In the autumn of 1998 the American Federal Reserve set up a consortium of banks and financial institutions in order to bail out a large hedge fund called Long-Term Capital Management. The clientele of this mutual fund comprised a small number of wealthy individuals for whom it tried to secure high rates of return through intricate transactions mainly in the derivatives market for interest rates. In a statement delivered on October 1, 1998 before a committee of the House of Representatives, A. Greenspan, the chairman of the Federal Reserve justified his policy by pointing out that LTCM’s portfolio was so entangled that it was virtually impossible to avoid what in the financial jargon is called a fire sale i.e. a sale at a considerable discount. Given the fragility of the markets, he added, such a liquidation could have triggered other failures and eventually lead to a severe drying up of market liquidity. At the same time the Federal Reserve cut interest rates three times to prop up stock markets. Subsequently, in December 1999, the Fed flooded the banking system with money to deal with the so-called Y2K (i.e. transition to year 2000) problem, an action that has been credited with fueling the December and January 2000 spurt of the NASDAQ index (Commercial Appeal, 23 January 2000). No doubt that by taking such moves the Fed has supported and prolonged the bull market. Later on in this chapter we will see that there are indeed good reasons to think that without such measures the end of 1998 would have marked a turning point.

We mentioned that episode in order to emphasize once again that predicting the downturn of a bull market is an almost impossible task in the sense that it heavily depends upon fortuitous circumstances. Yet, the precise date of the turning point, whether it occurs two years later or earlier, would not have changed the overall trajectory of the market; once it began and gathered mo-
mentum in the early 1990s the scenario of the unfolding of the bull market was fairly predictable. That is the point that will be emphasized in this chapter. It will indeed be shown that the shape of speculative price peaks follows some definite patterns.

In the first section we consider speculative price peaks for commodity and property markets. In the first case one can rely on numerous long price series which contain a large sample of peaks. We will see that, at least as a first approximation, one can admit that price peaks are symmetrical with respect to a vertical line drawn through their summit. As a closer approximation, it will be seen that the rising phase is about 10 to 20 percent longer than the falling phase. If one insists on even greater precision, which corresponds to shifting from a medium-term perspective covering several years to a short-term perspective, one can in many cases detect oscillations whose frequency becomes higher as one approaches the turning point. This is referred to as the log-periodic oscillation pattern and was introduced in 1996 in a famous paper (Sornette et al.). These results hold for commodity markets as well as for various other speculative markets and in particular stock markets. For the latter, however, the sample of available cases is fairly limited which in turn implies larger confidence intervals for the results.

1 Describing speculative peaks

First, in order to introduce the topic and main ideas of our approach we consider in some detail the specific case of wheat markets.

1.1 Shape of wheat price peaks

Several peaks for wheat prices are shown in chapter 2. Moreover, we have already pointed out in that chapter that although they may have been triggered by meteorological factors, such peaks also reflected a good deal of speculative behavior.

In the study of price peaks the first problem one has to face is how they should be identified and selected. Fig. 7.1a and b provide an overall view by showing typical wheat price series in two periods of 50 years that are three centuries apart. Three important observations can be made.

- The price paths in the two panels look very similar. This means that in spite of the transformations that occurred in production and transportation techniques wheat markets retained most of their characteristics from the 16th century to the early 19th century. Needless to say, a similar graph drawn for