

A REVEALING WINDOW ON THE U.S. ECONOMY IN DEPRESSION AND WAR: HOURS WORKED, 1929–1950

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Many years after the Great Depression and World War II, controversy continues to swirl as scholars, pundits, and ordinary citizens look back at the watershed events of the 1930s and 1940s. Economists and economic historians have assessed the economy's condition during these momentous years primarily with reference to the usual macroeconomic indicators, especially the real gross domestic product (GDP) and the rate of unemployment (U). For these analysts, the Great Depression is almost defined as the long period when real GDP remained well below its trend high-employment capacity and the rate of unemployment stood persistently above its normal range. The war period, in contrast, stands out in the standard statistical series as a time when real GDP appeared to increase phenomenally and the rate of unemployment fell almost to zero.

Interpretation of economic events in the light of such conventional measures has been complicated, however, by institutional peculiarities unique to these extraordinary times. Both real GDP and U are difficult to interpret in the usual way, the former because of the operation of a wartime command economy, complete with comprehensive price controls and a multitude of other significant departures from market pricing and resource allocation, and the latter because of large-scale, atypical forms of government employment, especially the emergency work-relief programs during the Depression and the military conscription of labor during the war.

I examine here what we can learn by focusing on a different, seldom considered measure, namely, employment of labor as measured by hours worked. This alternative way of looking at the economy's operation helps us to avoid a number of difficulties, such as the exceptional frequency of

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reduced-hours employment (“work spreading”) during the 1930s (Lyon and others 1935, 830–44; Lebergott 1964, 185–86) and the increased prevalence of overtime work during the peak years of the war. By using hours worked as our measure of employment, we avoid the necessity of distinguishing who is employed and who is unemployed (Lebergott 1964, 184–85; Darby 1976) and of arbitrarily imposing a cut-off line for determining who has “full-time work.” Not all hours worked are equal in economic significance, of course, so we do not avoid all difficulties of analysis by taking this approach, but some of the remaining difficulties can be reduced by disaggregation of the economy’s total hours worked into its component sectors.

Table 1 shows the basic data to which I make principal reference here. I have drawn these data from John Kendrick’s monumental study *Productivity Trends in the United States* (1961). Kendrick carries more significant digits than I show in the table, reporting his figures for hours in millions, but in my judgment such precision is spurious. Indeed, we are taking a substantial chance by relying even on the figures given here, in billions of hours, with one digit after the decimal point. I make this observation not to criticize Kendrick, who describes in great detail the enormous amount of careful effort that he put into making his estimates, but only to recognize that even an analyst as painstaking as Kendrick could not overcome many problems, especially those stemming from the absence of annual source data for many of his component categories. No doubt errors of various sorts remain embedded in these figures, not all of them offsetting in the aggregates, and readers are advised to bear this unavoidable situation in mind as they consider the present discussion.

Table 1
Hours Worked (in billions) in the United States, 1929–1950

Year	<u>Total</u>		<u>General Government</u>			<u>Private</u>		
	Includes Military	Civilian	Total	Military	Civilian	Total	Farm	Nonfarm
1929	120.3	119.8	5.4	0.5	4.9	114.9	25.5	89.5
1930	112.6	112.1	5.6	0.5	5.1	107.1	25.2	81.9
1931	103.8	103.3	5.6	0.5	5.1	98.2	25.8	72.4
1932	92.4	91.9	5.4	0.5	5.0	86.9	24.9	62.1
1933	92.6	92.1	6.5	0.5	6.0	86.1	24.8	61.2
1934	92.6	92.2	8.0	0.5	7.5	84.6	22.3	62.4
1935	97.8	97.3	8.6	0.5	8.1	89.2	23.2	66.0
1936	106.8	106.3	10.9	0.5	10.4	95.9	22.5	73.4
1937	111.4	110.9	9.6	0.6	9.0	101.9	24.3	77.6
1938	103.8	103.2	10.7	0.6	10.1	93.1	22.6	70.5
1939	108.5	107.9	10.7	0.6	10.0	97.9	22.7	75.1
1940	113.0	112.0	10.8	1.0	9.8	102.2	22.8	79.7
1941	124.2	121.0	12.9	3.2	9.7	111.3	22.1	89.3
1942	138.3	129.8	18.3	8.6	9.8	120.0	22.9	97.1
1943	156.3	135.3	31.9	21.1	10.9	124.4	22.8	101.6
1944	160.0	133.5	37.4	26.5	10.9	122.7	22.5	100.1
1945	150.0	126.0	34.1	24.0	10.1	115.9	21.0	94.9
1946	131.5	125.4	14.5	6.1	8.4	116.9	20.3	96.7
1947	130.3	127.5	10.9	2.8	8.1	119.4	19.4	100.1
1948	131.0	128.4	10.9	2.6	8.3	120.1	18.8	101.3
1949	126.4	123.6	11.4	2.8	8.6	115.0	18.2	96.8
1950	128.9	125.9	11.8	3.0	8.8	117.1	16.8	100.4

