

# Wages, Prices, and Employment: Von Mises and the Progressives

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There was a watershed in the history of economic ideas in the twentieth century, particularly ideas dealing with the relationships, in the aggregate, between money wage rates, price levels, and employment. This watershed occurred not quite a third of the way through the century and was derivative from the dramatic sequence of events known as the Great Depression. Economic thinking, in general, has never been the same since those years, especially in the United States, where, between 1929 and 1933, the unemployment rate rose from 3.2 to 24.9 percent, while output, in real terms, fell by about one-third.<sup>1</sup> Because of these developments, the Great Depression is often cited as a classic example of the failure of a capitalist economy to provide full employment of its resources, especially labor. Not surprisingly, that alleged failure triggered one of the most vigorous debates in the history of economic affairs, a debate that can be understood more fully if it is considered in the context of the state of thinking about the causes of unemployment on the eve of the Great Depression.

As the decade of the 1920s wound down, the dominant explanation for the occurrence of unemployment was the classical one, perhaps best represented in the writings of the British economist A.C. Pigou who, in his *Industrial Fluctuations* (1927), states that sufficiently flexible wages would “abolish fluctuations of employment altogether.”<sup>2</sup> Even more explicit (although published in 1933 after the onset of the depression) is a passage from his *Theory of Unemployment* in which he argues:

With perfectly free competition . . . there will always be at work a strong tendency for wage rates to be so related to demand that everybody is employed. . . . The implication is that such unemployment as exists at any time is due wholly to the fact that changes in demand conditions are continually

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taking place and that frictional resistances prevent the appropriate wage adjustments from being made instantaneously.<sup>3</sup>

With the Pigovian, or classical, argument lay the germ of the controversy to follow. The relationship between wage rates and employment envisaged by Pigou implied that unemployment was the result of real wage rates being too high (greater than their equilibrium level), suggesting that the solution to high levels of unemployment was a reduction in money (and real) wage rates.<sup>4</sup>

As a generalized explanation of the source of and remedy for unemployment, the classical analysis was found objectionable by many, some contesting it on theoretical grounds and others objecting for moral reasons. For example, within the broad fraternity of economists, there were those who felt that when dealing with the overall, or aggregate, economy, postulating an inverse relationship between real wage rates and employment was totally inappropriate in that it reversed the true direction of response. This argument, one variant of a long line of underconsumptionist ideas, had a wide range of appeal. The British economist John A. Hobson had espoused underconsumptionism beginning in the late nineteenth century; in 1923, he restated his position in *The Economics of Unemployment*, noting with disapproval that, "in depressed trade, with general unemployment, businessmen have considerable support from economists in calling for cuts in real wages."<sup>5</sup> In declaiming against the notion of wage cuts during times of high unemployment, Hobson emphasized the importance of the functional distribution of income in the determination of levels of output and employment, arguing that higher levels of wage rates were necessary to insure the existence of the level of consumption required to produce the full employment of labor. Thus, the cutting of wage levels in a time of depression would actually worsen the unemployment problem according to Hobson.

We should add that Hobson's was not the only form of underconsumptionist theory. W.T. Foster and W. Catchings proposed another variant, as did the famous Major Douglas.<sup>6</sup> However, Hobson was the most explicit in emphasizing the importance of wage rates as a determinant of levels of consumption. Thus, his theorizing stands in sharpest contrast to the classical view.

Underconsumptionism such as Hobson's would be expected to have had a rather substantial degree of popularity among trade unionists and the political left. In addition, though, it also had a remarkable vitality among American businessmen and supposedly, conservative politicians. Murray Rothbard has argued that:

As early as the 1920's, "big" businessmen were swayed by "enlightened" and "progressive" ideas, one of which . . . held that American prosperity was *caused* by the payment of high wages instead of the other way around. . . . By the time of the depression . . . businessmen were ripe for believing that lowering wage rates would cut "purchasing power" (consumption) and worsen the depression.<sup>7</sup>

Supporting Rothbard's view are the public pronouncements of certain major American business figures when faced with the prospect of the Great Depression. Henry Ford, for one, speaking in late November 1929, said:

Nearly everything in this country is too high priced. The only thing that should be high priced in this country is the man who works. Wages must not come down, they must not even stay on their present level; they must go up.

And even that is not sufficient of itself—we must see to it that the increased wages are not taken away from our people by increased prices that do not represent increased values.<sup>8</sup>

Ford's remarks were made in conjunction with a meeting of himself and other American business leaders at a White House conference convened by President Herbert Hoover. The meeting's conclusions were summarized in the following press release quoted in the *New York Times*:

The President was authorized by the employers who were present at this morning's conference to state on their individual behalf that they will not initiate any movement for wage reductions, and it was their strong recommendation that this attitude should be pursued by the society as a whole.

They considered that, aside from the human consideration involved, the consuming power of the country will thereby be maintained.<sup>9</sup>

The conference from which these statements emerged was one of a series Hoover convened in November and December 1929, for the purpose of instituting what he perceived to be a new departure in dealing with the phenomenon of the business cycle—in his own words, a “program unparalleled in the history of depressions in any country and any time.” Hoover believed in the efficacy of the federal government as a mechanism for the coordination of economic activity. He was an interventionist who, among other things, found morally and intellectually unacceptable the classical means of dealing with earlier incidents of depressed economic conditions. He termed it the “liquidation” of labor and he opposed it on two grounds. First, “labor was not a commodity: it represented human bones.” Second, he found the underconsumptionist doctrines attractive; they had captured his mind.<sup>10</sup>

While the underconsumptionist hypotheses are intriguing, during the 1930s, the strongest attack on the classical view of the way to deal with unemployment came from within the orthodox economics establishment. In his *General Theory*, John Maynard Keynes challenged whether adjustments in money wage rates could be relied on to achieve full employment of labor.<sup>11</sup> The basis of this challenge was twofold. First, he questioned whether what Pigou called “frictional resistances” and what he treated as downward money wage rigidity would ever permit the money wage rate adjustments necessary to restore full employment. More important, though, Keynes and his explicators,

perhaps most notably Abba Lerner, argued that even if this were not the case, whatever money wage adjustments took place would induce corresponding decreases in prices, leaving real wages (and output and employment) unchanged.<sup>12</sup>

If that were not enough, in an almost incestuous fashion, the Keynesian repudiation of the role of money wage rates as an adjustment mechanism at the aggregate level was capable of producing another round of underconsumptionist thought. As Paul Sweezy recalls, his reaction to the Keynesian argument in 1936 was that:

[The] reasoning depended on the assumption of pure competition. . . . I asked myself how it would be affected if one dropped this assumption and substituted the more realistic one of generalized oligopoly. . . . [It] was here that the kinked demand curve came into the picture. I was not too much concerned with the demand curve as with the associated marginal revenue curve which of course would show not a kink but a gap. If the relevant cost curve passed through this gap, it could be raised or lowered without affecting output or employment. The next step was that higher incomes owing to a wage increase would then cause an increase in effective demand and hence in employment.<sup>13</sup>

Ultimately, the Keynesian attack on classicism took a variety of forms, such as liquidity traps and perfectly inelastic investment demand functions, but fundamental to all these were the already established premises that (1) the only important thing is aggregate effective demand and (2) money wage rates can be ignored.<sup>14</sup> The latter notion became enshrined in “progressive” economic thought of the post-World War II era in the United States. An almost classic statement of this position can be found in Peter Temin’s 1976 attempt at assessing the relative importance of monetary forces in the Great Depression. In a brief, error-plagued discussion of the role of wage rates, he states:

In the postwar debate over the Keynesian system, one of the dominant questions was whether an unemployment equilibrium was possible. *The consensus now seems to be accepted that in the long run it is not* (emphasis added).<sup>15</sup>

What Temin appears to mean, here, is that there is no unique equilibrium level of employment (or unemployment). Any money (or real) wage rate is potentially an equilibrium one. This position can be thought of as a neo-Keynesian view, for, to be fair to Keynes, he never would have espoused such a line of thought. In the *General Theory*, he specifically accepts the classical notion that unemployment is the result of real wage rates being too high.<sup>16</sup> Keynes’s attack on the importance of wage rates centered on money wage rates usefulness as policy and not on whether there was an equilibrium real wage rate. The whole Keynesian framework, as envisaged by Keynes, was oriented toward

prescribing ways in which the classical labor market equilibrium could be attained without relying on the money wage rate adjustment mechanism. It is the neo-Keynesians, such as Temin, who dismiss the concept of labor market equilibrium out of hand.

The neo-Keynesian or “progressive” view achieved rather widespread acceptance quite quickly. For example, when his classic *The Theory of Money and Credit* was republished in 1953, Ludwig von Mises felt compelled to address this issue in a section of an epilogue (“Monetary Reconstruction”) which he wrote for the volume. In one of the more remarkable passages in the history of economic ideas, he addressed the subject, which he called “the full-employment doctrine,” in a fashion that is succinct, cogent, and prescient, foretelling in an almost uncanny fashion the path the U.S. economy would follow beginning some ten years later. The passage is a mere three pages in length and one hesitates to quote selectively from it for fear of losing a portion of its full flavor. Yet, for the purposes of this article, one brief paragraph is especially important:

The most characteristic feature of the full-employment doctrine is that it does not provide information about the way in which wage rates are determined on the market. To discuss the height of wage rates is taboo for the “progressives.” When they deal with unemployment, they do not refer to wage rates. As they see it, the height of wage rates has nothing to do with unemployment and must never be mentioned in connection with it.<sup>17</sup>

Von Mises’s complaint was registered just prior to the high tide of the neo-Keynesian view, which was to come in the 1960s, with the popularization of the Phillips curve. Interestingly, von Mises anticipated the Phillips curve discussion in his treatment of the full-employment doctrine by describing exactly what would happen in a world in which price levels were shocked upward by monetary policy and money wage rates adjusted upward, but with a lag. Specifically, he argued that as prices move upward more rapidly than money wage rates, real wage rates will fall and observed unemployment will decline, suggesting a negative relationship between the rate of change in prices and the unemployment rate—what would become known in a few years as a Phillips curve. However, von Mises viewed the fall in unemployment that results from this as a temporary aberration, arising out of a movement of real wage rates below their equilibrium level, a circumstance that will disappear as money wage rates fully adjust to the new level of prices and the equilibrium real wage rate is reestablished. This view anticipated Milton Friedman’s 1967 Presidential Address to the American Economic Association.<sup>18</sup>

The von Misesian interpretation of the relationship between prices, wages, and unemployment was, of course, almost totally foreign to the mainstream of

macroeconomic thinking when the Phillips curve relationship was announced to the world, primarily because of the prevalence of the view that there was no unique equilibrium wage rate in the labor market. In such a context, the “discovery” of the Phillips curve seemed to offer the possibility of empirically determining the “menu of policy options” available to the economy. In the mainstream view, every point on the Phillips curve was an equilibrium one. All that remained was to select the appropriate combination of unemployment and price inflation, presumably a political choice, and let the economists prescribe the set of macroeconomic policies necessary to achieve it. What with the burgeoning growth of modern high-speed data processing facilities, larger and larger macroeconomic models could be constructed and the process of producing the required sets of policy recommendations could be reduced to a simple mechanical procedure of running it through the model. The millenium had arrived. Or had it? Subsequent events, marked by the simultaneous existence of high rates of unemployment and price inflation, call into question the “optimistic” view that pervaded the 1960s.

The foregoing discussion suggests the extent of variation in perceptions of the relationship between wage rates and unemployment. Within the confines of economic orthodoxy, it took less than a half century for the pendulum to swing all the way from the classical view that, *ceteris paribus*, money wage rates and unemployment are positively associated with the Phillips curve notion that the more rapidly money wage rates are rising, the lower will be the level of unemployment. And, very recently, there is some evidence of a resurgence of interest in the role that money wage rates play in determining levels of unemployment.<sup>19</sup> About midway through this scenario of changing ideas, von Mises reaffirmed the classical view with his critique of the full-employment doctrine, an assessment that we find to be remarkably accurate. The remainder of this article will be devoted to presenting arguments to support our contention.

### **Wages in the von Misesian Framework**

The basic concepts contained in the von Misesian view of the role of money wage rates are relatively straightforward. To begin, two forms of labor markets must be considered, one focusing on real wages and another dealing with money wage rates. In the real wage version, the demand for labor is determined by the marginal productivity of labor schedule, which derives from an aggregate production function relating output to the quality of capital and labor inputs. The supply of labor in the real wage labor market is determined by the leisure-real income preferences of individuals in the society and has the conventional positive slope. The real wage version of the labor market is depicted in panel *B* of figure 1.

On the money wage side, the demand and supply functions for labor are simple transformations of the real wage relationships. Assuming competitive commodity markets, the money wage labor demand curve is obtained by multiplying the real wage labor demand function by the price level,  $P$ . Similarly,

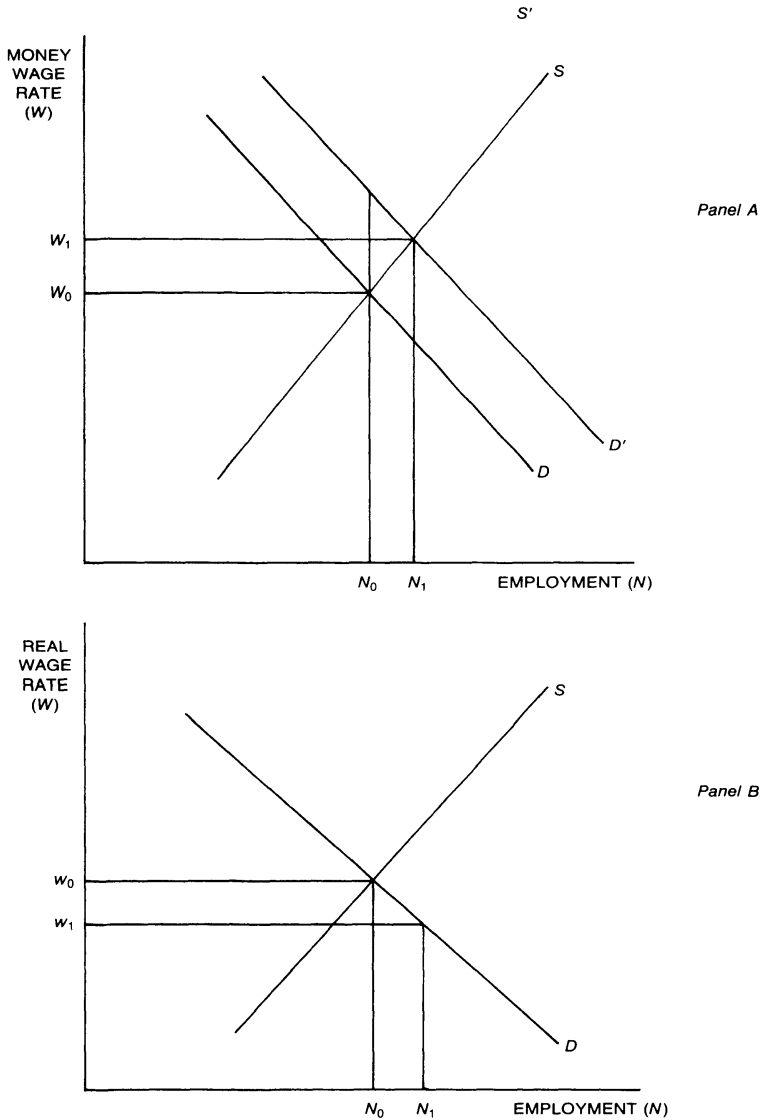


Figure 1. Wages in the von Misesian Framework

the real wage labor supply function can be translated into a money wage relationship by multiplying it by the price level workers *expect* to prevail, designated as  $P_e$ , in the period of employment. If the actual price level and the expected price level are identical, the money wage labor market equilibrium level of employment will coincide with the real wage equilibrium level of employment. These relationships are shown in panel A of figure 1.

