grasp for that straw!

THE PROSPECT

Since mid-1974, the energy-dip thesis has lost favor among economic forecasters; now the prevailing view envisions flat or falling real GNP and weaknesses of aggregate demand for a more prolonged period, extending through the rest of 1974 and into the first half of 1975. As that view spreads to business executives, a much more pronounced retrenchment of employment (and some rebound of productivity) should be expected in the months ahead, including a catch-up for the past delay—if my suggested explanation is the correct one. In that event, the three-to-one rule of thumb should be close to track by 1975:2, as it has been six quarters after previous peaks. If real GNP in 1975:2 matches that of 1974:2, the rule of thumb would estimate an unemployment rate of 7.6 percent. Subjectively, that looks a little high to me; I would make some allowance for the energy shortage and incomplete catch-up. But, given that path of output, I expect the unemployment rate to reach 7 percent in 1975:2.