



Figure 1-1

The Australian red wine sales, Jan. '80 – Oct. '91.

case, for example, when observations are made at fixed time intervals. *Continuous-time time series* are obtained when observations are recorded continuously over some time interval, e.g., when $T_0 = [0, 1]$.

Example 1.1.1 Australian red wine sales; WINE.TSM

Figure 1.1 shows the monthly sales (in kiloliters) of red wine by Australian winemakers from January 1980 through October 1991. In this case the set T_0 consists of the 142 times $\{(\text{Jan. 1980}), (\text{Feb. 1980}), \dots, (\text{Oct. 1991})\}$. Given a set of n observations made at uniformly spaced time intervals, it is often convenient to rescale the time axis in such a way that T_0 becomes the set of integers $\{1, 2, \dots, n\}$. In the present example this amounts to measuring time in months with (Jan. 1980) as month 1. Then T_0 is the set $\{1, 2, \dots, 142\}$. It appears from the graph that the sales have an upward trend and a seasonal pattern with a peak in July and a trough in January. To plot the data using ITSM, run the program by double-clicking on the ITSM icon and then select the option File>Project>Open>Univariate, click OK, and select the file WINE.TSM. The graph of the data will then appear on your screen. \square

Example 1.1.2 All-star baseball games, 1933–1995

Figure 1.2 shows the results of the all-star games by plotting x_t , where

$$x_t = \begin{cases} 1 & \text{if the National League won in year } t, \\ -1 & \text{if the American League won in year } t. \end{cases}$$