Suppose, though that the actual price level deviates from the expected price level (that is, unanticipated price inflation or deflation occurs). In such a case, the money wage labor market equilibrium level of employment will not be consistent with equilibrium in the real wage labor market. For example, imagine a burst of totally unanticipated inflation which shifts the *money wage* labor demand function to the right (To  $D'$  in panel A of figure 1), increasing the level of employment from  $N_0$  to  $N_1$ . The impact in the *real wage* labor market, holding the technological conditions of production (the production function) constant, will be a movement down the labor demand curve to the level of employment,  $N_1$ , consistent with the *money wage* labor market equilibrium and the reduction in the *real wage* rate implicit in the inflation's being unanticipated. The new real wage rate is  $w_1$  in panel B of figure 1.

If there were no subsequent adjustment in the money wage labor supply function, the new money wage equilibrium could be sustained indefinitely. However, such an assumption implies the existence of a permanent money illusion on the part of workers and a shift in the real wage labor supply function that will produce an equating of the quantities demanded and supplied of labor in that market. The more likely response is one in which the expected price level,  $P_e$ , adjusts upward, shifting the money wage labor supply function to the left, and moving the money wage equilibrium level of employment back toward its initial position. In fact, if  $P_e$  adjusts until it is equal to  $P$ , the money-wage supply function will have shifted to  $S'$  and the original equilibrium will have been restored, albeit at a higher price and money wage level.

From the standpoint of better understanding the discussion of the variety of notions about the role of money wage rates in macroeconomic affairs that introduced this article, this theoretical paradigm is quite useful. The complete adjustment process where  $P_e$  becomes equal to  $P$  can be thought of as the von Misesian-classical view of the way in which labor markets function. By contrast, the various forms of the "progressive," or neo-Keynesian perception of the world can be derived from a situation in which money wage rates remain unchanged or  $P_e$  either does not respond to movements in  $P$  or responds incompletely. The no-money-wage response case corresponds to the pure-money-wage rigidity hypothesis, while a lack of adjustment or partial adjustment between  $P_e$  and  $P$  implies that both money and real wage rates adjust, ex post, to create an equilibrium that is both different from the previous equilibrium and consistent with the new value of  $P$ . In short, in a world of incomplete adjustment between  $P_e$  and  $P$ , the equilibrium levels of both money and real wage rates as well as *the level of unemployment* are determined by the price level.



## Some Overall Empirical Evidence

The logic of the von Misesian-classical position seems clearly superior to any of the alternatives, it being difficult to envisage why a permanent money illusion on the part of workers should exist. However, the money illusion hypothesis cannot be dismissed out of hand. Rather, it needs to be evaluated by referring to the actual evidence pertaining to movements of money wages and prices. The clear implication of the von Misesian-classical framework is that, in a world in which the technological conditions of production and workers' leisure income preferences are constant, the continual adjustment of  $P_e$  to bring it into equality with  $P$  would result in the maintenance of a stable real wage rate. In effect, over time, the rate of change in the level of money wage rates would exactly equal the rate of change in the price level.

Through time, though, technological progress alters the conditions of production. With a reasonable set of assumptions about the nature of the aggregate production function, the impact of technical progress in the labor market is reflected in changes in the average productivity of labor.<sup>20</sup> Consequently, if the real wage rate moves in consonance with the average productivity of labor, there is a clear indication that  $P_e$  responds and adjusts in the von Misesian-classical manner to changes in the price level. Table 1 presents statistical measures describing the behavior of real wage and average productivity levels in the United States for various time periods during the twentieth century. What these data show is that for substantial time periods, real wage rates and productivity levels have moved virtually in unison, that is, in accord with the predictions of the von Misesian-classical view of labor markets. In all fairness, though, extended intervals can be found in which this relationship is not as precise as suggested by the wider time frames. In particular, during the 1930s, real wage rates advanced more rapidly than productivity. The period since 1973 has also been marked by a greater increase in real wage rates than in average productivity. The detailed movements are shown in table 2. Both of these periods are marked by a substantial escalation of the observed unemployment rate, exactly what the von Misesian-classical model of labor markets argues should occur. The clear suggestion is that there is a systematic relationship between the level of real wages (adjusted for productivity change) and the level of unemployment.

The real wage-unemployment relationship for the United States can be explored more fully through the application of standard multivariate statistical analysis techniques. Table 3 describes the relationship between the level of unemployment and the real wage rate that emerges from such an analysis for the periods 1901–41 and 1949–80.<sup>21</sup> In general, it appears that a 1 percent movement in the index of average real wage rates, adjusted for productivity change, will be associated with about a seven-tenths of one percentage point

**Table 1**  
**Behavior of Wage and Productivity Measures,**  
**Various Periods, United States, 1901–73**

<i>Time Period and Wage or Productivity Measure</i>	<i>Index at End of Period (Beginning = 100)</i>
1901–29: Average of annual and hourly real wage series	155.9
1901–29: Average of annual and hourly productivity series	156.0
1949–73: Bureau of Labor Statistics compensa- tion per hour (real) series	203.0
1949–73: Bureau of Labor Statistics output per hour series	204.1

**Table 2**  
**Behavior of Wage and Productivity Measures,**  
**Various Periods, United States, 1929–82**

<i>Time Period and Wage or Productivity Measure</i>	<i>Index at End of Period (Beginning = 100)</i>
1929–41: Average of annual and hourly real wage series	142.1
1929–41: Average of annual and hourly productivity series	124.0
1973–82: Bureau of Labor Statistics compensa- tion per hour (real) series	110.1
1973–82: Bureau of Labor Statistics output per hour series	106.5

**Table 3**  
**Estimates of Statistical Relationship between**  
**Unemployment and Productivity-Adjusted**  
**Real Wage Rate, United States, 1901–80**

	<i>Change in Unemployment Rate Associated with a 1 Percent Change in Index of Adjusted Average Real Wage Rate</i>
1901–41	0.73 (0.08)
1949–80	0.72 (0.12)

Source: Statistical appendix to this article.

Note: Values in parentheses are standard errors of the cited statistic.

change in the same direction in the unemployment rate. Thus, the greater the productivity-adjusted real wage rate, the greater the level of unemployment.

### Historical Example (1): The 1920–22 Cycle

The von Misesian-classical paradigm is a useful one for interpreting and understanding several rather disparate periods in the history of U.S. economic affairs in the twentieth century. Begin with the sharp post-World War I recession, the business cycle of 1920–22. Measured by the Federal Reserve Board series on factory employment, this downturn begins in the second quarter of 1920.<sup>22</sup> By the third quarter of 1921 (six quarters into the cycle), factory employment levels have fallen to 71.1 percent of what they were in the first quarter of 1920. Beyond that point, employment begins to rise, by the fourth quarter of 1922, returning to 85.6 percent of its first quarter 1920 level. The annual national unemployment rates for 1920, 1921, and 1922 are 4.0, 11.9, and 7.6 percent, respectively.<sup>23</sup> By 1923, full recovery has been achieved and the overall unemployment rate averages 3.2 percent.

What happened in this business cycle? Basically, the productivity-adjusted real wage rate  $w_r^*$  rose quite rapidly.<sup>24</sup> With first quarter 1920 equal to 100,,  $w_r^*$  in the manufacturing area soared to 150.3 by second quarter 1921, primarily because the price level fell precipitously between 1920 and 1921. The Bureau of Labor Statistics (BLS) wholesale price index fell by 36.5 percent in this interval, a decline that was only partially matched by a fall in money wage rates. BLS data indicate manufacturing hourly wage rates fell by only about 13 percent between 1920 and 1921. The sharp rise in real wage rates produced by this combination of price and money wage rate changes was only partially offset by a rise in the average annual productivity of labor of 3.3 percent.<sup>25</sup>

Midway through 1921, the price level stabilized and the recovery began as money wage rates continued to fall, in a lagged response to the drop in the price level, while productivity rose, lowering the productivity-adjusted real wage rate. Figure 2 shows the behavior of  $w_r^*$  and employment in the manufacturing sector of the economy. The pattern is clear. As real wage rates begin to move back toward their equilibrium level, employment begins to rise. It is an almost classic case of labor markets responding to and correcting a substantial disequilibrium that was introduced by a destabilizing shock to the price level.

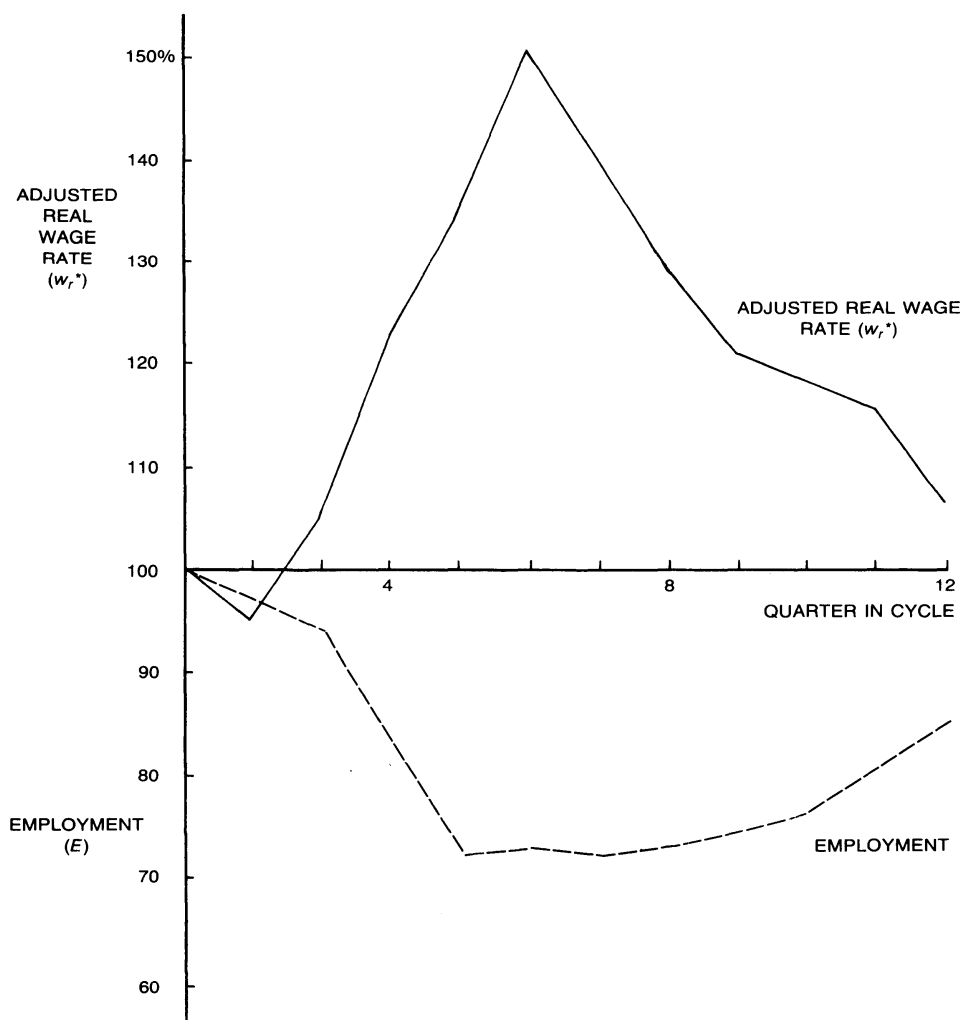


Figure 2. The 1920-22 Business Cycle

## Historical Example (2): The Great Depression

If the von Misesian-classical labor market adjustment mechanism worked so well in 1921 in correcting the employment disequilibrium generated by the shock of an unanticipated large fall in prices, what happened during the Great Depression beginning at the close of 1929? Why did the unemployment rate rise as much as it did and why did the Depression persist as long as it did? The Great Depression began innocently enough with a combination of events that shocked labor markets out of equilibrium by increasing the productivity-adjusted real wage rate,  $w,^*$ . On the one hand, the price level fell in 1930—not nearly as much as in 1921, only 3 percent—but, nevertheless, it fell. However, at the same time, the average productivity of labor also declined, by about 4 percent, unlike the 1920–21 downturn when it rose.<sup>26</sup> The combination of the productivity and price declines necessitated a compensating decline in money wage rates if a fall in employment was to be avoided. However, money wage rate decreases lagged developments in the price level and productivity sectors, much as in 1920, falling by less than 3 percent.<sup>27</sup> This operated to produce a disequilibrium in the real wage rate of 5 to 6 percent in 1930, depending on which money wage rate and productivity data series are used. (See table 4.) Predictably, unemployment rose from 3.2 to 8.7 percent.

