

### CHAPTER III. APPRAISAL OF RESULTS

The present indexes, like their predecessors, must be considered to be approximations rather than exact measures. The chief weaknesses arise from the fact that the underlying data are incomplete and imperfect, and the results are dependent to some extent on the estimates and assumptions necessary to overcome these difficulties. Judgments of individuals, which are always fallible, enter at various points.

There is no reliable method for calculating the margins of error in the indexes. They probably vary from industry to industry, according to the number and extent of measurement problems encountered. Many of the types of errors probably present are as likely to be in one direction as in the other, and are undoubtedly in different directions in the different indexes. They, therefore, offset each other to some extent in the composite indexes, so that the latter, and particularly the all-manufacturing index, are probably more reliable than the individual components. However, the total index, like its predecessors, probably has a net bias downward, chiefly because it is not feasible to reflect quality changes.

On the other hand, it is probable that the errors in the present indexes are smaller than in their predecessors, because of improvements in the available data over the years, because disclosure information could be used, and because it was possible to deal with some problems by use of machine tabulation listings, original

reports of manufacturers, and other unpublished Bureau of the Census materials. A great deal of effort was devoted to resolving the problems that arose in the course of the work. It is undoubtedly true that more work would produce still better indexes, but improvements in the basic data would seem to be required before the results of much additional effort in analysis would be commensurate with the cost.

The user of these indexes will find it desirable to consider the relevance to his purposes of the definition of physical volume employed, to avail himself of the notes on individual industry indexes that are given in appendix C, and to consider the significance for particular cases of the general problems and procedures described. He should also take into account the differences among the indexes in which different weight periods are employed.

Finally, in considering these production indexes in relation to other data for manufactures such as employment statistics, the qualifications of the other data must also be taken into account. In particular, care should be taken to make sure that they are comparable with the production indexes as to coverage, and are comparable with themselves from year to year. For example, as indicated earlier, the data published in the 1947 census basic volumes on production worker employment are not strictly comparable for 1939 and 1947 in a number of industries.