There are various tests which are used to detect structural change when the change point is unknown. Among these the widely used ones are Cumulated Sums (CUSUM) and CUSUM of Squares tests of Brown, Durbin and Evans (1975), Fluctuation test of Sen (1980) and Ploberger, Krämer and Kontrus (1989). Andrews (1993) suggests Sup F test and shows that it performs better than the above stated tests in terms of power.

This paper can be considered as a continuation of a previous paper (Başçı, Başçı and Zaman, 2000). In that paper, a procedure is suggested for model update, based on detection of structural changes at unknown change points. The procedure makes use of the SupF test introduced by Andrews (1993). This procedure is applied for modelling the common stock weekly index returns in Istanbul Stock Exchange for the 10 years period of 1989 - 1998. The underlying model consists simply of a mean plus noise, with occasional jumps in the level of mean at unknown time instances. The problem is the detection of this jump and the corresponding model update. Critical values for the SupF test statistic are found by using the Bootstrap methodology. A trading rule that uses the forecasts from the suggested procedure is observed to outperform the buy-and-hold strategy.

It is important to note that Sup F test of Andrews (1993), assumes homoskedasticity for the data. Ahmed et al. (2017) relaxes this assumption and introduces a new test of unknown change point where both the coefficients of the regression and variance are tested simultaneously. The new test statistics is named as Sup MZ. The paper compares the size and power performances of Sup F test and the Sup MZ test by performing Monte Carlo simulations.
and results that the Sup MZ test is superior to Sup F test. In the paper, they have an application for consumption function as well. In this paper, for our analysis of the same question of Başçı, Başçı and Zaman (2000), this time we use Sup MZ test instead of Sup F test to consider the possibility of heteroskedasticity as well. We use the same data but for the period 1991 – 2018.

Our preliminary results show that there are less structural change points when Sup MZ is used instead of Sup F test which is reasonable since Sup MZ considers a simultaneous change both in mean and variance. Our expectation is that this will improve the trading policy of Başçı, Başçı and Zaman (2000) over buy and hold strategy since there will less transaction costs. Up to know we did not get the detection times of the change point but that, what we should do because model update is done at those points and it is important to know those points.

References