It is interesting to speculate on how President Hoover's insistence on not cutting wage rates contributed to the emerging labor market disequilibrium. Rhetoric is one thing, but actual behavior may be something else. Indeed, some chroniclers of the history of this disturbed period have concluded that the public pronouncements of the Fords and Hoovers of the world did not have the effect of preserving wage stability. Perhaps betraying a predilection for underconsumptionism, Broadus Mitchell claims that, "The obligation [of industry] not to cut wages was . . . widely dishonored," and Arthur Schlesinger, Jr., states that, "The entire wage structure was apparently condemned to disintegration."<sup>28</sup>

**Table 4**  
Unemployment Rate and Indexes of Consumer Prices, Money Wages, Productivity, and Productivity-Adjusted Real Wages, United States, 1929–33

	Unemployment Rate	Consumer Prices	Indexes (1929 = 100)					
			Money Wages		Productivity		Productivity-Adjusted Real Wage	
			Annual	Hourly	Annual	Hourly	Annual	Hourly
1929	3.2 %	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1930	8.7	97.3	97.4	98.4	94.8	96.3	106.7	105.0
1931	15.9	88.6	90.4	94.4	94.4	97.1	111.4	109.7
1932	23.6	79.6	80.1	82.4	81.8	93.4	118.5	110.1
1933	24.9	75.4	73.3	82.6	87.6	91.6	117.0	119.6

That wages fell, ultimately, is not to be questioned. The Hoover policies could not be pursued indefinitely. What is more important is the timing of the wage decreases. The issue is whether the Hoover recipe delayed the onset of money wage adjustments sufficiently to exacerbate the disequilibrium and increase the severity of the Great Depression. The evidence is persuasive that this is the case. The average hourly earnings of production workers in manufacturing declined from 56 cents in 1929 to only 55 cents in 1930; in bituminous coal mining, average hourly earnings stayed constant at 66 cents in 1930; and in both the building and printing trades, union wage scales actually increased in 1930.<sup>29</sup> At a more detailed level, a monthly wage index compiled by the Federal Reserve Bank of New York (reported by Lionel Robbins) shows almost no movement in money wage rates from the fourth quarter of 1929 through the second quarter of 1930.<sup>30</sup>

Contrast this pattern with that of the 1920–21 downturn. In both cycles, industrial production peaked at midsummer before the onset of the decline. In both cycles, the decline was precipitous, 27.5 percent from July 1920 to July 1921 and 21.3 percent from June 1929 to July 1930.<sup>31</sup> However, as noted earlier, in the 1920–21 case, money wage rates fell by 13 percent, setting the stage for the sharp recovery that began in August 1921. One of the factors cited by Benjamin Anderson in explaining this recovery is “a drastic reduction in the costs of production.”<sup>32</sup> How these costs were reduced is clear—money wage rates were cut, something that did not occur in the early days of the Great Depression. For example, according to data compiled by the National Industrial Conference Board, hourly wage rates for unskilled male labor fell more between 1920 and 1921 than they declined throughout the Great Depression.<sup>33</sup>

The clear implication seems to be that the money wage rate adjustment process was distinctly different during the Great Depression compared to the 1920–21 decline in business activity. Apparently, Herbert Hoover’s goal of maintaining levels of money wage rates was achieved, at least temporarily. It is worth noting that not only did the Hoover policies call for maintaining wages in order to sustain purchasing power but, in addition, they advocated a similar departure with respect to dividends. Amazingly, at a time when corporate profits were falling rapidly, dividends were relatively unchanged, while undistributed corporate profits turned *negative*. Anderson remarks, “The poor old St. Louis and San Francisco Railroad, impressed with its duty to keep purchasing power high, proceeded to declare its preferred dividend a full year in advance—with unsatisfactory consequences.”<sup>34</sup>

The course of the onset of the Great Depression can be traced in a more detailed fashion by employing the data series referred to in the discussion of the 1920–22 business cycle. Using Federal Reserve Board information on factory employment and estimates of productivity-adjusted real wages in manufacturing, it is possible to observe the same pattern of wage and employment changes that marked the 1920–21 downturn in the business cycle. It began

in the fourth quarter of 1929. By the fourth quarter of 1930, factory employment had fallen to 78.7 percent of its third quarter 1929 level. Accompanying this was a 26.7 percent rise in adjusted real wage rates in the industrial sector.<sup>35</sup>

Up to this point, the 1920–21 cyclical downturn and the Great Depression are quite similar in nature. Unanticipated exogenous shocks of the price level and productivity variety have displaced the real wage rates upward from its equilibrium level, resulting in a rise in unemployment. In the case of 1921, the price level stabilized, money wage rates continued to adjust downward, and recovery began. However, during the Great Depression, the price level did not stabilize. Rather, a secondary price shock occurred that ultimately (by 1933) drove the price level down to 75 percent of its 1929 value. Milton Friedman and Anna Schwartz ascribe this secondary (as well as the primary) price shock to the policies of the Federal Reserve Board.<sup>36</sup>

While the Friedman-Schwartz argument is intriguing, there is an alternative explanation that builds on the contribution of Hoover's underconsumptionist policies to delaying the normal adjustment process. A good case can be made that the failure of labor markets to adjust during the first year of the Great Depression had very important second-round effects that contributed to the sharp decline in output and rise in unemployment noted in 1931 and 1932. For example, the financial crisis, beginning in full force in 1931, can easily be attributed to the failure of labor markets to adjust in 1930. In turn, that financial crisis led to an unanticipated sharp decline in the stock of money that brought about equally unanticipated deflation, deflation that complicated the process of labor market adjustment even further, and, in fact, contributed to higher real wages and interest rates in 1931 and 1932.

By maintaining money wages in the face of falling productivity and prices, businesses encountered a massive profit squeeze by mid-1930. Before-tax corporate profits fell some 63 percent from 1929 to 1930 and, given that dividends were maintained at essentially their 1929 levels, undistributed corporate profits fell from \$2,820 million in 1929 to a *negative* \$2,613 million the following year.<sup>37</sup> Whereas, in mid-1929, less than 6 percent of firms surveyed by First National City Bank of New York were losing money, by the third quarter of 1930, the proportion of losers had increased to 29 percent and a large percent of the remainder were not covering dividend payments.<sup>38</sup> Profits in the second quarter of 1930 are estimated to have been less than half of what they were but nine months earlier.<sup>39</sup>

By mid-1930, the profit squeeze was beginning to be noticed by the financial community. One immediate effect was a sharp decline in new capital financing. New capital issues averaged \$810 million a month in the first half of 1930, but fell more than 55 percent to \$362 million a month in the last half of the year.<sup>40</sup> Stock prices, which were higher in May 1930 than in November 1929, fell 36 percent between May and December, a greater decline than observed in the so-called "great crash" of late 1929.<sup>41</sup>

The financial squeeze that led to a decline in demand for corporate equities led to a similar decline in the attractiveness of corporate debt. An increasing inability of businesses to cover debt obligations from cash flow led to growing lender hesitancy in making loans, which manifested itself in higher risk premiums on loans to business. What Ben Bernanke calls the "cost of credit intermediation" began to increase sharply.<sup>42</sup> Bernanke observes that the yields of middling-quality corporate debt (Baa bonds) were about 2.5 percent higher than on high-quality U.S. government bonds in both late 1929 and mid-1930, but that the differential rose more than 30 basis points every month in the last quarter of 1930, with the differential of 2.41 percentage points in September widening to 3.49 percentage points by December, and, then, to more than 4 percentage points by the summer of 1931.<sup>43</sup> More importantly, the deterioration in corporate balance sheets increased the proportion of firms with debt classified as being of low or middling quality and a corresponding decrease in the proportion of firms with high-quality debt ratings. As a consequence, the risk premiums paid by U.S. corporations on new debt probably rose far more than 100 basis points in 1930 and even more in 1931. The real price of financial capital was rising even faster, as accelerating deflation, beginning in late 1930, raised real interest rates substantially. Rising government borrowing to finance the Hoover fiscal program in 1931 added to interest rate pressures and the crowding out of private investment.<sup>44</sup>

The impact of the decline in corporate profitability on the supply of savings and loanable funds was devastating, as table 5 documents. Savings fell roughly 40 percent between 1929 and 1930, with nearly 90 percent of the decline attributable to the decrease in corporate undistributed profits. Savings fell again, by another 40 percent, in 1931, with about half the decline resulting from the worsening corporate profitability picture and 30 percent of it due to the shift in deficit financing by the federal government. The sharp fall in savings contributed to a massive increase in real interest rates and the real cost

**Table 5**  
**Savings in the United States, 1929–31**  
(in \$ billions)

<i>Form of Savings</i> <sup>a</sup>	1929	1930	1931
Personal savings	\$4.2	\$3.4	\$2.6
Capital consumption allowances	7.9	8.0	7.9
Corporate retained earnings	2.8	-2.6	-4.9
Net federal savings <sup>b</sup>	0.7	0.7	-0.6
Total	15.6	9.5	5.0

Source: U.S. Department of Commerce, Bureau of Economic Analysis.

<sup>a</sup>State and local governmental savings are excluded.

<sup>b</sup>As measured by the change in the public debt; a reduction in the national debt is viewed as positive savings.



of financial capital.<sup>45</sup> This helps explain the drop of 53 percent in nonresidential fixed investment between 1929 and 1931.<sup>46</sup>

It is important to note that the deterioration in corporate profits began long before the banking crisis emerged. The sum of bank deposits and currency in October 1930 was within 3 percent of the level prevailing in September 1929, before the stock market crash.<sup>47</sup> A good measure of depositor confidence is the deposit/currency ratio, which tends to fall as depositors become wary of banks and convert deposits to currency. The deposit/currency ratio in October 1930 was the second highest monthly total ever recorded.<sup>48</sup> Fear of banks on the part of depositors clearly had not yet developed. Yet, retained earnings already had turned negative by October 1930, and the risk premiums associated with corporate lending already were rising.

In the year after October 1930, the banking crisis began in force. The deposit/currency ratio fell more than one-third from October 1930 to October 1931, a majority of the decline observed during the whole of the Great Depression.<sup>49</sup> The conventional wisdom is that the failure of the Bank of the United States on December 11, 1930, and some other bank failures, triggered a decline in depositor confidence leading to the shift from deposits into currency, a move that lowered bank reserves and forced monetary contraction.<sup>50</sup> Our alternative hypothesis is that the deterioration in corporate profits, in part explained by the wage inflexibility of late 1929 and early 1930, led to a decrease in the market value of business loans, wiping out much—possibly all—of the net worth of many financial institutions. Growing realization that bank balance sheets (which were generally based on book values) did not reflect true market valuations of assets led to depositor withdrawals that, in turn, caused the banking crisis. In this view, the banking crisis was a consequence of labor market maladjustment rather than the cause of a deepening of the Great Depression.

Is it reasonable to assert that the decline in the quality of business loans associated with falling business earnings, and also the decline in the value of mortgages and consumer loans associated with rising unemployment, caused a dramatic deterioration in the true financial condition of banks? The answer is clearly yes, as an example can illustrate. Suppose a long-term loan were made at 6 percent interest in 1929, but had that loan been made in late 1930, an 8 percent interest rate would have been required to compensate the lender for the greater risk associated with the diminished ability of the lender to repay. A \$1,000 loan made at 6 percent in 1929 with a very long maturity date would have, by late 1930, a market value approaching \$750, since the \$60 interest payment (6 percent of \$1,000) would be 8 percent (the risk-augmented rate) of \$750.<sup>51</sup> On a short-term obligation, the decline in the market value would have been much less, but in any case some decline in market value would occur. Assume that, by late 1930, bank loans and investments, on balance, were worth 10 percent less than their stated market value. Considering the 36 percent decline in equity prices from May to December 1930, this seems to be a

reasonable estimate of the actual decline in value. For all banks, for the entire year 1930, average loans and investments of banks were stated to be \$59,080 million.<sup>52</sup> If the true value were 10 percent less, the overstatement is \$5,908 million, an amount equal to 57 percent of stated bank capital for the year.<sup>53</sup> In other words, true bank capital would have been far less than half the amount stated. Moreover, these are average amounts, and many banks no doubt would have had much less real capital, and, in some cases, none. In a world before deposit insurance, bank capital was a reserve providing depositor protection. As that protection became increasingly fictitious in nature, a reasonable depositor response is the flight from deposits that characterized the crisis that began in very late 1930.

We wish to emphasize that this hypothesis regarding the banking crisis is tentative. Further research needs to be done. We have not exhaustively examined either financial records or historical accounts. Indeed, some evidence might be viewed as contradicting the hypothesis.<sup>54</sup> On balance, however, a preliminary examination of the available data supports the contention that the banking crisis was a result of the disequilibrium in labor markets that resulted from an adherence to the underconsumptionist pleas of President Hoover and leading industrialists. This is not to deny that the banking crisis aggravated the Great Depression. Quite the contrary. On this point, the evidence of Friedman and Schwartz is rather persuasive. The cause of the banking crisis, however, needs reexamination.

Whatever its source, the secondary wave of price declines had the effect of increasing the degree of maladjustment in labor markets, partly because they were accompanied by further drops in productivity, largely due to a decline in the nation's capital stock. Between 1929 and 1933, low levels of new investment in fixed capital produced a rapid deterioration in the capital stock, as much as one-fourth according to Kuznets—less, but still significant, if other sources are believed.<sup>55</sup> Collectively, these additional price and productivity shocks vitiated a downward adjustment in money wage rates that began in mid-1930. Between 1930 and 1931, average annual money wage rates declined by 6.5 percent; from 1931 to 1932, by 12.1 percent; and between 1932 and 1933, by 8.4 percent. All told, in the four years from 1929 to 1933, average annual money wage rates fell by about 27 percent, or slightly more than the decline in the price level (as measured by the consumer price index). However, this was insufficient to compensate for the combined impact of the price and productivity declines and the productivity adjusted real wage rate steadily advanced until, by 1933, real wages were almost 20 percent above their equilibrium level. (See table 4 for details.)

Referring again to the quarterly data on manufacturing employment and adjusted real wages, figure 3 shows quite clearly how 1929–33 differed from 1920–22. At the six-quarter mark in the two cycles, the 1920–21 downturn was the more severe of the two. In the 1920–22 case, the adjusted real wage rate

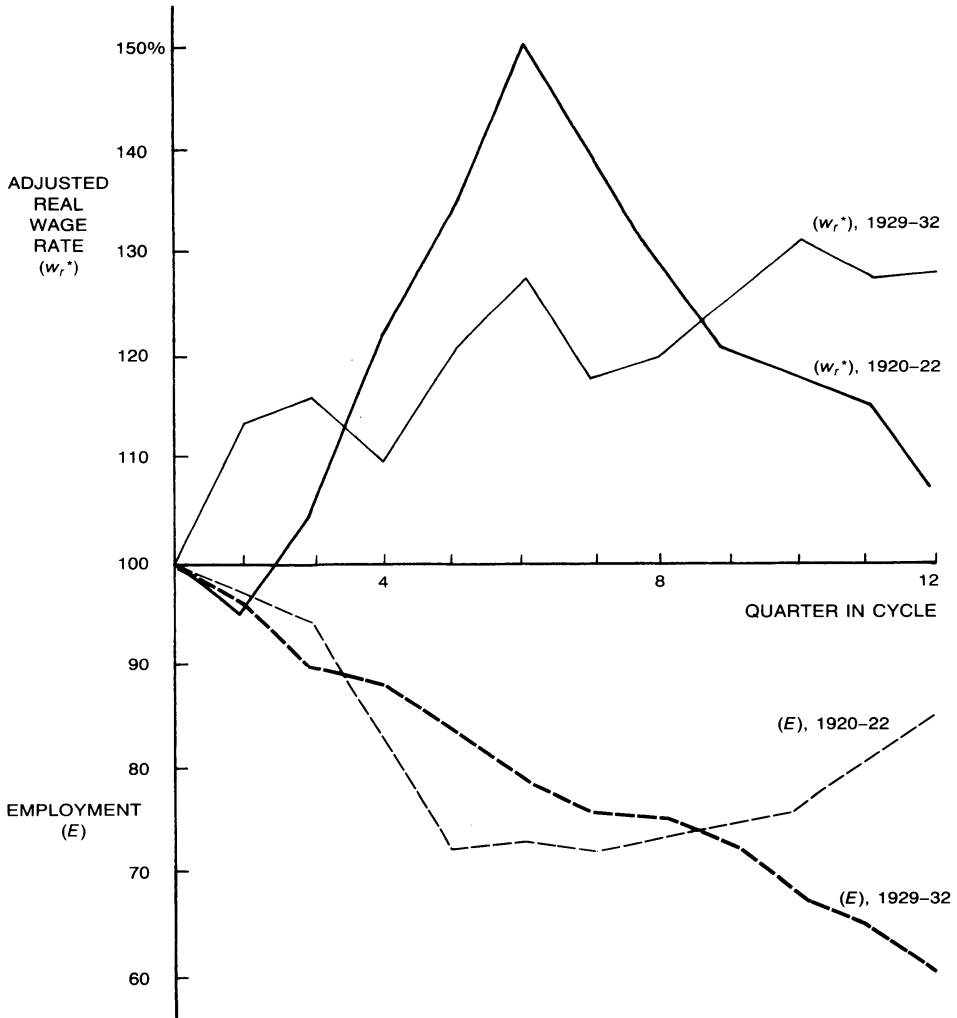


Figure 3. Comparison of 1920-22 Business Cycle with Early Years of Great Depression

began to fall at this point and continued to fall until equilibrium was restored and recovery achieved in 1923. The Great Depression, though, was marked by an aborted decline in the adjusted real wage rate. The critical point appears to be about seven to eight quarters into the Great Depression. In the seventh quarter, the adjusted real wage rate fell but, thereafter, it resumed a pattern of upward movement as the secondary price and productivity shocks impacted on the labor market. The result was that, after a brief slowing of the decline

in factory employment, the economy, so to speak, “fell off the shelf” as the year 1932 began. At the twelve-quarter mark in the two cycles, recovery from the 1920–21 downturn was well under way while, in the Great Depression, the economy was still spiralling downward.

