SHIFTS IN BORSA ISTANBUL RETURN BEHAVIOUR: AN ANALYSIS WITH CHANGE-POINT DETECTION

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ABSTRACT

Purpose- In Turkey, there is an enormous increase in local investors' stock market interest for the last several years (Altınbaş, 2021: 36). Increasing inflation, deteriorating welfare, lack of alternative investments seems to be the foremost reasons of this attention. As of November 2022, Borsa Istanbul 100 (BIST 100) index value level reached to historic highs (tripled in one year) and this trend is expected to continue. The index is exponentially increasing in overall and there are several retracement periods over the time. What drives, strengthens or changes this behaviour of market? Do political developments, economic news or any other events influence investors? To answer these questions, change points in statistical parameters of market return distributions are examined and detected dates are evaluated. Analysis period covers the dates between January 2009 and November 2022.

Methodology- Change points/breakpoints in statistical properties of time series can be informative for specific events that influence the behaviour (Beltratti & Morana, 2006; Chatzikonstanti, 2017; Eizaguirre, Biscarri, & de Gracia Hidalgo, 2004; Khuong Nguyen & Bellalah, 2008; Malik, 2011). In this study, change points determination is done with pruned exact linear time (PELT) method (Killick, Fearnhead, & Eckley, 2012). This method is applied to daily return data of the index, and it estimates a single or multiple points at which the statistical properties change. Analysis is conducted in R statistical software (R Core Team, 2021) with package changepoint.np (Haynes, Killick, Fearnhead, Eckley, & Grose, 2022). This is a modified version of original change point detection technique which is used in cases where there is no assumption on the statistical properties of observations (Haynes, Fearnhead, & Eckley, 2017).

Findings- Many changepoints detected. Some of these coincide with explicit/significant events, such as coup attempt in July 2016 or Covid-19 pandemic announcements. Interestingly, frequency of change points increased over the last one and a half year and most of them are very close to Monetary Policy Committee meetings. But some changes seem not to be directly related with important events, and some important events did not significantly change market behaviour.

Conclusion- Findings indicate it is neither possible to generalize market behaviour shifts with specific event types nor certainly expect a change after an event. Deeper analysis and interpretation of individual events and their impact may further provide further insights.

Keywords: Stock market, investor sentiment, pruned exact linear time, change-point detection.
JEL Codes: C22, G12, G14, G4

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