They include a) Market Experiments; and b) Consumer Interviews. This section discusses these methods in brief along with their pros and cons.

Market Experiments

This is quite an expensive and somewhat difficult technique of estimating demand functions. This method attempts to hold everything constant during the study/experiment except the price of the good. There are laboratory experiments as well as field experiments, where in the former, volunteers are used to simulate actual buying conditions; and in the latter, firms display their products in different showrooms at different locations with different characteristics and population over a period of time and observe consumer's behavior and choices.

Experiments performed in the laboratory are a compromise between market study and market survey. In these lab experiments, firms look for suitable volunteers and pay them to simulate actual buying conditions but without going through the real markets. They are given an experience of an actual shopping trip and experimenter changes relative prices between trips. With numerous shopping trips by various consumers, an approximation of demand is obtained. Volunteers have the choice (and hence probability) of retaining their purchases, hence they have an incentive to act as if they are shopping for real.

In the second method i.e. field experiments/field study, when firms display their products in the actual markets, they make certain that there are enough units available at the showroom at each price in order to satisfy demand. Hence there is no impact of change in supply. The researchers want to change the price of goods and actually observe the behavior of the consumers. So, during the experiment, the prices slowly changed with small increments and record of sales is made at each price. With this, it is possible to remove influence of other things and a realistic approximation of the actual demand is made possible.

Consumer Interviews

Another direct method of estimating a demand function is through interactions with the consumers. This straightforward method simply involves asking the potential buyers how much of the good they would buy at different prices. This method involves various techniques from a simple interaction with customers by stopping them and asking them how much they would buy at various price levels; to a more sophisticated method of developing a detailed questionnaire to a selected sample of the population. The interviewer has to be careful while selecting the right representative sample. This sample should have the same characteristics as the population itself. A random selection of members from the population has to be made. This means that if the male female ratio in the population is 60 is to 40, then the sample should also have the same ratio approximately.

The next step is to forecast sales for first quarter of 2014 for which t=17, D_1=1, D_2=0 and D_3=0. Therefore, the forecast for sales for the first quarter of 2014 is:

$$X_{2014(1)} = 1599.1 + 271.34*17 - 700.59 = 5511.29$$

In the same way, we can predict for all the quarters.

The linear trend model discussed above is one of the simplest models from among many different types of time series models that can be used to forecast economic variables. More advanced time series models require detailed discussion which is not in the purview of this course and advanced course on forecasting would teach how to implement more sophisticated time series modeling techniques.

Activity

Calculate the future sales for the above example for the second, third and fourth quarters of 2014. Compare the values, and also compare them with the data values for the period 2010-2013.