Having reached bottom in 1932–33, the U.S. economy begins to turn upward over the next four years. Unemployment falls from its 1933 high of 24.9 percent to 21.7 percent in 1934, 20.1 percent in 1935, 16.9 percent in 1936, and 14.3 percent in 1937. The speed of the recovery was slow, certainly much less rapid than in 1920–22, and this raises the question, “Why?” After 1933, the productivity decline is reversed and there are modest rises in the price level. (See table 6.) However, after a long period of declining money wage rates, they begin to rise in 1934, and, as they do, the extent of economic recovery is diminished. A simple exercise that employs the multivariate analysis of the relationship between unemployment and adjusted real wage rates reported earlier reveals that *had the real wage rate (unadjusted for productivity change) remained at its 1933 level, the unemployment rate in 1937 would have been 2.4 percent, rather than 14.3*. But, the unadjusted real wage rate did not stay constant. Between 1933 and 1937, average annual money wage rates rose by 20.5 percent (about 5 percent a year), while the price level only increased by 10.8 percent. Were it not for an 18.4 percent rise in the annual average productivity of labor, the recovery would have been even more minimal.

Why the surge in money wage rates? This is not what would be expected during a period of extremely high unemployment rates. For example, between 1936 and 1937, average annual money wage rates rose by 9.9 percent, despite unemployment rates in the 15 percent range. Some obvious possible explanations come rather quickly to mind. The period beginning in 1933 was one of substantial social and political experimentation with institutional arrangements that have an impact on labor markets. In June 1933, toward the end of the first hundred days of the New Deal, the National Industrial Recovery Act

**Table 6**  
**Consumer Price Index, Unemployment Rate, Money Wages,**  
**Productivity, and Productivity-Adjusted Real Wages, United**  
**States, 1933–38**

		Wage or Price Index (1933 = 100)						
	Unemployment Rate	Consumer Prices	Money Wages		Productivity		Adjusted Real Wage	
			Annual	Hourly	Annual	Hourly	Annual	Hourly
1933	24.9 %	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1934	21.7	103.5	102.0	119.1	102.7	110.1	96.0	104.5
1935	20.1	106.1	106.7	123.3	108.7	113.7	92.5	102.2
1936	16.9	107.2	109.7	125.0	117.2	119.5	87.3	97.6
1937	14.3	111.1	120.5	142.1	118.4	119.3	91.6	107.2
1938	19.0	109.2	116.8	146.1	117.9	116.9	90.8	114.5

(NIRA) was passed establishing the National Recovery Administration (NRA). At least two provisions of that legislation seem pertinent to this discussion. First, one of the conditions that was established in order for businesses to qualify for the right to display the blue eagle symbol of the NRA was adherence to a minimum wage of 40 cents per hour. Since average hourly wage rates in manufacturing in 1933 were only 44 cents, it seems likely that the minimum wage provision pushed up the wage rates of many relatively low-wage workers. Admittedly, the minimum wage rates were not a legislative mandate and, technically, were voluntary on the part of business. However, in the face of a widespread campaign urging consumers to buy at the sign of the blue eagle, the pressure on businesses to abide by such voluntary practices was substantial.<sup>57</sup> Certainly, the behavior of money wage rate levels in 1934 is consistent with the notion that the NRA codes had a positive impact on money wage rates. At the bottom of the Great Depression, with unemployment rates nearing 25 percent, average hourly money wage rates in manufacturing rose from 44 cents to 53 cents, slightly more than a 20 percent increase.<sup>58</sup>

The second portion of the NIRA with significance to labor market behavior is section 7(a), a seemingly innocuous statement guaranteeing workers the right to organize and engage in collective bargaining with employers.<sup>59</sup> This was the forerunner of the National Labor Relations Act of 1935 (the Wagner Act), which established as a matter of national policy the collective bargaining rights of workers. Presumably, an enhanced labor union presence will have an impact on wage levels in the unionized areas of employment. This seemingly was the expectation of the Congress. The second paragraph of section 1, the "Policy and Findings" portion of the law, reads:

The inequality of bargaining power between employees who do not possess full freedom of association or actual liberty of contract and employers who are organized in the corporate or other forms of ownership association substantially hinders and affects the flow of commerce, *and tends to aggravate recurrent business depressions, by depressing wage rates and the purchasing power of wage earners in industry* and by preventing the stabilization of competitive wage rates and working conditions within and between industries (emphasis added).<sup>10</sup>

Congress was obviously under the influence of the underconsumptionist ideas of the time. However, there may be a substantial disparity between legislative intent and actual events. What evidence is there that the enactment of legislation such as the Wagner Act had any significant impact on wage levels? This issue is often debated, and there is a substantial literature dealing with the question of the effect of unionism on wage levels.<sup>61</sup>

Much of that literature focuses on the impact of unions on wages in the unionized sector of the labor market relative to wages in the nonunion sector. To give this research a greater historical dimension, consider the behavior since

1919 of a comprehensive measure of wage rates—compensation of full-time equivalent employees—in those private sector industries traditionally regarded as being unionized (mining, construction, manufacturing, and transportation, communications, and public utilities) vis-à-vis typically nonunionized industries (wholesale and retail trade, services, and finance, insurance, and real estate). The wage differential between these sectors, expressed as a percentage of the average wage for all workers (thus converting it into a relative wage differential), shows no trend in the decade 1919–29, averaging 4.97 percent and ranging from a low of a negative 1.91 percent (nonunion wages exceeded union wages in 1922) to a high of 7.22 percent in 1919. (See table 7.)

Over the four years that follow, the differential is negative in three, including a minus 5.89 percent in 1932. From that point, there is a consistent increase until the 1919 high is surpassed in 1936 (at 8.04 percent), followed by a 10.48 percent figure in 1937. This pattern of increases is not a transitory phenomenon.

**Table 7**  
**Union/Nonunion Wage Differential as a Percentage**  
**of Average Compensation, Full-Time Equivalent**  
**Employees, 1919–41**

	<i>Differential</i>
1919	7.22 %
1921	5.77
1922	– 1.91
1923	5.65
1924	6.47
1925	3.97
1926	3.19
1927	6.62
1928	7.15
1929	5.60
1930	3.87
1931	– 0.23
1932	– 5.89
1933	– 0.73
1934	1.06
1935	3.65
1936	8.04
1937	10.48
1938	5.83
1939	10.32
1940	14.13
1941	23.17

Source: *Historical Statistics of the United States*, series D-685-719.

Note: In order to take account of changes in industrial mix through time, 1954 weights are used throughout to standardize the estimates of compensation per full-time equivalent employee. Thus, these estimates abstract from shifts in industrial structure.

By 1941, the measure of this differential has opened out to 23.17 percent. The trend continues after World War II to 24.45 percent in 1950 and 33.05 percent in 1960.<sup>62</sup> Formal statistical tests of these trends indicates a substantial change in the pattern of behavior of the union/nonunion wage differential, commencing at approximately the time the nation's basic policy with respect to trade unions shifted from being one of reluctant toleration to one of legal encouragement.

While this evidence is suggestive, a more formal statistical analysis would be reassuring. Again, multivariate statistical techniques are employed to measure the relationship between money wage rates, on the one hand, and prices, productivity, and the extent of unionization in the labor force on the other.<sup>63</sup> The results confirm the existence of a statistically significant positive relationship between the portion of the labor force that is unionized and the level of money wage rates. Knowing this relationship, and knowing the impact of changes in money wage rates on unemployment (from the earlier statistical analysis of the causes of unemployment), changes in the extent of unionism can be translated into estimated changes in unemployment.<sup>64</sup> Table 8 presents the results of doing this for the post-1933 period. By 1938, the expansion of unionism brought about by the legislation of the mid-1930s is estimated to have caused the unemployment rate to be at least five percentage points greater than it otherwise would have been.

The rise in wage rates and unemployment attributable to the increase in trade unionization is not the only significant structural change occurring at this time. Various government policies were contributing to increasing labor costs in ways not measured by the standard wage rate statistics employed in our discussion. This was the era in which the great explosion of supplements to wages and salaries began. In 1929, supplements to wages and salaries were 1.2 percent of the total wage bill. Little change occurred in this relationship through 1935. In that year, supplements were 1.4 percent of the annual wage

**Table 8**  
**Estimates of Induced Unemployment, United States, 1934–40**

	<i>Cumulative Unemployment Attributable to</i>		
	<i>Growth in Unionization</i>	<i>Public Retirement System</i>	<i>Unemployment Compensation Costs</i>
1934	0.40%	0.00%	0.00%
1935	0.91	0.00	0.00
1936	1.35	0.00	0.43
1937	4.65	0.60	1.09
1938	5.73	0.62	1.58
1939	6.28	0.66	1.55
1940	6.14	0.75	1.58

bill. In 1936, though, they rose to 2.4 percent; in 1937, to 4.2 percent; and, in 1938, to 5.1 percent.<sup>65</sup> At that point, supplements stabilized at about 5 percent of the total wage bill. The source of the rise in supplements is primarily in the form of employer contributions for social insurance. In 1935, they accounted for 25 percent of all supplements while, in 1938, they were 71 percent of supplements. Two new social programs old-age survivors insurance and unemployment insurance, explain this rise. The former represents about 17 percent of supplements in 1938, while the latter accounts for 43 percent of supplements. Thus, the newly emerging public retirement system produced about an 0.85 percent increase in wage costs, while the unemployment insurance system added another 2.20 percent. With the aid of the statistical model of unemployment described earlier, the impact on unemployment of these changes can be estimated.<sup>66</sup> Year-by-year calculations are shown in table 8. They indicate that, by the late 1930s, the impact of the increases in employer contributions for social insurance was to create about an addition. 2.2 percentage points of unemployment.

After four successive years of declining unemployment rates, 1938 saw a sharp rise in that statistic, from 14.3 to 19.0 percent. Various explanations for this reversal have been advanced, including a monetarist one focusing on the Federal Reserve Board's actions in increasing reserve requirements<sup>67</sup> and a fiscalist hypothesis which emphasizes tax rate increases and attempts at balancing the federal budget.<sup>68</sup> These are interesting possibilities, but there is an alternative of a different nature, namely, that the downturn of 1938 was, in large part, the product of movements in money wage rates in the two preceding years, particularly in 1937.<sup>69</sup> In that year, money wage rates rose by from 10 to 14 percent, depending on the wage measure used. A simple set of calculations illustrates the impact of these changes. If it is assumed that real wage rates had remained at their 1936 levels through 1938, not only would recovery have continued, but the unemployment rate would have been less than 10 percent in 1938.<sup>70</sup>

In retrospect, the von Misesian-classical framework for the interpreting macroeconomic events works remarkably well in explaining the events of the Great Depression. Just how well is indicated in figure 4, which compares the actual yearly unemployment rates with the values predicted by the statistical analysis used to evaluate the von Misesian-classical hypotheses. Clearly, these hypotheses will not only account for the initial decline in employment, but they also suggest why recovery from the Great Depression was so slow and why the economy experienced a recession in 1938.<sup>71</sup>

To summarize, basically, the decade of the 1930s can be characterized as a period in which the role of money wage rates as a determinant of unemployment was denigrated. Businesspeople, economists, and legislators often behaved as if money wage rates could be maintained with impunity at higher than



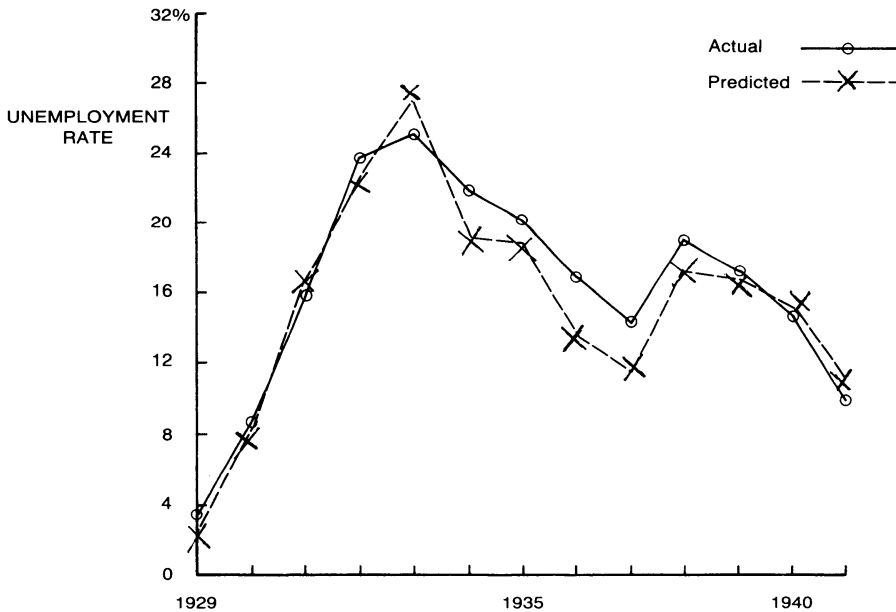


Figure 4. Unemployment during the Great Depression

von Misesian-classical equilibrium levels. That wage rates were in excess of equilibrium would seem to be beyond dispute. If the 1929 wage levels are viewed as being equilibrium ones, the data shown in table 9 indicate that wage rates were in substantial disequilibrium throughout the decade, initially largely as the result of exogenous shocks of the productivity and price level variety, but later as the product of changes in labor market institutions that imparted an upward bias to movements in money wage rates. The end result was a decade of misery for those who experienced the unemployment that ensued. However, for the more than 80 percent (on average) of the labor force who had jobs, life was not that bad. Average annual real wages rose by 10 percent between 1929 and 1939, and hourly real wage rates for unskilled labor increased an astounding 51 percent.<sup>72</sup> This occurred during a period in which real per capita gross national product grew by only 2 percent. A strong argument can be made that there was a redistribution of income from one sector of the labor force to another during the 1930s. More importantly, it appears that money wage levels did matter, and that the widespread belief that they did not had a traumatic impact on the U.S. economy and, ultimately, on the character of economic thinking.<sup>73</sup>

**Table 9**  
**Deviation of Money Wage Rate from Equilibrium,**  
**United States, 1929–41**

	<i>Annual</i>	<i>Hourly</i>
1929	0.0%	0.0%
1930	6.7	5.0
1931	11.4	9.7
1932	18.5	10.8
1933	17.0	19.6
1934	13.2	25.2
1935	8.1	22.4
1936	1.0	16.6
1937	5.1	28.3
1938	4.5	30.1
1939	4.0	28.9
1940	2.6	28.0
1941	4.1	28.5

Note: The equilibrium wage is viewed as the wage that would maintain the 1929 relationships between money wages, productivity, and prices.

