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## 2 *Data on Wage Rates and Average Hourly Earnings in Manufacturing Industries, United States*

From 1919 to 1935 the Bureau of Labor Statistics compiled data monthly on changes in wage rates based on reports from establishments in its employment and payroll sample. It published the number of establishments reporting specified percentage changes in rates from January 1919 to April 1923; we weighted the percentage changes in rates by the number of establishments affected. From April 1923 to August 1931 we used the number of employees affected as weights and carried the establishment-weighted indexes forward through December 1923 to observe the effect of the shift in weights. After August 1931 the BLS published the relative changes in wage rates and employees affected only for all manufacturing industries combined. In July 1935 it discontinued the series because of inherent deficiencies and in the belief that the average hourly earnings series instituted in 1932 covered much the same ground. Hence our indexes for the nine industries end with August 1931 and for all manufactures with July 1935 (App. A).

One inherent deficiency is the unavoidable assumption that establishments not reporting a change in wage rates made no change. Since the reports are monthly and since changes in wage rates are fairly infrequent one would expect the proportion of establishments not making any change in a given month to be large. Nevertheless, our assumption may understate the proportion somewhat since some firms that changed wage rates may simply have failed to report.<sup>6</sup> The effect would be to make our indexes more stable than they should be, but to what degree we do not know.<sup>7</sup>

The only monthly series on average hourly earnings in manufacturing that cover most of these years, and are therefore available for comparison with the wage rate indexes, are those compiled by the National Industrial Conference Board. From its 25 industry series we selected 9 for which the size of the samples seems most adequate and the coverage comparable in definition with the BLS

<sup>6</sup> For the percentage of all factory workers affected by changes in wage rates, see Appendix A.

<sup>7</sup> This inference involves the further assumption that a majority of the firms not reporting changes in a given month instituted changes in the same direction in which the index moved. This assumption seems plausible in the light of Section 7 where we could not explain the differences in amplitude of the cyclical movements in wage rates and average hourly earnings by the differences in concepts.

industry designations. For these 9, monthly movements in wage rates and in average hourly earnings can be compared (Table 1 and Charts 1-2). The deficiencies of samples in individual industries are probably less serious when the 25 industries are combined into a single series for all manufacturing, although the manufacture of food products, clothing, and construction materials seems under-represented. In the absence of a more satisfactory series, we compare average hourly earnings for all manufacturing compiled by the NICB with the index of wage rates for all manufacturing based on the industry samples of the BLS, which has a broader coverage.

Because our interest is centered in cyclical behavior these series must be adjusted to eliminate possible seasonal movements; i.e., seasonally adjusted average hourly earnings are compared with the unadjusted index of wage rates since the latter does not seem to require adjustment.

### 3 *Wage Rates turn later than Business Activity and Employment in Manufacturing Industries, United States*

Let us examine first the movement of wage rates. Among the first impressions we get from Charts 1 and 2 is that wage rates declined sharply from 1920 to 1922, made a substantial but partial recovery by 1923, and continued at the 1923 level with minor variations until 1930 or thereabouts when the impact of the Great Depression began to affect their level. On closer inspection, however, we find that the minor movements during this period of relative stability, 1923-30, have a cyclical character. This is illustrated by Chart 3 which shows the movement for these years for all manufactures computed to 2 decimal places and plotted on a generous scale.<sup>8</sup> The amplitudes of the cyclical phases are so very small that we are compelled to distinguish between the major and minor cyclical movements in wage rates. The former are the movements that correspond to the contraction of business activity from January 1920 to July 1921, the succeeding expansion from July 1921 to May 1923, and the contraction initiated in June 1929. The minor cyclical move-

<sup>8</sup> Cycles appear during this period in 5 of the 9 individual industries when the data are computed to 2 decimal places and plotted on a generous scale: automobile, iron and steel, paper and pulp, silk and rayon, and woolen and worsted manufactures (Table 1).