Source: John W. Kendrick, *Productivity Trends in the United States* (Princeton, N.J.: Princeton University Press, 1961), pp. 312–13.

Note: Detail may not add to totals because of rounding.

The 1930s

In most discussions of the Great Depression, the macroeconomic profile of the subject is portrayed as follows: steep continuous decline from

1929 to 1933, sharp recovery from 1933 to 1937, severe but short “depression within the depression” from 1937 to 1938, and renewed rapid recovery from 1938 onward, with the economy having fully recovered by 1940 or, at latest, 1941. With regard to hours worked, the profile looks somewhat different.

Total hours worked fell substantially from 1929 to 1932. Then, unlike the standard depiction of the economy’s course, they hit bottom and stayed put in a virtually flat-bottomed trough for three years, 1932, 1933, and 1934. They then rose substantially until 1937, dropped by 7 percent in 1938, then rose again thereafter. However, even as late as 1940, total hours remained below the 1929 level by 6 percent, and only in 1941, with the population vigorously engaged in mobilization for war, did total hours exceed the 1929 value, by 3 percent. Meanwhile, of course, the population and the potential labor force had grown substantially, the former by 11.6 million persons, so simply getting back to the 1929 level of hours worked represented something less than a complete triumph.

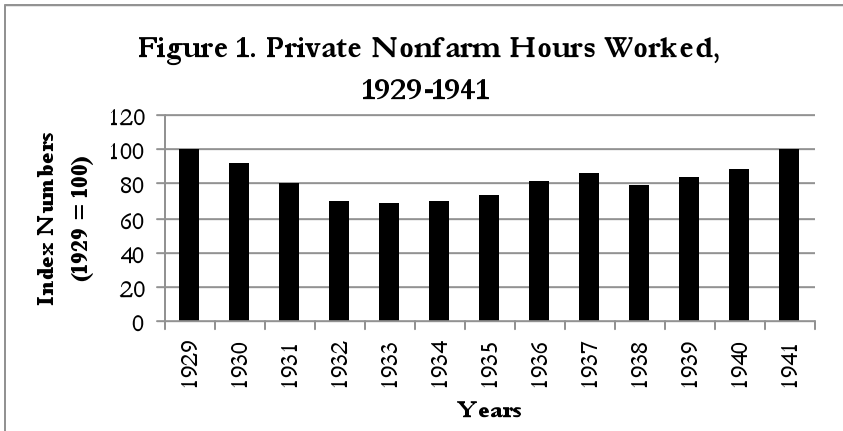
As the table shows, military employment remained quite low and did not vary substantially from 1929 to 1939. Similarly, farm hours worked varied little, although after remaining fairly steady from 1929 to 1933, they dropped in 1934 and never regained their previous level. This abrupt one-shot drop to a lower level probably represents the effects of the New Deal’s agricultural relief programs, some of which created incentives for farmers to reduce the amount of labor, especially sharecroppers’ labor, they used in their operations (Whatley 1983).

Because neither military nor farm hours varied much between 1929 and 1939, the changes in total hours worked in that period are attributable almost entirely to changes in civilian government hours and private nonfarm hours.