### **Historical Example (3): The Great Depression in Britain**

The Great Depression was by most measures nearly as severe in Europe as in the United States. Is the von Misesian framework useful in explaining the European experience? The answer is clearly “Yes,” and is confirmed by econometric testing. A large portion of the fluctuations in unemployment in a dozen European nations for which data are available can be explained by a model incorporating measures of changes in wages, prices, and productivity. Of special interest in this regard is the British experience, particularly since the economic environment of Great Britain at this time fostered the intellectual development of the Keynesian macroeconomic orthodoxy that in turn led to the neo-Keynesian or modern progressive view that “wages do not matter.”

While ultimately the rising unemployment in Britain stemmed from the same labor market disequilibrium conditions that afflicted the United States, the scenario unfolded somewhat differently. To begin, Britain after 1920 was subject to very high unemployment, with the rate falling below 10 percent only in one year, 1927.<sup>74</sup> Yet for all the unemployment, real output rose over the decade at a rate that compared rather favorably with past British historical experience.<sup>75</sup> As Daniel Benjamin and Louis Kolchin have demonstrated, however, the opportunity cost of being unemployed was sharply reduced by extremely generous unemployment insurance payments enacted during this period.<sup>76</sup> Our own statistical analysis leads us to concur with Benjamin and Kolchin’s endorsement of the views of Edwin Cannan, Lionel Robbins, Jacques Rueff, and

William Beveridge: namely, that the dole caused the unemployment problem, rather than exchange rate policies, deficiencies in British entrepreneurship, or other factors (as argued by Keynes and others).<sup>77</sup> In addition, however, Benjamin Anderson argues cogently that high wages imposed by postwar union militancy aggravated unemployment; our statistical findings are consistent with that viewpoint.<sup>78</sup>

While the Benjamin and Kolchin evidence convincingly explains why unemployment in the late 1920s typically exceeded 10 percent rather than perhaps 3 percent as was the case before 1913, their evidence does not explain why the unemployment rate doubled to more than 20 percent by 1932. The dole was not made more generous; indeed it was reduced as the Depression proceeded. Nor can one explain the rise in the unemployment rate in terms of evidence of underconsumption. It is interesting to note that between 1927 and 1932, when unemployment more than doubled, real consumption expenditures per capita actually *rose*.<sup>79</sup>

The von Misesian framework, by contrast, does explain most of the rise in unemployment. As table 10 indicates, however, the proximate causes of the labor market disequilibrium were rather different in Britain. While Hoover and other progressives delayed the adjustment of money wages in the United States, at least a partial wage adjustment eventually occurred that prevented the Depression from being far worse. In Britain, however, money wages were indeed inflexible downward, even in 1932 (explaining the emphasis on wage inflexibility in Keynes's work). Prices, however, were more flexible, falling significantly. Thus, real wages rose sharply, causing unemployment.

**Table 10**  
**Wages, Prices, and Productivity, United States and Britain, 1929–38**

	<i>Money Wages</i>	<i>Prices</i>	<i>Real Wages</i>	<i>Productivity</i>	<i>Adjusted Real Wages</i> <sup>a</sup>
<i>United States</i> <sup>b</sup>					
1929	100	100	100	100	100
1933	73	75	97	83	117
1938	86	82	104	99	105
<i>Great Britain</i>					
1929	100	100	100	100	100
1933	95	85	112	111	101
1938	106	100	106	116	91

Sources: For the United States, see text. Britain: E.H. Phelps Brown and Margaret Browne, *A Century of Pay* (London: Macmillan, 1968); B.R. Mitchell, *Abstract of British Historical Statistics* (Cambridge: Cambridge University Press, 1976).

Note: 1929 = 100.

<sup>a</sup>Real wages divided by productivity.

<sup>b</sup>The annual wage data referred to in text are used.

Britain's comparative wage rigidity no doubt reflected the fact that it (unlike the United States at this time) had strong anticompetitive elements in labor markets, notably large and militant labor unions which only a few years earlier (1926) had called a general strike. Britain's deflation probably reflected a failure to allow normal increases in the stock of money, which, in turn, was likely the result of a futile attempt by the central bank to deflate, in order to maintain gold convertibility at \$4.86 per pound. In light of even greater deflation in the United States, this British attempt was probably doomed, but the resultant unanticipated real wage increases contributed to higher unemployment.

To compare the United States and Britain during the downturn in the early 1930s, in both nations unexpected declines in prices contributed to an enhancement in real wages that aggravated the unemployment problem. In the United States, money wages were strictly downward for an inordinate period owing to the exhortations of Hoover and some members of the industrial elite, but belatedly money wage adjustments occurred. In Britain, however, these adjustments never occurred to any major extent, contributing significantly to the Depression. In Britain, labor productivity rose, in contrast to the United States and in contrast to the commonly accepted notion that downturns inevitably lead to a decline in aggregate demand which in turn causes a decline in productivity as labor adjustments lag output changes.

It is interesting that real output per person rose in Britain in most years in the thirties. Indeed, measured by output changes, there was no real Great Depression in Britain at all. The Depression was largely confined to the labor market. Unlike the United States, Great Britain did not stand completely still with respect to real output growth in the thirties.<sup>80</sup> Unemployment was high in Britain not because of demand deficiencies, but rather because monopoly elements in labor markets combined with inappropriate public policies (deflationary monetary policies and excessive unemployment compensation payments) to cause labor market disequilibrium.

Recovery came quicker and more robustly in Britain than in the United States. Whereas unemployment in Britain by 1937 had returned to the natural or normal rate of the 1920s, in the United States, unemployment was still more than three times the normal rate of the twenties.<sup>81</sup> The reason is comparatively simple: money wages rose much faster in the United States, especially for industrial workers, than in Britain. Indeed, real wages fell in Britain as the same comparative money wage rigidity combined with prices that rose to the levels prevailing in the twenties. In the United States, widespread new forms of government labor market intervention and growing anticompetitive institutional arrangements (labor unions) caused the real wage increase. Britain either already had these institutions and interventions established or did not institute them on a widespread scale as part of a progressive reform of the economy. As a consequence, Britain had returned to normalcy fully a year before Hitler invaded Poland.

## Historical Example (4): The 1960s

Move forward roughly two decades in time. A.W. Phillips has observed his “loops,” Richard Lipsey has refined them empirically, and Paul Samuelson and Robert Solow have given the relationship their blessing.<sup>82</sup> The Phillips curve lives and neo-Keynesianism is in its prime as a new U.S. political administration assumes the reins of power in 1961. What follows has often been interpreted, erroneously, as the finest example of “progressive” economic policy formulation at work. In reality, the period 1961–70 is a classic instance of the von Misesian-classical model in operation. Beginning in 1961, the sum of the rates of change in productivity and prices exceeds the rate of change in money wage rates as unanticipated price inflation is introduced into the economy in a systematic fashion. By today’s standards, the amount of inflation in the 1960s seems minor. However, the important thing is its unanticipated character. Between 1961 and 1965, the consumer price level rises by about 5 percent and the sum of the rates of change in productivity and prices consistently exceeds the rate of change in money wage rates. By 1965, the productivity-adjusted real wage rate has drifted downward from its 1961 level by 3.3 percent. The decline in the adjusted real wage rate creates a profit wedge in favor of business and produces a 23 percent rise in the corporate profit share of national income.<sup>83</sup>

All this occurred because of the operation of a money illusion effect in labor markets. The real wage rate paid to labor rose less rapidly than did labor’s average productivity, redistributing income from employees to employers. The result was an expansion of employment opportunities and a fall in the unemployment rate, with a lag of about one year.<sup>84</sup>

After 1965, though, the money illusion disappeared and the long-run labor market adjustment mechanism took hold. The rate of change in money wage rates then exceeded the sum of the rates of changes in prices and productivity, despite an escalation of the rate of price inflation to almost 5 percent a year. In 1969, the productivity-adjusted real wage rate surged back to its 1961 level, the corporate profit share of national income fell sharply; in 1970, a year later, the unemployment rate averaged 4.9 percent, 1.4 percentage points higher than in 1969. A graphic representation of these changes is shown in figure 5.

The 1961–69 experience is instructive. It illustrates how a mild burst of unanticipated inflation (about 5 percent between 1961 and 1965) can be used to push the unemployment rate temporarily below its equilibrium level by redistributing real income from workers to employers. However, the reduced unemployment is only temporary. As the longer-term labor market adjustment begins to operate, the income redistribution is reversed and the unemployment rate returns to a level that is more capable of being maintained on a permanent basis, that is, toward the equilibrium, or natural, rate of unemployment.

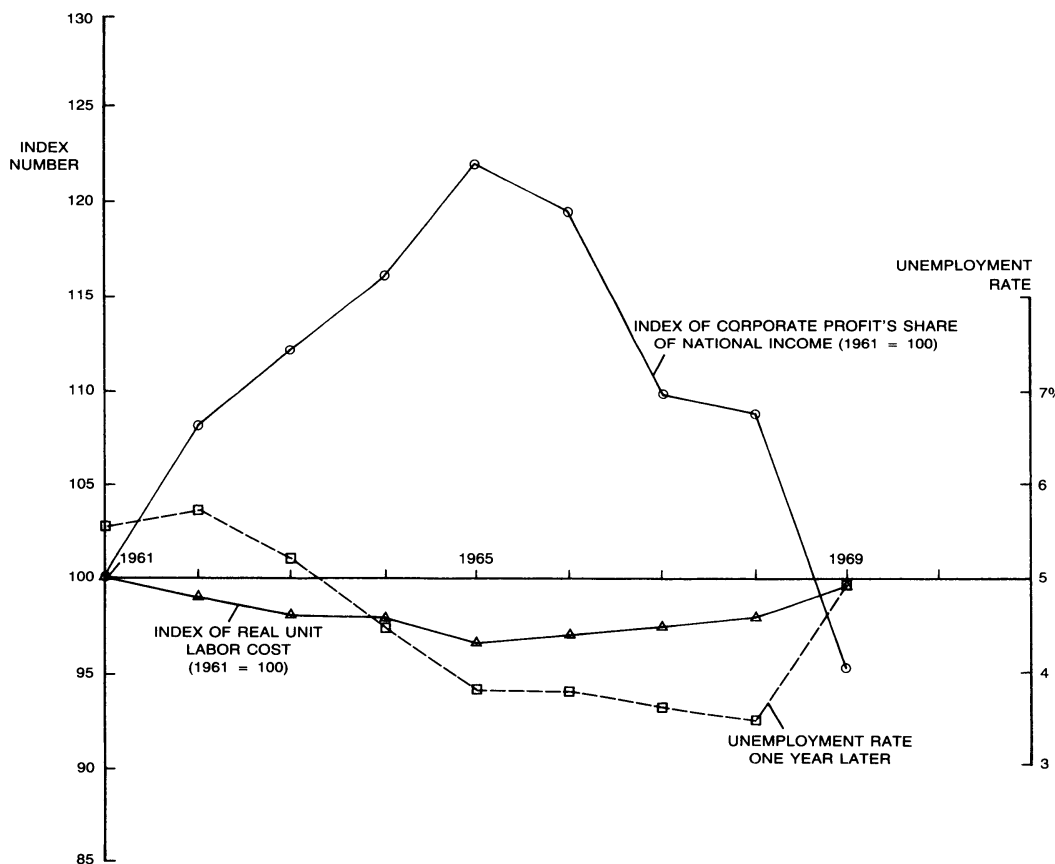


Figure 5. The Economics of the 1960s

### Historical Example (5): Stagflation in the 1970s and 1980s

As the United States entered the decade of the 1970s, the phenomenon of stagflation emerged, a state of affairs in which, despite persistent amounts of price inflation, the unemployment rate remained at levels substantially greater than those occurring in the halcyon days of the mid-1960s, contradicting the predictions of neo-Keynesian macroeconomic thinking.<sup>85</sup> However, the events of this period are thoroughly compatible with the von Misesian-classical conception of economic affairs. The formal statistical analysis based on this framework explains the behavior of the unemployment rate in both the 1960s and 1970s quite well in figure 6. More specifically, unemployment rose in 1970 (4.9 percent) and 1971 (5.9 percent) in the face of an upward movement in

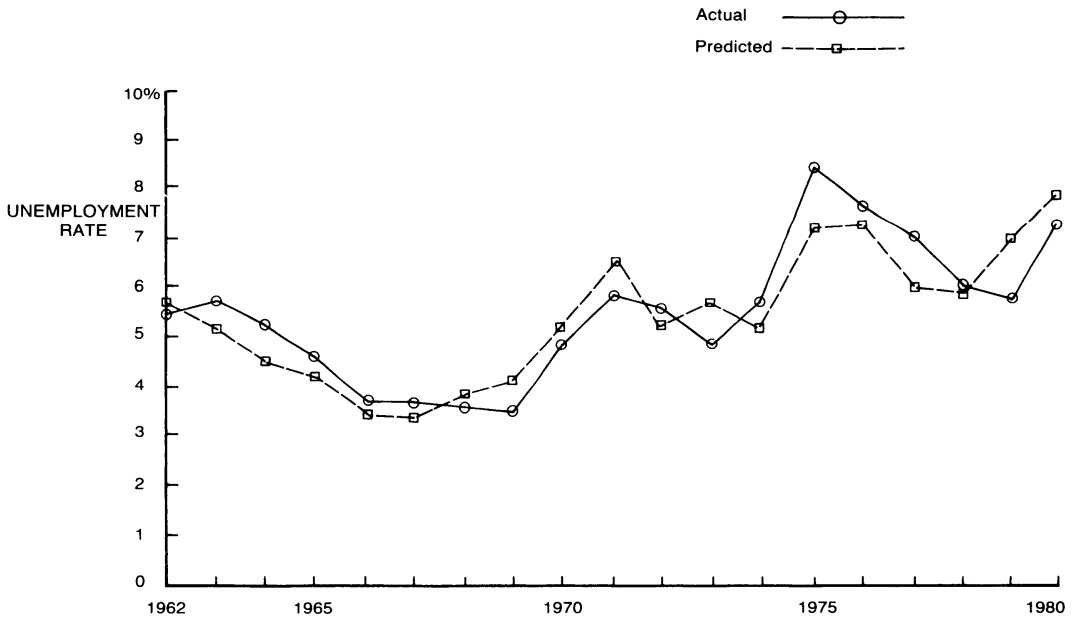


Figure 6. Unemployment, 1962–80

prices, measured by the implicit price deflator for gross national product (4.5 percent in 1970 and 4.4 percent in 1971). The source of the increase in unemployment was a quickening of the pace of money wage rate increases as inflationary expectations became pervasive in the economy.

