

APPENDIX TO CHAPTER IV

TECHNICAL NOTE ON SEASONAL UNEMPLOYMENT

The measurement of seasonal unemployment in 1957 was made primarily from the individual seasonally adjusted series on unemployment by industry source, related to the month of minimum seasonal unemployment indicated by the seasonal adjustment factors.

The following procedure was used:

1. Differences between the original and seasonally adjusted series were computed for each month. This gave a measure of seasonal unemployment for each month in relation to the annual average.
2. The month of minimum seasonal unemployment for each industry division was identified from the seasonal adjustment factors. For this month the amount of seasonal unemployment was considered as zero.
3. The amount of seasonal unemployment for each of the other months was the sum, without regard to sign, of the differences between adjusted and original figures for the minimum month and each of the other months. This is illustrated in the following example for total unemployment.

	Minimum month (October 1957)	Other than minimum month (March 1957)
Unemployment:		
Original.....	2,508,000	2,882,000
Seasonally adjusted.....	3,195,000	2,661,000
Seasonal unemployment related to annual average.....	-687,000	221,000
Seasonal unemployment related to minimum month.....	0	908,000

When calculated for aggregate unemployment, the average proportion attributable to seasonality amounted to 24 percent; when the calculation was applied to major industry divisions (and included new entrants to the labor force) the estimate was increased to 26.5 percent. Had it been possible to do the computations for more detailed groups, the estimates would undoubtedly have been somewhat higher.

This last point illustrates one difficulty in attaining a precise measure of seasonal unemployment. Any of the aggregate groups represents a balance of offsetting movements. Even at levels considered minimum for any group some individuals would be unemployed for seasonal reasons. However, it was not practical to measure seasonal unemployment in groupings more detailed than the major industry division because the small size of the more detailed unemployment groups would not have permitted statistically adequate seasonal adjustment. Even though the amount of revealed seasonality would have been greater, it is questionable whether further quantification of seasonal unemployment at minimal levels for smaller groupings would have materially altered the patterns described in this report.

There are other limitations which must be recognized in using the information on seasonal unemployment. Just as the original data on unemployment are subject to sampling variability and response errors and biases, so are the seasonal adjustments merely approximations of an average pattern which has been discerned within an historical mass of other regular and irregular movements, without certainty that the pattern is precisely applicable to the current period of study.

The seasonal adjustment factors express the characteristic recurrent pattern of monthly change isolated through a highly detailed technical examination of unemployment over a period of years, with due weight being given to changes in the pattern indicated in more recent years. These factors were developed in the Census Bureau by the application of a ratio-to-moving-average procedure to the original data, with the computations carried out on high-speed electronic computing equipment.

For a description of the basic ratio-to-moving-average procedure, see "Adjustment for Seasonal Variation," by H. C. Barton, Jr. in the Federal Reserve Bulletin, June 1941. For its utilization in electronic computers, see "Seasonal Computations on UNIVAC," by Julius Shiskin, in the American Statistician, February 1955.