Chapter 27
Globalization and Time–Varying Market Efficiency:
An Innovative Approach

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ABSTRACT

The main purpose of this study is to determine time-varying weak form efficiency of 18 Borsa İstanbul sub-sector indices. In line with this purpose weak form efficiency is tested with innovative technique alongside traditional methods. The study indicated that bank, real estate invest trusts, holding & investments, telecommunication, wood, paper & printing, insurance, tourism and transportation indices are not linear. The weak form efficiency of aforementioned indices is analyzed with a rolling KSS unit root test developed by Yılancı. It is concluded depending on the applied tests that weak form efficiency of all of the nonlinear sub-sector indices has a time-varying structure. Results also showed that global scale events affect weak form efficiency of the indices in different durations. Findings gained from the study can be used by investors in strategic portfolio management decisions and by policy makers as well.

INTRODUCTION

The efficient market hypothesis which is frequently investigated in finance literature was defined by Eugene Fama (1970) as the market in which all available information is fully reflected in prices, and classified as weak form, semi-strong and strong efficiency. In weak form efficient market model, the sequential price changes are independent of each other. For this reason, it is impossible for investors to obtain return above the market. This situation states that there is no possibility of excessive profit

opportunity in the market, and prices show random walk characteristic. On the other hand, if the prices have mean-reverting characteristic, in other words if they follow a stationary process, it means that effects of the shocks to prices are temporary and prices will move to own trend in time. In the literature, the efficient market hypothesis has been tested for many markets with different methodologies. But these tests such as unit root test that is widely used in testing efficient market hypothesis, are used under the assumption of linearity. Although the number of the studies that consider the nonlinearity characteristic in testing weak-form efficiency increases in recent years, there is another lack in the literature is the usage of the methods which test the efficiency for whole the period by not considering the time-varying structure. These tests produce only one test statistic depending on the efficient market hypothesis and do not give information about the time-varying structure of the efficiency. But it is not realistic approach for a healthy investment policy to accept or refuse that the efficiency of the market, which is thought to be invested in, does not change within whole the period. Because efficiency of the market may change over the investment period due to the global, economic and sectoral developments with the structural changes such as social and economic events.

Especially recent shocks and different types of crises such as 2008 Global Crisis and European Debt Crisis may change the efficiency structure due to the developments in the market or in a related market. On the other hand, to investigate the efficiency in sectoral basis instead of for whole market presents the opportunity of a deeper analysis. Because to diversify their portfolios efficiently investors may construct their portfolios based on the sub-sectors in stock markets, besides the fundamental investment vehicles such as currencies, gold and bond. Therefore, it is crucial to determine the efficiency structure of the index, which is thought to be invested in, for constructing healthy portfolio management policies, making decisions for investment timing and developing risk management strategies. In this context, the purpose of this research is to test the time-varying weak form efficiency of 18 sub-sector index contained within Borsa İstanbul Industrial (XUSIN), Services (XUHIZ) and Financial (XUMAL) sectors and to determine the events that change the efficiency structure. The fundamental hypothesis of the study is as follows;

H_0: Weak form efficiency of BIST sub-sector indices do not change over the time.
H_1: Weak form efficiency of BIST sub-sector indices change over the time.

Also, the study will search answers for the following questions besides testing fundamental hypothesis.

- Which of the BIST sub-sector indices are linear?
- What are the specific shocks that affect weak form market efficiency and cause structural breaks?
- Which of the weak form efficiency of the BIST sub-sector indices change over the time?
- Which of the weak form efficiency of the BIST sub-sector indices change only in the short-run?

The rest of the paper is organized as follows; in the next step, the literature that includes studies, which investigate the subject of the paper with different dimensions, is summarized. The data and econometric methods used in the paper are explained in section 3. The empirical results are given in section 4 and Section 5 concludes the empirical results.

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