Ordinarily, increases in unemployment produce a marked slowing of the rate of increase in money wage rates, but not in the early 1970s. Between 1969 and 1973, money wage rates advanced at an average of 7.1 percent a year, with a minimum of 6.5 percent in 1972, and a maximum of 8.0 percent in 1973. The steady escalation of the rate of price inflation during the 1960s was by then being reflected in the labor market in the form of pronounced inflationary expectations. All through the 1970s, the rate of increase in money wage rates showed a general upward trend until, at the end of the decade, it exceeded 10 percent. Further, the rate of increase in money wage rates began to diverge rather systematically from the sum of the rates of change in productivity and prices. Table 11 shows the data for the 1960–69, 1969–73, and 1973–79 business cycles, measuring from peak to peak. These data suggest an upward drift in the equilibrium real wage rate and a corresponding increase in the equilibrium, or natural, rate of unemployment, similar to the shift introduced in the 1930s.<sup>86</sup>

A rather likely explanation for the rise in the equilibrium unemployment rate is that workers' labor supply responses were changing in a fashion that affected the intensity of their job search effort, once they became unemployed, as well

**Table 11**  
**Rates of Change in Money Wage Rates, Prices, and**  
**Productivity, United States, 1960–79**

	<i>Mean Annual Rate of Change in</i>	
	<i>Money Wage Rates</i>	<i>Prices plus Productivity</i>
1960–69	5.3%	5.3%
1969–73	7.1	6.9
1973–79	9.0	8.6

as their reservation wage (the wage rate below which they will not accept employment but will prolong the search process). A major factor in this regard is the existence of substantial unemployment compensation programs. The evidence is clear that the availability of unemployment compensation programs is positively related to the level of unemployment.<sup>87</sup> Also, there is a sizable body of research substantiating the premise that there is a predictable work incentive response at the level of the population as a whole to the availability of transfer payment income. Carl Brehm and Thomas Saving demonstrate this with respect to general assistance payments, as does Hirschel Kasper.<sup>88</sup> Further, in a more specific sense, the work of Benjamin and Kolchin, dealing with Britain between the two World Wars, is particularly supportive of this argument.<sup>89</sup> The critical concept is that accessibility to unemployment compensation benefits in the United States has been rising. Over the course of the 1961–69 business cycle, about two-thirds of the civilian labor force was in employment covered by unemployment compensation systems. Contrast this with the almost 80 percent in covered employment in the years 1974–79.<sup>90</sup>

In addition to unemployment compensation benefits, there are other social transfer payment systems to consider. The food stamp program did not exist in the 1960s. By the end of the 1970s, payments under this program amounted to over \$6 billion annually.<sup>91</sup> Vendor medical payments more than quadrupled during the 1970s. All told, social welfare expenditures in the United States rose from being about 13 percent of personal income in 1960 to almost one-fourth of personal income at the end of the 1970s.<sup>92</sup> Such a growth in the relative importance of “safety-net” expenditures alters people’s attitudes with respect to what is an acceptable job, producing an upward drift in the equilibrium unemployment rate.

### **Historical Example (6): Fourth Quarter 1982**

Beginning in the second quarter of 1981, the rate of price inflation in the United States showed signs of declining. From mid-1981 to mid-1982, the annual



inflation rate measured by the implicit price deflator for gross national product was 5.5 percent, compared to 9.5 percent in the previous year.<sup>93</sup> The drop was particularly acute in the first quarter of 1982, when the inflation rate fell to 3.8 percent. In this quarter, the rate of change in money wage rates was 7.3 percent, down somewhat from the previous year, but not by as much as the fall in the rate of price inflation. Since the productivity change in this quarter was – 1.0 percent, the productivity-adjusted real wage rate rose sharply, portending a future rise in unemployment. Experimentation reveals that the lag between changes in the productivity-adjusted real wage rate and changes in unemployment is about three quarters. Thus, the behavior of money wages, prices, and productivity in the first quarter 1982, interpreted in the von Misesian-classical framework, predicted a significant rise in unemployment in the fourth quarter of 1982. The reality? The unemployment rate for all civilian workers rose from an average of 10.0 percent in the third quarter to 10.7 percent in the fourth quarter of 1982.<sup>94</sup>

What happened in 1982 is simple. An unanticipated decline in the rate of price inflation produced an upward movement in the productivity-adjusted real wage rate, just as the unanticipated decline in the price level between 1929 and 1930 produced a similar rise. Subsequent to this, labor market adjustment began to occur and the rate of change in money wage rates slowed from 7.3 percent to 5.6 percent by the fourth quarter of 1982. Accompanied by significant improvements in productivity, this had the effect of actually reducing the productivity-adjusted real wage rate, suggesting a decline in unemployment beginning in the first half of 1983.

## **Conclusion: Wage Rates Do Matter**

The primary theme of this extended article is straightforward: “The level of money wage rates is a vital factor in macroeconomic affairs.” This is not a new discovery. At one time, it was the prevailing orthodoxy. Alfred Marshall, Irving Fisher (at times), A.C. Pigou, Lionel Robbins, Jacob Viner, Alvin Hansen rather early on, and even William H. Beveridge, among others, expounded it.<sup>95</sup> But, it fell out of favor in the 1930s and, in the years since, has had little popularity within the mainstream of the economics profession, whose leaders espoused what von Mises called the “progressive” view in his 1953 remarks cited earlier. The view that wages do not matter spread far beyond the economics profession proper. It is a convenient attitude for political figures who do not wish to alienate the labor union establishment; it is one of those intuitively appealing propositions for many intellectuals with little training in economics. Popularity, though, is no substitute for logic and evidence. Evaluated in terms of the latter, the popular view that wages do not matter fares badly and, more importantly, the von Misesian-classical hypotheses appear to offer meaningful

and profound insights into the nature of a wide variety of historical incidents in the United States during the twentieth century. It is unfortunate that these insights have largely been ignored, beginning with the 1930s.<sup>96</sup> Much mischief has been done by a failure to appreciate what the von Misesian-classical framework has to contribute, which takes us to a secondary theme of this article.

In recent remarks on the occasion of the Keynes Centenary published in *The Economist*, John R. Hicks makes the remarkable statement, "The ship needs continual steering."<sup>97</sup> This is a classic remark, especially from one who earlier in his career appeared to feel otherwise, in that it embodies quintessentially the refusal by many intellectuals to recognize the existence of a definable equilibrium or natural rate of unemployment to which the economy continually tends. The existence of this blind spot has had serious consequences. In the United States, it has contributed to the growth of the idea that the U.S. economy can be managed or fine-tuned with great precision in the short run. That philosophy had been confidently extolled at the start of the 1960s and it was clearly the prevailing mood all through that decade and the next.

However, looking back on this era from the perspective of the early 1980s, it is easy to question whether the optimism of the early 1960s was warranted. Compare 1980 to 1961. The unemployment rate in 1961 was 6.7 percent, to that time the highest rate for the post-World War II period. In 1980, it was 7.1 percent and rising, but still lower than it had been in 1975 and 1976. As for inflation, in 1961, the rate of price inflation was 1.0 percent. In 1980, it was 11.1 percent and had been as high as 13.0 percent in 1979. Real economic growth was adequate, but not spectacular by historical standards, running at 3.55 percent per year, just slightly less than the long-term historical average of about 3.6 percent a year. Even the interval of greatest economic growth in this period, 1961–69, showed only a rate of growth of 4.7 percent, compared, for example, to the 6.0 percent that marked a similar period, 1921–29. Or, take the period 1921–41, embracing the Great Depression of the 1930s. The real growth rate in that interval was slightly greater (3.60 percent) than it was in the two decades under discussion here.<sup>98</sup>

The rather mixed record of success in "managing" the U.S. economy between 1961 and 1980 raises the issue of whether, given the existence of an equilibrium rate of unemployment, short-term manipulation and control of economic variables have much to offer from the standpoint of improving economic performance. Perhaps, it may be postulated, the economy would do just as well, or even better, if national economic policy focused more on providing conditions that are conducive to long-term economic growth, rather than emphasizing the control of short-term economic conditions. To explore that possibility, the actual performance of the U.S. economy in the period 1961–80 can be compared with the results of a simulation of the economy that assumes no attempt at managing it in the short run, except for a 2 percent fixed rate of growth in the monetary base.<sup>99</sup>

Table 12

**Comparison of Actual Performance of Economy with Simulation Assuming 2 Percent Rate of Growth in Monetary Base, United States, 1961–80**

<i>Performance Component</i>	<i>Actual Performance</i>	<i>Simulated Performance</i>
Real growth rate	3.55%	3.57%
Average unemployment rate	5.22	5.38
Average rate of price inflation	4.73	0.78

A comparison of the results of the simulation with the actual performance of the economy is shown in table 12. The only substantial difference is in the rate of price inflation. Two decades of attempts at short-term management of the U.S. economy produced about 4 percent a year more price inflation with no appreciable effect on unemployment or the real growth rate, the latter two being determined by the underlying structural realities of the economy, that is, the forces that determine the natural rate of unemployment within the context of the von Misesian-classical theoretical framework. With a zero rate of growth in the monetary base, the comparison would be even more striking. Productivity gains would have been reflected in the form of falling prices and there would have been an era of price deflation (over 1 percent a year) rather than price inflation with, of course, little difference in the real level of economic performance.

Lest the foregoing remarks suggest that the rate of price inflation is totally irrelevant to the time path of the real economic magnitudes of a society, it should be emphasized that the simulations that have been reported assume no feedback between the price level and the processes of capital accumulation and technological change. What is evaluated is the usefulness of short-term attempts at managing the economy, given the level of labor productivity in the system. In the longer run, persistent price rises, especially an increasing rate of price inflation, are likely to have negative impacts on levels of saving and, ultimately, investment, thereby shifting a society to a lower economic growth path. For example, it is probably no accident that over the period 1973–82, productivity in the nonfarm business sector of the U.S. economy increased by less than 5 percent. And, for the last five years of that period, it actually declined very slightly.<sup>100</sup>

One last concluding remark. Von Mises, and others like him, were correct in rejecting the “progressive” view that the level of money wage rates does not matter. Not only is it important but, in conjunction with the levels of prices and productivity, it is the key to understanding patterns of variation in aggregate levels of employment and output. With the aid of the von Misesian-classical analysis, such disparate phenomena as high unemployment rates, low unemployment rates,

high unemployment accompanied by inflation (stagflation), low unemployment in unison with inflation, swift economic recoveries, and aborted economic recoveries can be understood in an intelligent fashion. No special economics are needed for each situation. What other theoretical apparatus can make the same claim?

# Statistical Appendix

## The Unemployment Relationship

The unemployment rate ( $U$ ) is explained in terms of variations in the levels of money wage rates, prices, and productivity—the factors that determine the productivity-adjusted real wage rate ( $w_r^*$ ). For the period 1901–41, the following relationship has been estimated using multiple regression analysis:

$$\begin{aligned}
 U = & 4.07 + \underset{(0.08)}{0.73} (w_r^*{}_{t-1})_A + \underset{(0.04)}{0.33} (w_r^*{}_{t-1})_H + \underset{(0.17)}{0.07} (\dot{W}_t)_A \\
 & + \underset{(0.10)}{0.28} (\dot{W}_t)_H - \underset{(0.18)}{0.62} (\dot{\pi}_t)_A - \underset{(0.18)}{0.03} (\dot{\pi}_t)_H - \underset{(0.17)}{0.88} (\dot{P}_t), \\
 R^2 = & 0.92, \quad \bar{R}^2 = 0.91, \quad D-W = 1.25 \qquad (1)
 \end{aligned}$$

where  $\dot{W}$  denotes the rate of change in money wage rates,  $\dot{\pi}$  the rate of change in average labor productivity, and  $\dot{P}$  the rate of change in the price level. The subscripts  $A$  and  $H$  denote, respectively, annual and hourly measures of wages and productivity.<sup>101</sup> The consumer price index is used as the measure of price level changes. The values in parentheses beneath the regression coefficients are the standard errors associated with the coefficients.

For the years 1949–80, a unified data set containing all the necessary information is available from the Bureau of Labor Statistics. Using it, the following regression equation has been estimated:

$$\begin{aligned}
 U = & 4.79 + \underset{(0.12)}{0.72} (w_r^*{}_{t-2}) + \underset{(0.18)}{0.39} (\dot{W}_{t-1}) - \underset{(0.11)}{0.46} (\dot{\pi}_{t-1}) \\
 & - \underset{(0.16)}{0.32} (\dot{P}_{t-1}) \\
 R^2 = & 0.72, \quad \bar{R}^2 = 0.68, \quad D-W = 1.57 \qquad (2)
 \end{aligned}$$

In both regressions,  $w_r^*$  is expressed as a deviation from the mean value of its index number. In equation 2, all independent variables are lagged one year.

### **The Money Wage Adjustment Relationship, 1901–41**

The von Misesian-classical framework implies that changes in money wage rates will reflect exactly changes in prices and productivity over time. A multiple regression equation embodying these relationships and a variable measuring the fraction of the labor force that is unionized has been estimated for the annual and hourly wage series used in the 1901–41 employment model for those same years. The results are:

$$W^H = 0.0114 + 0.622 \dot{\pi}_H + 0.628 \dot{p} + 0.132 U^* \\ (0.157) \quad (0.059) \quad (0.043) \\ R^2 = .82, \quad \bar{R}^2 = .80, \quad D-W = 1.66 \quad (3)$$

and

$$W^A = 0.0157 + 0.381 \dot{\pi}_A + 0.431 \dot{p} + 0.113 U^* \\ (0.189) \quad (0.071) \quad (0.052) \\ R^2 = .61, \quad \bar{R}^2 = .58, \quad D-W = 0.97 \quad (4)$$

where  $W$  denotes the level of money wage rates,  $\dot{\pi}$  is the rate of change in the average productivity of labor,  $\dot{p}$  is the rate of change in the wholesale price index,  $U^*$  is the fraction of the labor force that is unionized, and the subscripts  $H$  and  $A$  indicate, respectively, hourly and annual measures of wages and productivity.<sup>102</sup>

## Notes

1. *Historical Statistics of the United States*, part 1 (Washington, D.C.: 1975), series D-86 for unemployment rates and series F-32 for gross national product. Throughout this article, the standard data series for unemployment rates are used, with recognition that there has been a challenge to the validity of those data during the Great Depression years. See Michael R. Darby, "Three-and-a-Half Million U.S. Employees Have been Misaid: Or An Explanation of Unemployment, 1934-1941," *Journal of Political Economy* 84, 1976.

