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Measuring and Predicting Cyclical Turning Points, Gaps, and Drawdowns

By locating the running maxima and minima of a time series, and measuring the current deviation from them, it is possible to generate processes that are relevant for the analysis of the business cycle and for characterizing bull and bear phases in financial markets. The talk focuses, in particular, on the output gap (the deviation of current output from its potential) and the drawdown of a financial asset (the potential loss in the value of an asset when it deviates from its historical peak). Further, the measurement of the current lead time from the running maxima and minima originates Markov chains, which are informative on the duration of market phases and time reversibility of the underlying process, and, together with the distribution of output growth and asset returns, determine the properties of the output gap and the drawdown. A new algorithm for dating peaks and troughs of the output (price) process, delimiting expansions and recessions (bear and bull market phases), is derived with the support of the two chains. We finally discuss out-of-sample prediction and robust estimation of gaps and drawdowns.