Civilian government hours did not change appreciably from 1929 to 1932. In 1933, however, government civilian hours began to rise quickly, and by 1936 they had more than doubled. They remained more or less at the new, higher level thereafter, with only a modest dip in 1937. These increases arose for the most part from employment in the work-relief programs, such as the Civil Works Administration, the Civilian Conservation Corps, the National Youth Administration, the Works Progress Administration, and others (Chandler 1970, 194–98), all of which have the distinguishing characteristic of having been created not for the sake of producing a desired output, but solely for the sake of creating paid employment—they were indeed, as they were widely considered to be at the time, make-work programs. By 1935, even President Franklin D. Roosevelt felt compelled to express publicly his disgust with the “narcotic” of the dole: “I am not willing,” he declared in his second

State of the Union address, “that the vitality of our people be further sapped by the giving of cash, of market baskets, by a few hours of weekly work cutting grass, raking leaves or picking up papers in the public parks”—although he did approve of public work on the roads and in reforestation projects (qtd. in Flynn [1948] 1949, 86).

In 1929, private nonfarm hours amounted to three-quarters of all hours worked in the national economy, and thereafter their movements accounted for most of the variation in the economy-wide total. Private nonfarm hours fell by more than 30 percent between 1929 and 1932; they remained almost unchanged at that level in 1933 and 1934, and then increased quickly until 1937, whereupon the economy’s reversal brought them back down by 9 percent; and they increased sharply from 1938 to the peak years of the war. Of course, early in the 1930s, hours fell disproportionately in especially hard-hit industries, such as construction and the manufacture of most capital goods and consumer durable goods. The failure of nonfarm hours to revive before 1935 probably owes a great deal to the employment-constricting effects of the National Industrial Recovery Act (NIRA, often simply NRA), which, among other things, raised wage rates substantially in many industries and set minimum wage rates (Lyon and others 1935, 317–64, 834; Chandler 1970, 230–32; Cole and Ohanian 2004). Blacks, who in those days worked predominantly in low-wage occupations in the South, took to calling the NRA the Negro Removal Act because of its adverse effect on the employment of workers previously employed at wages below the newly prescribed minimums. After the Supreme Court declared the NIRA unconstitutional on May 27, 1935, private nonfarm employment began to grow in earnest.



Private nonfarm hours, however, did not exceed their 1929 level until 1942, when Americans were energetically building up the war-supply industries and a gigantic complex of military facilities to accommodate an armed force that eventually exceeded 12 million men and women in uniform. As late as 1939, Roosevelt's seventh year in the presidency, private nonfarm hours were 16 percent below their total in 1929—and about 21 percent below the trend high-employment level for 1939 (computed on the assumption of a constant rate of growth of such hours between 1929 and 1948). Perhaps no other single comparison expresses so succinctly, so unambiguously, and so irrefutably the New Deal's failure to bring about full economic recovery. Moreover, in 1939, private nonfarm hours no longer represented nearly 75 percent of the total national hours worked, as they had in 1929, but only 69 percent—surely a move in the wrong direction with regard to restoring the pre-Depression level of economic well-being.

The 1940s

Total hours worked increased rapidly from 1940, when in the latter half of the year the United States began to mobilize for war, until the peak in 1944. Hours fell substantially in 1945 and 1946, by 18 percent altogether, before stabilizing on a lower plateau from 1946 to 1950, except for a small dip during the recession year 1949. Government civilian hours and farm hours varied within a relatively narrow range in the 1940s, which means that the large variations in total hours during this decade may be traced for the most part to variations in military hours and private nonfarm hours. (We might note, however, that within the fairly constant number of total civilian government hours, those of people in emergency make-work programs were progressively diminished in the first half of the 1940s, and this decline was offset by increases in the hours worked by regular government employees,

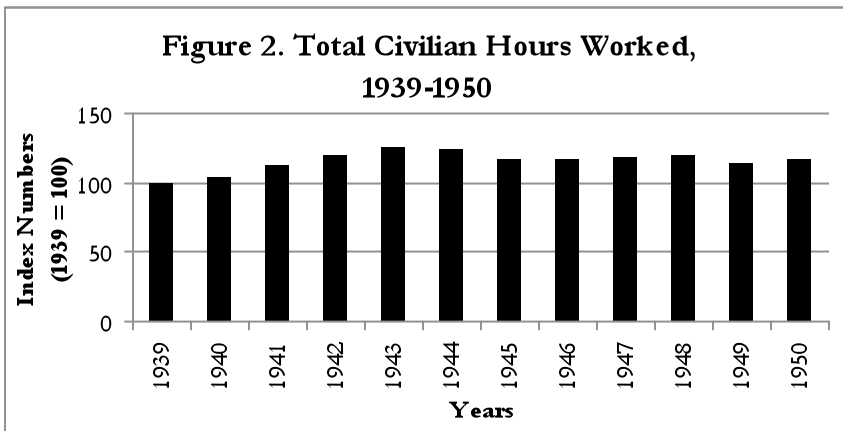
most notably by the 2.3 million civilians the armed forces added to their payrolls [Higgs 2007, 443; Field 2008, 682, 684]. Note, too, that farm hours declined slightly each year from 1942 on.)