2. A.C. Pigou, *Industrial Fluctuations*, 1st ed. (London: Macmillan, 1927), p. 176.

3. A.C. Pigou, *Theory of Unemployment* (London: Macmillan, 1933), p. 252. Pigou makes his arguments in a variety of other places. For example, see his "Real and Money Wage Rates in Relation to Unemployment," *Economic Journal* 47, 1937, and "Money Wages in Relation to Unemployment," *Economic Journal* 48, 1938.

4. It is perhaps something of an exaggeration to ascribe this position entirely to Pigou. A number of other economists espoused similar views. Recognizing that the list is incomplete, we cite a few, beginning with Jacob Viner, *Balanced Deflation, Inflation, or more Depression* (Minneapolis, Minn.: University of Minnesota Press, 1933), especially pp. 12-13. See also W.H. Beveridge, *Causes and Cures of Unemployment* (London: Longmans, Green and Co., 1931), p. 25, and *Unemployment, A Problem of Industry* (London: Longmans, Green and Co., 1930), chapter 16; Wilford I. King, *The Causes of Economic Fluctuations* (New York: Ronald Press Co., 1938), chapter 8; and Lionel Robbins, *The Great Depression* (New York: Macmillan, 1934).

5. John A. Hobson, *The Economics of Unemployment* (New York: Macmillan, 1923), p. 84.

6. W.T. Foster and W. Catchings, *Profits* (Boston: Houghton Mifflin, 1925) and *Business Without a Buyer* (Boston: Houghton Mifflin, 1927); and C.H. Douglas, *Credit-Power and Democracy* (London: C. Palmer, 1920) and *Warning Democracy* (London: C.M. Grieve, 1931). A more recent interpretation of the Great Depression with underconsumptionist overtones in John Kenneth Galbraith, *The Great Crash, 1929* (Boston: Houghton Mifflin, 1976).

7. Murray N. Rothbard, *America's Great Depression* (Princeton, N.J.: Van Nostrand, 1963), p. 45.

8. Henry Ford, *The New York Times*, November 22, 1929, p. 2.

9. *The New York Times*, November 22, 1929, p. 1. It is interesting to note that Hoover's inclinations toward underconsumptionism were recognized and, of course, approved, by trade unionists. Witness a statement by the AFL's John P. Frey in 1929 relating to a public works scheme of Hoover's. In effect, Frey argued that the president was in agreement with the AFL's position that depressions were the result of underconsumption and low wages. See Joseph Dorfman, *The Economic Mind in American Civilization* (New York: Viking Press, 1959), vol. 4, pp. 349-50. See also Ronald Radosh, "The Development of the Corporate Ideology of American Labor Leaders, 1914-1933" (doctoral dissertation in history, University of Wisconsin, 1967).

10. Rothbard, *America's Great Depression*, chapter 8. Not to be ignored is the fact that ideas such as those that enamored Hoover were not as unorthodox among professional economists as sometimes claimed. See J. Ronnie Davis, *The New Economists and the Old Economists* (Ames, Iowa: Iowa State University Press, 1971).

Davis presents an interesting array of statements by economists and other academics relating to the issue of the impact of wage reductions on the economy (pp. 94–99).

11. John M. Keynes, *The General Theory of Employment, Interest and Money* (London: Macmillan, 1936).

12. Abba P. Lerner, "Mr. Keynes' 'General Theory of Employment, Interest and Money,'" *International Labor Review* 34, 1936. See also W.B. Reddaway, "The General Theory of Employment, Interest and Money," *Economic Record* 12, 1936. A systematic description of the thought of this time is contained in Lawrence R. Klein, *The Keynesian Revolution* (New York: Macmillan, 1947). For a taxonomic description of the various views of the aggregate demand schedule for labor, see Sidney Weintraub, "A Macroeconomic Approach to the Theory of Wages," *American Economic Review* 46, 1956.

13. Paul M. Sweezy, personal letter to John B. Shelley, dated February 11, 1977, cited in Dana C. Hewins and John B. Shelley, "Sweezy's Kink: Macro Foundations of a Micro Theory," *Economic Inquiry* 17, 1979.

14. For a description of the various dimensions of the Keynesian critique of classical economics, see Alvin H. Hansen, *A Guide to Keynes* (New York: McGraw-Hill, 1953). More recent appraisals and restatements of the total thrust of Keynesianism are Abba P. Lerner, "From 'The Treatise on Money' to 'The General Theory,'" *Journal of Economic Literature* 12, 1974; and Hyman P. Minsky, *John Maynard Keynes* (New York: Columbia University Press, 1975).

15. Peter Temin, *Did Monetary Forces Cause the Great Depression?* (New York: Norton, 1976), p. 140. Temin also attempts to demonstrate that the Great Depression was brought on by an autonomous shift in the consumption function. That view has been challenged (successfully, we think) by Thomas Mayer, "Consumption in the Great Depression," *Journal of Political Economy* 86, 1978.

16. Keynes, *The General Theory*. In chapter 2, Keynes is very explicit. In reference to the principle that real wages and employment are systematically related, he says, "I am not disputing this vital fact which the classical economists have (rightly) asserted as indefeasible."

17. Ludwig von Mises, *The Theory of Money and Credit* (New Haven, Conn.: Yale University Press, 1953). Permission granted by Mrs. Margit von Mises. Quotes from 1981 *Liberty Classics*, Indianapolis, edition.

18. Milton Friedman, "The Role of Monetary Policy," *American Economic Review* 58, 1968.

19. In particular, see Jerome Stein, *Monetarist, Keynesian, and New Classical Economics* (Cambridge, United Kingdom: B. Blackwell, 1982).

20. The key assumptions are constant returns to scale and neutral disembodied technical progress.

21. The underlying statistical models are moderately complex. They are described briefly in the statistical appendix. The logic and structure of the models are more fully developed in Lowell Gallaway and Richard Vedder, *The "Natural" Rate of Unemployment*, staff study, Subcommittee on Monetary and Fiscal Policy, Joint Economic Committee, Congress of the United States (Washington, D.C.: 1982).

22. *Federal Reserve Bulletin*, various issues.

23. *Historical Statistics*, series D-86.

24. The productivity-adjusted real wage rate on a quarterly basis is calculated by dividing the manufacturing wage bill by the product of Federal Reserve Board



(not the wage bill) and the index of average labor productivity (not total output) should be used. However, converting the wage bill and the index of industrial production to wage rate and productivity measures involves dividing both of them by the same quantity of labor ( $L$ ). Since  $L$  appears in both the numerator and denominator of the expression for the adjusted real wage rate, it cancels out and can be ignored.

25. As calculated from *Historical Statistics*, series D-688.

26. *Ibid.*, series D-683 and D-688.

27. *Ibid.*, series D-724 and Paul A. David and Peter Solar, "A Bicentenary Contribution to the History of the Cost of Living in America" in Paul Uselding, ed., *Research in Economic History*, vol. 2 (Greenwich, Conn.: JAI Press, 1977), pp. 59–60.

28. Broadus Mitchell, *Depression Decade*, vol. 9, *The Economic History of the United States* (New York: Rinehart, 1947), p. 84; and Arthur Schlesinger, Jr., *The Age of Roosevelt: The Crisis of the Old Order, 1919–1933* (Boston: Houghton Mifflin, 1957), p. 249. Interestingly, though, some observers of the period disagree with this assessment. For example, Leo Wolman, *Wages in Relation to Economic Recovery* (Chicago: 1931) notes, "[I]t is indeed impossible to recall any past depression of similar intensity and duration in which the wages of prosperity were maintained as long as they have been during the depression of 1930–1931." Similarly, Don Lescohier, "Working Conditions," vol. 3, *History of Labor in the United States, 1896–1932*, John R. Commons and Associates, eds. (New York: Macmillan, 1935) states:

The first impact of the depression of the "thirties" did not affect the wage structure. . . . In 1921 wage cuts were advocated early in the depression to liquidate labor costs. In 1930–31 they were apposed both by government and by leading employers, in the hope that the maintenance of wage earners' incomes would furnish a market for products and help business recovery. In 1921 they were inaugurated long before business had reached a dangerous position; in 1931 they became common only after a large number of businesses had taken heavy losses. Realization of the reluctance of a large number of employers to cut wages caused wage earners and the public to accept them calmly when they did come, perhaps too calmly (p. 92).

29. *Historic Statistics*, series D-802, D-813, D-818, and D-824, respectively.

30. Robbins, *The Great Depression*, p. 224.

31. Geoffrey H. Moore, ed., *Business Cycle Indicators*, vol. 2, *Basic Data on Cyclical Indicators* (Princeton: Princeton University Press, 1961), p. 129.

32. Benjamin M. Anderson, *Economics and the Public Welfare* (New York: Van Nostrand, 1949), p. 72.

33. *Historical Statistics*, series D-839.

34. Anderson, *Economics*, p. 220.

35. Without the productivity adjustment, real wages in manufacturing (in 1923 prices) rose from 58.9 cents an hour in December 1929 to 62.5 cents an hour in December 1930. After that, they continued to rise to 66.3 cents an hour in January 1932. Wilford I. King, *Causes of Fluctuations*, pp. 182–83. See also Sol Shaviro, "Wages and Payroll in the Depression, 1929–1933" (unpublished M.A. essay, Columbia University, 1947).

36. Milton Friedman and Anna J. Schwartz, *A Monetary History of the United States, 1867–1960* (Princeton, N.J.: Princeton University Press, 1963).

37. U.S. Bureau of the Census, *National Income and Product Accounts of the United States, 1929–1976* (Washington, D.C., Department of Commerce, Bureau of Economic Analysis, 1981), p. 308.

38. Moore, *Business Cycle Indicators*, p. 106.
39. Harold Barger, *Outlay and Income in the United States, 1921–1938* (New York: National Bureau of Economic Research, 1942), appendix B, table 28. A smaller profit decline is reported in a less comprehensive survey conducted by the Federal Reserve Bank of New York. See Irving Fisher, *Booms and Depressions: Some First Principles* (New York: Adelphi, 1932), p. 98.
40. Robbins, *The Great Depression*, p. 205. The data were originally published in *Commercial and Financial Chronicle*.
41. This is based on the Standard and Poor's index, which fell 32.9 percent from September to November 1929. The second decline actually began in April 1930. A similar pattern is observed using the Dow-Jones index, which fell 39.7 percent from April to December 1930, compared to 37.0 percent from September to November 1929. The recovery in stock prices after November 1929 was robust; the April 1930 Dow-Jones index was the eleventh highest recorded in history, exceeded only in the first ten months of 1929. See Moore, *Cyclical Indicators*, pp.108–9.
42. Ben Bernanke, "Nonmonetary Effects of the Financial Crisis in the Propagation of the Great Depression," *American Economic Review*, June 1983, p. 261.
43. *Ibid.*, p. 262.
44. Federal debt declined about \$700 million in both 1929 and 1930, but rose more than \$600 million in 1931. See *Historical Statistics*, series Y-493.
45. If one uses the consumer price index to measure price changes, real interest rates on bank loans in 1929 averaged about 6 percent, rising to about 7.7 percent in 1930, and to about 13 percent in 1931. This is based solely on current year price changes. A real interest rate model using weighted averages of past price changes would show a smaller rise. Interest rate data are based on Federal Reserve System reports. See Moore, *Cyclical Indicators*, p. 154.
46. *Historical Statistics*, series F-54.
47. Friedman and Schwartz, *A Monetary History*, table A-1, pp. 712–13.
48. *Ibid.*, table B-3, p. 803.
49. *Ibid.* The deposit/currency ratio fell from 11.57 in October 1929, to 4.44 in March 1933, a decline of 7.13 points, with 3.87 points (54 percent) of that decline occurring between October 1930 and October 1931.
50. *IBID.*, pp.308–13.
51. The price would fall to \$750 only for a consol, a bond with no maturity. Short-term bonds would sell at a small discount from face value because the owner of the bond would receive the face value at maturity.
52. *Historic Statistics*, series X-581.
53. Capital accounts were \$10,372 million. *Ibid.*, series X-587.
54. Most nominal interest rate series show little change in the early years of the Great Depression, and, indeed, many show some decline. This masks two phenomena, however. First, declining commodity prices during the period led to rising real interest rates over time. Second, most interest rate series report actual transactions, probably ignoring a growing number of customers who were crowded out because of sharply rising risk premiums. It is possible that interest rates demanded of some average potential borrower rose, even though actual interest rates reflected in transactions did not rise.
55. Data from U.S. Bureau of Economic Analysis, *Fixed Residential Business Capital in the United States, 1929–1973* (Washington, D.C.: Department of Commerce,

1974), reported in *Historical Statistics*. The exact data series employed is F-484 for producers' equipment valued at 1958 prices. This series falls from a 1929 level of \$74.1 billion to \$59.2 billion in 1933. Simon Kuznets, *Capital in the American Economy* (Princeton, N.J.: Princeton University Press, 1961), table R-5, p. 492, concludes that net capital formation was almost zero in 1931, and decidedly negative in the years 1932–34.

56. Use of the consumer price index yields lower-bound measures of the extent of wage disequilibrium. This index fell substantially less than did the wholesale price index during the Great Depression. Consumer prices (*Historical Statistics*, series E-135) fell 24.3 percent, while wholesale prices (*Ibid.*, series E-23) declined by 30.8 percent.

57. The codes in question were the blanket codes introduced pending the development of the specific industry codes. See David A. Shannon, *Between the Wars: America, 1919–1941* (Boston: Houghton Mifflin, 1965), pp. 154–55. See also Michael M. Weinstein, "Some Macroeconomic Impacts of the National Industrial Recovery Act, 1933–1935," chapter 14, pp. 262–81, in Karl Brunner, ed., *The Great Depression Revisted* (Boston: Kluwer/Nijhoff, 1981) and *Recovery and Redistribution under the NIRA* (Amsterdam: North-Holland Publication Company, 1980).

58. *Historical Statistics*, series D-802.

59. Section 7(a) of the National Industrial Recovery Act was added to allay the fears of labor leaders that industry would act cooperatively against labor. It required that every industry code developed under the act include provisions guaranteeing the right of employees to organize and bargain collectively and that employees could not be required as a condition of employment to either join a company union or refrain from joining a union of their choice.

60. After the National Industrial Recovery Act was declared unconstitutional by the Supreme Court, the provisions of section 7(a) were reenacted in a more detailed fashion, including the establishment of an administrative machinery to police the law, in the National Labor Relations Act of 1935.

61. Probably the best known study of this question is H. Gregg Lewis, *Unionism and Relative Wages in the United States* (Chicago: University of Chicago Press, 1963). Also worth noting are John Maher, "Union, Non-Union Wage Differentials," *American Economic Review* 46, 1956; and Adrian W. Throop, "The Union–Non-Union Wage Differential and Cost-Push Inflation," *American Economic Review* 58, 1968.

