Illustration 11.1
Estimating Economies of Scale in the U.S. Airline Industry

One of the principal arguments for regulating airfares and entry into the U.S. airline industry is the existence of substantial economies of scale. Economies of scale, if indeed they exist, would give large airlines a cost advantage over smaller airlines. Some proponents of airline regulation would favor more mergers of airlines in order to reduce costs. Then to ensure that the cost savings are passed on to the consumer, they argue airfares would have to be regulated. If, on the other hand, economies of scale are small (or nonexistent), the benefits from allowing airlines to get very large in scale are slight. Clearly, a crucial consideration in evaluating the desirability of a merger between two airlines is the issue of economies of scale.

In a paper published recently in the ***Southern Economic Journal***, Subal Kumbhakar has estimated a long-run total cost function for the U.S. airline industry.* One of the purposes of this estimation was to estimate the economies of scale in the airline industry. While the specification of long-run total cost used in this paper is more complicated than the two specifications presented in this text, the basic approach is the same. Kumbhakar collected cross-section data for 31 airlines during the period 1970-84. This type of data set, which is a time-series over the same cross-sectional group of firms, is called ***panel data.*** The total cost equation, like the Cobb-Douglas cost function presented in this chapter, was specified to be a function of output, the prices of the inputs (labor, capital, and fuel in the case of airlines), as well as some additional variables, which we did not include in our analysis, for measuring technological change.

In his estimation of long-run total cost, Kumbhakar divided his sample into two time periods: the time period during which the Civil Aeronautics Board (CAB) was still regulating the airline industry (prior to 1978) and the time after the CAB was abolished and airline deregulation took place (after 1978). The results of estimating economies of scale in the two time periods indicate that economies of scale in the U.S. airline industry became smaller during the period of deregulation. The estimated elasticity of total cost (which corresponds to B in the Cobb-Douglas specification) was 0.7317 before deregulation and 0.8342 after deregulation. Recall that if B is less than one, economies of scale exist, but the closer B is to one, the smaller the economies of scale.

Apparently, airlines took advantage of falling long-run average costs after airline deregulation by increasing their scales of operation. Further increases in scale are not likely to cause costs to fall much further. Kumbhakar concluded that his estimates of economies of scale "indicate that efficiency gains from airline mergers are likely to be slight."

Subal Kumbhakar, "A Reexamination of Returns to Scale, Density, and Technical Progress in U.S. Airlines," ***Southern Economic Journal,*** October 1990.