The rise and fall of military employment during this decade was nothing short of astonishing. By 1945, military hours equaled more than twenty-six times their amount in 1940. At the annual peak, in 1944, they accounted for almost 17 percent of the economy's total hours worked. Then, after slipping somewhat in 1945, when military personnel began to be mustered out of service in the latter part of the year, military hours fell by 75 percent in 1946 as millions of servicemen left the armed forces. Military hours fell still further in 1947, leveling off for four years at somewhat less than three times their amount in 1940—a ratchet effect that reflected the military establishment's (and its private contractors') newly acquired political clout and the incipient Cold War (Lazarowitz 2005; Higgs 2006, 126–27).

The gigantic military buildup was remarkable for many reasons. For present purposes, it is germane to note that the rise in military hours accounted for 54 percent of the rise in the economy's total hours worked between 1940 and 1944. Did you want to get rid of high unemployment? Here was one sure-fire way to do so. Not simply because every man enrolled in the military was *ipso facto* no longer a candidate to be counted as unemployed, but also because the people in the uniformed military services required an even greater number of people to support them by working in the war-supply industries and as civilian employees of the military services. No wonder the economy's total hours worked in 1944 exceeded the number worked in 1929 by one-third. In this regard, one might have declared with confidence that the economy had finally escaped from the Great Depression—unless, that is, one paused to consider that many of these “full-employment” hours were being supplied by the 10 million draftees and therefore were not so much being supplied as being extracted.

Certainly, however, private nonfarm hours also shot up during the war, rising by 27 percent between 1940 and their annual peak in 1943. After almost remaining at this elevated level in 1944, private nonfarm hours dropped by 5 percent in 1945, then bounced back slightly after a couple of years to verge on their wartime high. At the wartime peak, private nonfarm hours constituted only 65 percent of the national total, however, in contrast to the nearly 75 percent they had accounted for in 1929—testimony especially to the greatly augmented importance of military employment during the war, as well as to the government's bulked-up civilian employment still enduring from its creation during Roosevelt's first term as president.

It is worthwhile to ponder the relation between the increase in total civilian hours during the war (21 percent between 1940 and the peak in 1943) and the increase in real GDP (57 percent between 1940 and the peak in 1944, according to Kendrick, 79 percent according to the Commerce Department's estimate released in 1990 [Higgs 2006, 65], 75 percent according to the Commerce Department's currently posted estimates).¹ Is it plausible that such a disproportionate increase in output could be brought about by the relatively paltry (19 percent) contemporaneous increase in civilian hours worked?



Consider, as well, that the civilian hours being added between 1940 and the wartime peak in output were being supplied in large part by teenagers, elderly people, and women with little or no previous experience in the paid labor force, whereas the simultaneous buildup of the armed forces involved almost entirely prime-age male workers. It is true that the private capital stock was used much more intensively (and correspondingly run down) during the war and that the government directly invested \$17 billion in war-related manufacturing plants and equipment (Higgs 2006, 44, 93), which helped to augment measured output in the short run, and civilian workers may have applied themselves with greater diligence than usual as their contribution to victory. Still, it is extremely difficult for me to find the relation between the increase in civilian (or even total) hours worked and the increase in real GDP plausible. This apparent mismatch in the input-output data helps to persuade

¹See the Bureau of Economic Analysis estimates in chained 2000 dollars at www.bea.gov/National/nipaweb/TableView.asp?SelectedTable=6&ViewSeries=NO&Java=no&Request3Place=N&3Place=N&FromView=YES&Freq=Year&FirstYear=1940&LastYear=1944&3Place=N&Update=Update&JavaBox=no. The percentage increase is exactly the same in chained 1937 dollars.

me that the wartime increase in real output has been greatly exaggerated—a conclusion I have reached on other grounds as well elsewhere (Higgs 2006, 64–68, 102–06).