62. The basic data employed in these calculations are taken from Lowell E. Gallaway, "Trade Unionism, Inflation, and Unemployment" in George Horwich, ed., *Monetary Process and Policy: A Symposium* (Homewood, Ill.: R.D. Irwin, 1967), pp. 60–66. At first blush, the indication of a significant change in what we call the union/nonunion wage differential appears to conflict with Lewis's findings in *Unionism and Relative Wages*, which suggest a stable union/nonunion differential over time. However, we have defined our differential in terms of traditionally organized industries compared to traditionally unorganized ones. Actually, there are substantial numbers of nonunion members in the work force of what we have called the unionized industries. For example, in 1920, when trade union membership peaked at over five million, only about one-fourth of the work force in our unionized industries were union members. See Leo Wolman, *Ebb and Flow in Trade Unionism* (New York: National Bureau of Economic Research, 1936). They made up about 90 percent of union membership, though. By contrast, on the eve of World War II, when union membership had recovered to over ten million (compared to its 1933 low of less than three million), union workers

were approaching accounting for one-half the work force in our unionized industries. In fact, what our wage differential measure attempts to capture is the impact of the changing volume of unionism on the interindustry wage structure and, ultimately, on the average wage rate. Actually, we feel that we may have underestimated the union impact by employing a relative wage differential measure rather than focusing on the absolute differential (in real terms) between the unionized and nonunionized areas. For a theoretical discussion of why the relative wage criterion may not be appropriate, see Gallaway, "Trade Unionism." If we had used the absolute differential for purposes of this evaluation, the effect of increases in union membership on the interindustry wage structure would have been even more dramatic.

63. The detailed statistical analysis is described in the statistical appendix to this article.

64. This is done by estimating the impact of growth in union membership on wage levels and then translating the unionization-induced wage shifts into changes in unemployment.

65. Total supplements are from *Historical Statistics*, series D-893. Average annual earnings from *ibid.*, series D-722. See also Albert Rees, *New Measures of Wage-Earner Compensation in Manufacturing, 1914-1957*, occasional paper 75 (Princeton, N.J.: National Bureau of Economic Research, 1960).

66. Detailed supplement data are from *Historical Statistics*, series D-907 and D-908. The percent increase in the total wage bill attributable to the increase in a particular supplement is calculated and the impact of such an increase on unemployment is estimated using the statistical relationships reported in the statistical appendix to this article.

67. The strongest proponents of a monetary explanation for the recession of 1937-38 are Friedman and Schwartz, *A Monetary History*.

68. There is an abundance of literature that suggests a fiscal policy explanation for the downturn in 1938. See E. Cary Brown, "Fiscal Policy in the 'Thirties': A Reappraisal," *American Economic Review* 46, 1956; Alvin H. Hansen, *Fiscal Policy and Business Cycles* (New York: W.W. Norton, 1941); Arthur Smithies, "The American Economy in the Thirties," *American Economic Review* 36, 1946; and Kenneth D. Roose, "The Role of Net Government Contribution to Income in the Recession and Revival of 1937-1938," *Journal of Finance*, 6, 1951. Roose's views are also stated in his *Economics of Recession and Revival* (New Haven, Conn.: Yale University Press, 1954).

69. Interestingly, Roose, *Economics of Recession*, also expresses views that are consistent with our findings. He comments, "Most important of all, however, was the reduced profitability of investment, beginning in the first quarter of 1937. This resulted from increases in costs, in which labor played a prominent part." (pp. 238-39).

70. This estimate is based on calculations made using the statistical model of unemployment cited earlier.

71. It is interesting to note that the statistical model of unemployment that we present systematically underpredicts the level of unemployment during the period in which the growth in wage supplements is most pronounced, namely 1936-38. Since the supplements are not included in the wage measure used to predict unemployment, this may account for the underpredictions in these years.

72. King, *Causes of Fluctuations*, pp. 80-81, noted this phenomenon rather early, remarking that, "all through the depression, those who were fortunate enough to have jobs were, on the average, earning more money per hour than they were in 1929."

73. The total dismissal of the importance of the money wage rate adjustment mechanism became complete during World War II. In Britain, for example, Sir William Beveridge, cited earlier as supporting the classical view of the world, swung full circle and embraced the aggregate demand notions, especially the idea that government spending could produce full employment. In his "The Government's Employment Policy," *Economic Journal*, June–September 1944, pp. 161–62 (a commentary on the government's White Paper of May 26, 1944), he refers to a statement from Winston Churchill's 1929 budget speech as chancellor of the exchequer, to wit: "It is the orthodox Treasury dogma steadfastly held that, whatever might be the political and social advantages, very little additional employment and no permanent additional employment can, in fact, and as a general rule, be created by State borrowing and State expenditure," by commenting, "By the renewed experience of full employment the dogma has been consumed by the fires of war, and the White Paper may be regarded as a ceremonial scattering of its ashes."

Also worth noting is the dialog among Keynes, Hayek, and Frank Graham centering on the usefulness of a commodity standard of money to replace the now defunct gold standard. It begins with Hayek, "A Commodity Reserve Currency," *Economic Journal*, June–September 1943, pp. 176–84, and Keynes's remarks, "The Objective of International Price Stability," *ibid.*, pp. 185–87. Keynes takes the position that the level of money wage rates must be taken as given and everything else adjusted to it. Frank Graham, "Keynes vs. Hayek on a Commodity Reserve Currency," *Economic Journal*, December 1944, pp. 422–29, takes up the issue again and Keynes's view is restated in "A Note by Lord Keynes," *ibid.*, pp. 429–30.

In the United States, one of the classic statements of the "new" economics is Franco Modigliani, "Liquidity Preference and the Theory of Interest and Money," *Econometrica*, January 1944, pp. 45–88. Also, Alvin Hansen has reversed his position and is on his way to becoming the great interpreter of Keynes for a generation of graduate students via his *A Guide to Keynes*. Of course, it could be argued that the weight of the empirical evidence was on the side of Keynes in this issue. Not so. John Dunlap, "The Movement of Real and Money Wage Rates," *Economic Journal*, September 1938, pp. 413–34, reports evidence inconsistent with the Keynesian position that changes in real wages rate cannot be produced by changes in money wage rates. Admittedly, Dunlap attempts to explain away the data as somehow reflecting other things. However, Lorie Tarshis, "Changes in Real and Money Wages," *Economic Journal*, March 1939, pp. 150–54, reports even stronger evidence along these lines. By the end of World War II, though, Keynesianism was sufficiently in the ascendancy to permit the summary disregarding of this evidence. Lawrence Klein, *The Keynesian Revolution*, in reflecting on Tarshis's article, ponders whether "Keynes was backing the wrong horse" (p. 107). However, he resolved his dilemma by rather cavalierly stating in the very next sentence, "Our main concern . . . is not with the empirical problem but with the theoretical relation of wage cuts to unemployment."

74. The rate was 9.7 percent in 1927, while the median annual rate for the years 1921–29 was 11.05 percent. On unemployment statistics, see Department of Employment and Productivity, *British Labour Statistics: Historical Abstract 1886–1968* (London: H.M. Stationery Off., 1971).

75. Real output rose 2.75 percent a year from 1921 to 1929, and even 1.66 percent annually from the boom year of 1920 to relatively depressed 1930; by contrast,

real growth per annum from 1900 to 1913 was only 1.65 percent. These calculations are derived from C.H. Feinstein, *National Income, Expenditure and Output of the United Kingdom, 1855–1965* (Cambridge, U.K.: Cambridge University Press, 1972).

76. Daniel K. Benjamin and Levis A. Kolchin, "Searching for an Explanation of Unemployment in Interwar Britain," *Journal of Political Economy*, June 1979.

77. See Edwin Cannan, "The Problem of Unemployment," *Economic Journal*, March 1930; Robbins, *The Great Depression*; Jacques Rueff, "Ces variations du chômage en Angleterre," *Revue politique et parlementaire*, December 10, 1925; William Beveridge, *The Causes and Cures and Unemployment, A Problem*. This list is by no means exhaustive. These persons and others recognized that not only did unemployment insurance payments raise the opportunity cost of working, but they inspired union militancy and, accordingly, produced higher money wage rates. Among the other writers, see, especially, A.C. Pigou, "Wage Policy and Unemployment," *Economic Journal*, September 1927, and John R. Hicks, *The Theory of Wages* (London: Macmillan, 1932). A prominent politician who believed unemployment compensation raised unemployment was Winston Churchill. See his article, "The Dole," *Saturday Evening Post*, March 29, 1930.

On the view of Keynes and other economists, see Keith J. Hancock, "Unemployment and the Economists in the 1920's," *Economica*, November 1930. See also Keynes, "Some Consequences of the Economic Report," *New Statesman and Nation*, August 15, 1931.

78. Anderson, *Economics*. Like the authors in the previous footnote, Anderson argued that unemployment insurance payments raised wages.

79. On consumption spending, see Feinstein, *National Income*; Richard Stone, et al., *The Measurement of Consumers' Expenditures and Behaviour in the United Kingdom, 1920–1938*, two volumes (Cambridge, U.K.: Cambridge University Press, 1954). For statistics dealing with a variety of economic variables in this period, including consumption, see B.R. Mitchell, *Abstract of British Historical Statistics* (Cambridge, U.K.: Cambridge University Press, 1976).

80. That is actually an understatement. Output in 1939 was more than 21 percent higher than in 1929, with the per annum growth rate of 1.94 percent being high by historical standards. Real gross national product fell only 6 percent from 1929 to the trough in 1932. See Feinstein, *National Income*.

81. The 1937 British unemployment rate of 10.8 percent was actually slightly below the median rate of the 1920s. See Department of Employment and Productivity, *British Labour Statistics*. The U.S. unemployment rate of 14.3 percent in 1937 compares with a median rate for the 1920's of 3.75 percent. See *Historical Statistics*, series D-86.

82. A.W. Phillips, "The Relation between Unemployment and the Rate of Change of Money Wage Rates in the United Kingdom, 1861–1957," *Economica*, N.S., vol. 25, 1958; Richard G. Lipsey, "The Relation between Unemployment and the Rate of Change in Money Wage Rates in the United Kingdom, 1862–1957: A Further Analysis," *Economica*, N.S. vol. 27, 1960; and Paul A. Samuelson and Robert M. Solow, "Analytical Aspects of Anti-inflationary Policy," *American Economic Review* 50, 1960.

83. The corporate profit share of national income rose from 11.33 percent in 1961 to 13.98 percent in 1965. *Historical Statistics*, series F-163 and F-179.

84. The choice of a one-year lag produces the best explanation for unemployment variations in the post-World War II period. The logic of some type of lag is appealing. Employers may well respond to increasing productivity-adjusted real wage rates by searching for alternatives other than the laying off of a labor force that is experienced in its tasks. Also, once it becomes obvious that labor force reductions are necessary, it is tempting to accomplish them through a process of attrition, by simply not replacing workers who quit, die, or retire. The concept of a lag is certainly consistent with the arguments presented in Walter Oi, "Labor as a Quasi-Fixed Factor," *Journal of Political Economy* 70, 1962.

85. Fortunately for the defenders of the neo-Keynesian paradigm, the inflation of the period could be explained away as a phenomenon associated with the movements of specific commodity prices, especially oil. However, these are movements in *relative* prices and not in the overall price level.

86. Estimates reported in Gallaway and Vedder, "*Natural*" Rate, indicate that the equilibrium rate of unemployment was about 4.4 percent in the 1960s and 5.7 percent in the early 1970s, standing at 6.6 percent by the end of that decade.

87. Some of the representative studies of this subject are the early work of Gene Chapin, "Unemployment Insurance, Job Search, and the Demand for Leisure," *Western Economic Journal* 9, 1971; and, later, Martin Feldstein, "Unemployment Compensation: Adverse Incentives and Distributional Anomalies," *National Tax Journal* 27, 1974.

88. C.T. Brehm and T.R. Saving, "The Demand for General Assistance Payments," *American Economic Review*, December 1964, pp. 1002-18; and Hirschel Kasper, "Welfare Payments and Work Incentives: Some Determinants of the Rates of General Assistance Payments," *Journal of Human Resources*, 1968. See also Robert E. Hall, "Effects of the Experimental Negative Income Tax on Labor Supply" in Joseph A. Pechman and Michael Timpone, eds., *Work Incentives and Income Guarantees: The New Jersey Negative Income Tax Experiment* (Washington, D.C.: 1975); and Lowell E. Gallaway, "Negative Income Tax Rates and the Elimination of Poverty," *National Tax Journal*, September 1966, pp. 298-307, for further evidence dealing with the question of work incentives.

89. Benjamin and Kolchin, "Unemployment in Interwar Britain."

90. U.S. Employment and Training Administration.

91. U.S. Social Security Administration.

92. Total social welfare expenditure data are from the Social Security Administration. Personal income data are from the Department of Commerce.

93. Joint Economic Committee of the Congress of the United States, *Economic Indicators* (Washington, D.C.: March 1983), p. 16.

94. *Ibid.*, p. 12.

95. Alfred Marshall, *Principles of Economics* (London: Macmillan, 1920); Irving Fisher, *Booms and Depressions*; A.C. Pigou, *Theory of Unemployment*; Lionel Robbins, *The Great Depression*; Jacob Viner, *Balanced Deflation*; A.H. Hansen, *Business Cycle Theories* (Boston: 1927); and W.H. Beveridge, *Unemployment, A Problem*. For a thorough discussion of the thinking about business cycles prior to, during, and immediately after the Great Depression, see Gottfried von Haberler, *Prosperity and Depression* (Cambridge, Mass.: Harvard University Press, 1958).

96. Not everyone has ignored these notions. In addition to von Mises, it should be noted that Friedrich Hayek, *Unemployment and Monetary Policy* (San Francisco: Cato Institute, 1979) and W.H. Hutt, *The Keynesian Episode: A Reassessment* (Indianapolis: Liberty Press, 1979) have continued to propound what we have called the von Misesian-classical view of macroeconomics. We especially call attention to Hutt's views on the general subject of the underconsumptionist position, which are well summarized in his "Illustration of Keynesianism" taken from his *Politically Impossible* (London: Institute of Economic Affairs, 1971). His specific view on Hoover and wage reductions was related to the authors in private dinner conversation.

97. John R. Hicks, "A Sceptical Follower," *The Economist*, June 18, 1983, p. 19.

98. The growth rates are calculated from the real gross national product statistics reported by the U.S. Department of Commerce, Bureau of Economic Analysis.

99. The magnitude employed is the adjusted monetary base which consists of (1) reserve accounts of financial institutions at Federal Reserve Banks, (2) currency in circulation (currency held by the public and in the vaults of all depository institutions), and (3) an adjustment for reserve requirement rate changes. A detailed description of the simulation can be found in Gallaway and Vedder, "Natural" Rate.

100. *Economic Indicators*, p. 16.

101. The data sources are *Historical Statistics*, series D-683, D-688, and D-724, and David and Solar, *ibid.*

102. The data source for the trade union membership variable is *Historical Statistics*, series D-948.