

### Seminar 23

1. Which is of the four components of a time series would we use to describe the effect of Christmas sales upon a retail department store?
2. Which is of the four components of a time series might the U.S. department of Agriculture use to describe a 7-year weather pattern?
3. How would a war be accounted for in a time series?
4. What component of a time series explains the general growth and decline of the steel industry over the last two centuries?
5. In time series analysis, which of the following is true of seasonal variations?
  - a) They always have a period of one year.
  - b) They always repeat exactly year after year.
  - c) They have a period shorter than that of any cyclical variations there may be.
  - d) If you combine the trend and the seasonal variations, you always get back to the actual data.

6. Given the data:

Year (19xx)	70	63	72	60	66	70	74	66	62	67
Sales (in thousands)	155	150	180	135	156	168	178	160	133	145

- a) Find the linear trend of the time series, and estimate the trend value of the sales data in 1971.
  - b) Can coding time be used in developing the linear trend? Why?
  - c) Translate the time period of the time series into coding time.
7. Given the past 14 years' sales data of a trading company as followings:

Year	1979	1980	1981	1982	1983	1984	1985
Sales (in '000)	12	24	20	24	26	21	30
Year	1986	1987	1988	1989	1990	1991	1992
Sales (in '000)	36	40	39	30	50	55	100

Using the Least Squares Method, forecast the sales of the trading company in 1995.