

total costs to physical output, nothing can be said about unit costs. If an industry produced only one product and this product were identical for all time periods, it would be a simple matter to divide total cost by total units produced, giving true unit costs. These unit costs could in turn be divided into labor costs, etc. Unfortunately such homogeneity of output does not usually exist even for an individual firm, much less for the aggregation of firms which we call an industry. Under these circumstances true unit costs cannot be calculated. However, an approximate index of unit costs may be constructed in the following fashion. For each year the total costs of output valued at current prices is divided by the total cost of output valued at constant base year prices. This ratio for each year has a simple and direct interpretation. It tells what a dollar's worth of output at base year prices cost in each year. Thus if 1947 is the base year, and the ratio for an industry is 1.42 in 1954, we may say that \$1 worth of production in 1947 prices cost \$1.42 in 1954, and therefore costs for this industry had risen 42 percent in the period 1947-54. Thus these ratios are unit costs where outputs of diverse products are made commensurable by expressing them as dollars of output at constant prices. Since this dollar's worth of output is not a physical unit, the ratios are only indexes of unit costs and not absolute unit costs. As is conventional with most indexes, the base in this study, 1947, is 100 rather than 1.00. This conversion to a base of 100 does not affect the interpretation suggested above. The index of unit costs in each industry reflect, however, not only changes in the unit costs of producing the various products of the industry, but also shifts within the industry between high and low unit cost products. Thus even if the unit costs of producing each individual product were to remain unchanged, a shift in the composition of output toward products with a higher than average unit cost could affect our unit cost index. We have been able to construct a unit cost index for all manufacturing which excludes the effects of changes in the distribution of output among the 20 industries. The unit cost indexes for each industry, however, still reflect the effects of changes in product mix within each industry.

The index described above is an index of all costs per unit of output in a given industry. It is a simple matter to divide this total cost per unit into its components. As noted above, the four components identified in this paper are compensation, capital consumption, net business income, and indirect taxes. Letting Y equal the total cost of output in current prices and Z equal the cost of output in constant prices, we have the following relationship:

$$\frac{Y}{Z} = \frac{L+C+B+I}{Z} = \frac{L}{Z} + \frac{C}{Z} + \frac{B}{Z} + \frac{I}{Z}$$

Total cost per unit of output	=	Labor cost per unit of output	+	Capital con- sumption per unit of output	+	Net business income per unit of output	+	Indirect taxes per unit of output
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The four terms on the right side show the point contribution of each of the cost items to the index of total cost per unit of output. By examining the behavior of the points of the cost components over time, it is possible to see how much each has contributed to the rise or fall in unit total costs; whether there have been offsetting movements of the cost elements, etc.