The economic buildup during the war was heavily concentrated in manufacturing, especially the manufacturing of durable goods (U.S. Bureau of the Budget 1946, 104; Field 2008, 680–82). Using data on the number of employees and the average hours worked per production worker (U.S. Bureau of the Census 1975, 137, 169), I estimate that the number of hours worked in manufacturing increased from 21.0 billion in 1940 to 39.1 billion in 1944, or by 86 percent. This increase accounts for 84 percent of the increase in total civilian hours worked during this period. At this point, we have come face to face with Rosie the Riveter and a legion of her sisters (as well as with a substantial number of teenage boys and elderly men).

Credit where credit is due: these women who took up positions in manufacturing plants could be trained to weld, solder, and tighten bolts as well as anyone, but because most of them lacked work experience, they needed time to acquire and hone their skills. Meanwhile, they remained a drag on productivity, and they were more likely to blunder into an accident. The rate of disabling injuries per hour worked in manufacturing rose by more than 30 percent between 1940 and its wartime peak in 1943 (U.S. Bureau of the Census 1975, 182). The increase in double-shift and even treble-shift work (U.S. War Production Board 1945, 7, 32) also diminished the productivity of the additional hours worked in manufacturing. Both of these factors call further into question the “miracle” of the officially estimated increase in output during the war by showing us exactly how the additional hours worked might have been poor substitutes for the hours that would have been worked had the young men not been drafted and removed from the production lines.

Solomon Fabricant, a leading analyst of productivity trends for the National Bureau of Economic Research, wrote at the time:

The new workers are inexperienced; and some are handicapped. . . . Long hours cut the strength of labor and management. As a result [of these factors and others he mentioned], national output per man hour fails to rise at the peacetime rate. . . . [I]n most peacetime and manufacturing industries . . . actual and palpable declines [in labor productivity] occur. For skilled labor is pulled away, transport is choked, and materials come hesitatingly and in meager quantity. (qtd. in Field 2008, 675)

Similar sorts of questions are raised by the *postwar* mismatch between changes in private hours worked and changes in the private part of real GDP. Whereas the former barely changed between 1945 and 1946, the latter leaped

upward by approximately 30 percent. This genuine economic miracle reflects above all the transfer of private workers from war-supply work to the production of civilian goods and services—a shift the data in Table 1 do not allow us to track—but it also testifies to the overestimation of the value of war-related goods produced between 1940 and 1945, an overestimation that contributes mightily to the apparent surge in national output during the war that carried output implausibly far above its trend high-employment levels for those years (Higgs 2006, 105–06).

In all these areas of doubtful estimation that stems from displacement of private-market pricing, examination of the hours-worked data helps us to keep our focus on a critical variable that is measured relatively unambiguously. Hence, when the hours movement and the movement in a technologically or economically related variable X seem inconsistent, and the government is drastically interfering with the operation of the market system of pricing and resource allocation, chances are good that the change in X is the variable subject to the greater mismeasurement.

Conclusion

A close examination of the data on hours worked helps us to understand better the macroeconomic changes that occurred during the 1930s and 1940s. Perhaps the most arresting conclusions we may reach from this examination are: (1) the profile of the economy's performance between 1929 and 1937 is not clearly V-shaped, with a distinct low point in 1933, as it appears in the usual depiction, but more U-shaped, with a flat, three-year trough during 1932, 1933, and 1934; (2) despite (or perhaps because of) the doubling of civilian government hours between 1932 and 1936, which added 5.4 billion annual hours to the total, private nonfarm hours per year increased by only 11.3 billion during that period, leaving them still 18 percent less than their 1929 amount; (3) as late as 1939, private nonfarm hours worked were 16 percent below their 1929 level and about 21 percent below the trend high-employment level for 1939; (4) the tremendous mismatch between the increase in private hours worked and the estimated increase in real GDP from 1940 to 1944 calls into serious question the accuracy of the estimated increase in real output, and (5) this question becomes only more thought-provoking when we recognize that the growth of private nonfarm hours during the war entailed a substitution of lower-productivity workers for the higher-productivity workers being drained into the armed forces.

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